

THE GREAT ENCYCLOPÆDIA OF UNIVERSAL KNOWLEDGE

*With 1,100 illustrations
and a 22-page Supplement of Famous Characters
in Drama and Fiction*



ODHAMS PRESS LIMITED
LONG ACRE, LONDON, W.C.2

PREFACE

FOR more thousands of years than we can accurately estimate mankind has been in search of knowledge. At first tentatively and to-day more surely, man has sought knowledge which would arm him against the terrors and dangers of the powers of darkness, which would clothe him against his nakedness and feed him against his hunger. Early in his long story, however—"ere the first star shivered"—the wonders of nature, the mystery of life and the universe his imagination. How long can it be since he first contemplated the stars in their courses, the tides of the seas, the eternal miracle of day and night? How long since the first realisation that knowledge and wisdom and truth are among the priceless eternal possessions of men? Down the pathway of the unending years, through the recognition of the things about him, through thought and emotion, through the worship of unknown gods, man started on his long, long journey in search of knowledge and truth. History cannot teach us, nor legend recall, from what dim recesses of time spring the ultimate source and desire of all our knowledge.

This encyclopædia, in which in brief form is recorded the knowledge of man, is a milestone marking yet another stage in history. Here for all to read, will be found the lives of men and of women, the accumulated wisdom of the centuries, the story of religion, of science, of art and of literature, descriptions and illustrations of the teeming life of the earth to-day, of birds, beasts and fishes, of trees, plants and flowers, and descriptions and illustrations of the strange and terrible forms of life that have gone and whose memory is embodied to-day in nothing more than a fossil. Here are the primitive ancestors of man, his primitive weapons, and the primitive instruments he used, and here are all the wonderful inventions and discoveries of modern times that have made life what it is to-day, that have given us cures for our illnesses, the fruits of all the earth for our table and the comforts of science for our leisure.

Sometimes with pride, sometimes with misgiving, but always

with humility, we shall read the immensity of the story, the untold ages that have gone, the magnificent courage with which mankind has faced the unknown, the little ambitions and jealousies which have been provoked, the revolting cruelties of some in their search of immediate personal and material ends, and the undying glory of others in their self-sacrifice. We shall read again of the terrible and strange forms of animals that have lived and died, of the empires that have risen and fallen, of the men and women who have gone before, of failures and successes all coming and going like the rising and the setting of the sun, while life itself pursues its unalterable course.

No effort has been spared in the collection of this information. No research has been neglected. In times when the world is changing so quickly before our eyes, when new happenings, new inventions and new discoveries follow so hard on the heels of the old, it has been no easy task. But no last search has been omitted as each section has been recorded to make sure that the events of to-day are covered equally with the history of two thousand years ago.

Here then is "The Great Encyclopædia of Universal Knowledge"—the wisdom of the centuries, the product of years of labour and thought and research by a host of experts, for your profit, your benefit, and your enjoyment.

THE EDITOR.

1922

A

Aachen (formerly **Aix-la-Chapelle**), in Rhenish Prussia, one of the oldest cities in Germany, made capital of the German empire by Charlemagne; derives its name from its mineral springs; is a centre of manufacturing industries and an important trade; is celebrated for its octagonal cathedral (in the middle of which is a stone marking the burial-place of Charlemagne), for treaties of peace in 1668 and 1748, and for a European congress in 1818. Pop. 155,000.

Aalborg, a trading town on the Limfjord, in the N. of Jutland, Denmark. Pop. 48,000.

Aalesund, a seaport of Norway, in the Møre fylke (county), standing on three islands; one of the chief centres of the fishing industry. It was destroyed by fire in 1904. Pop. 14,000.

Aar (or **Aare**), the largest river of Switzerland, a tributary of the Rhine, 180 m. long, rising in the Aar Glacier in the Canton of Berne.

Aarau, capital of the Swiss canton of Aargau; manufactures silk, cotton, etc. Here the Helvetic Republic was proclaimed in 1798. Pop. 12,000.

Aardvark, the name, meaning earth-pig, given by the early Dutch settlers in S. Africa to an animal resembling the ant-eater, characterised by large, pointed ears, long snout and tongue, long, powerful tail and short legs. It is a burrowing animal, living chiefly on ants, and its toes are modified for digging.



AARDVARK

Aardwolf, or **Maned Jackal**, a small animal resembling a hyena, found throughout Africa; 3 ft. long; coat yellow, striped with black; burrows like a fox and feeds on carrion and termites.

Aargau (Argovie), a fertile Swiss canton bounded on the N. by the Rhine (Germany opposite), through which the R. Aar flows. Cap. Aarau. Pop. 260,000.

Aarhus, a seaport and trading town, second city of Denmark, standing on Aarhus Bay, on E. of Jutland; has considerable export and import trade, a fine old Gothic cathedral and a University; capital of a county of the same name. Pop. 90,898.

Aaron, the elder brother of Moses, and the first high-priest of the Jews, an office he held for forty years; with Moses, led the Israelites out of Egypt; at Mt. Sinai supported the hands of Moses whereby victory over the Amalekites was secured. While Moses was on the mount, he countenanced idolatry and the making of a golden image, but repented.

Aaron's Beard, the popular name of *Hypericum calycinum* (St. John's Wort or Rose of Sharon), a plant of the Guttiferæ order, bearing large yellow flowers 3-4 in. across; often used in rock-gardens and for covering dry banks.

Aaron's Rod, a popular name for *Verbastrum thapsea*, a yellow-flowered species of Mullein.

Abacus, in architecture, a tablet crowning a column and its capital. Also a calculating apparatus, consisting of a grooved board containing pebbles or a wire frame on which beads are strung, used by the

ancient Greeks, Romans, Egyptians, Mexicans, and some primitive modern people.

Abaddon, the Hebrew name of the "angel of the bottomless pit," king of the swarm of locusts which, according to Rev. ix, shall torment those who "have not the seal of God in their foreheads." Greek name Apollyon.

Abalone, the name of several species of limpet-like molluscs of the Haliotidae family, also known as "ear-shells" and "ormers." They are found in most parts of the world except S. America. One species (*H. tuberculata*) is common round the Channel Islands and N. of France, and is an article of food there. Other edible species are equally common in China, Japan, New Zealand, etc. Mother of pearl is obtained from the shells of some species.

Abandonment, in law, the relinquishing of an interest or claim. In marine insurance, if the assured abandons to the insurers (or insurers) his right to what is saved out of a wreck, he is entitled, if anything insured has, by some of the usual perils of the sea, become practically valueless, to call upon the insurers to pay the full amount of the insurance, as if it were a case of total loss.

The surrender of his property by a debtor for the benefit of his creditors is also an illustration of the legal use of the term. Things found must not necessarily be assumed to have been abandoned, unless all the circumstances indicate that the owner intended to part with the thing; and to appropriate things found, where the owner could on inquiry be identified, renders the finder liable to be charged with larceny.

Abano Bagni, a village 6 m. from Rome, Padua, Italy; famous for its baths. It was the birthplace of the Italian astrologer Pietro d'Abano. Pop. 4,500.

Abarbanel (or **Abraham**), Isaac Ben Jehuda, Portuguese scholar and statesman claiming descent from royal house of Judah; born in Lisbon; treasurer to Alfonso V., on whose death he fled to Spain; minister of state to Ferdinand and Isabella 1484 till Jews banished 1492. Went afterwards to Naples, Corfu, and Monopoli. Minister of state at Venice 1503-1508. Interpreter of Hebrew scripture. (1437-1508).

Abarim, a mountain range in Trans-Jordan, NE. of the Dead Sea, the highest point being Mt. Nebo (2848 ft.), from which, at "the top of Pisgah," Moses first saw the Promised Land and where he died. (Deut. xxxiv. 1 and 5.)

Abatement. In law, a "plea in abatement" was one which showed some reason for abating or quashing the plaintiff's statement of claim on the ground that it was improperly framed, e.g., the misnomer of a defendant. Such pleas have now been abolished, and the defendant must himself correct the misnomer. Also used in the literal sense to destroy or abate a nuisance. In heraldry, it indicates a mark or blot on the escutcheon for some stain, as e.g. bastardy, in the wearer.

Abati (or **Abbato**), Niccolò dell'Italian fresco-painter, born at Modena. Influenced by Correggio. His "Martyrdom of St. Peter and St. Paul," painted for the Benedictine church at Modena, is in the Dresden gallery. After painting in his native city and at Bologna, he removed to France

ABATTOIR

c. 1552, and worked under Primaticcio in the palace of Fontainebleau. (1512-1571).

Abattoir, or **Slaughter-house**. The word is more usually applied to a public slaughter-house which by law is under the control of the local government authorities. Bye-laws provide for their proper control; private slaughter-houses must also be conducted conformably with these bye-laws, under annual licence from the local authority. The largest in the world are in Chicago.

Abauzit, **Firmin**, a French Protestant theologian and mathematician; a friend of Newton and supporter of his theories, and esteemed for his learning by Rousseau and Voltaire. (1679-1767).

Abbas, uncle of Mohammed, caliph of the dynasty of the Abbasides (q.v.). (566-652).

Abbas The Great, Shah of Persia, of the dynasty of the Sophis, great conqueror, reformer and administrator. (1557-1628).

Abbas Hilmy, or **Abbas II.**, last eldest son of Tewfik Pasha, whom he succeeded 1892. Quarrelled with British authorities in Egypt until the Sudan was recovered by Kitchener. Visited England 1899; but in Great War took side of Central Powers. Deposed 1914; retired to Vienna, where he had been educated; died there. (1874-1923).

Abbasides, a dynasty of 37 caliphs of Baghdad from 750 to 1258, when the Tartars burned Baghdad. Luxury and the arts were fostered under this dynasty, the most famous member of which was Haroun al-Raschid.

Abbas-Mirza, a Persian prince, a Persian army and a leader of it, unsuccessfully, however, against Russia. (1783-1833).

Abbess, a dignitary in the Roman Catholic Church, the superior of a nunnery. She fulfils the same functions in the nunnery as the abbot in a monastery. She may not preach, however, or receive confession. Elected by the nuns, the appointment of an abbess is confirmed by the bishop.

Abbeville, a thriving old town on the Somme, 12 m. up, with an interesting house architecture and a cathedral, unfinished, in the Flamboyant style. Used as a British base in the Great War. Pop. 21,000.

Abbey, a church institution forming the of monks or nuns. It usually comprises a



BUCKFAST ABBEY

church, chapter-house, refectory, cloisters, dormitories, guest-room, almshouse, library and other buildings. Among the principal British abbeys are those at Westminster, Canterbury, Durham, Fountains, Holyrood and Buckfastleigh. Buckfast Abbey has been rebuilt in recent years by a community of Benedictine monks near the ruins of an old Cistercian abbey.

Abbey, **Edwin Austin**, famous American painter, born in Philadelphia; sent to England, 1878, by Harper Brothers to make studies for illustrations of Herrick's poems. Also illustrated Shakespeare. Painted panels, "The Quest of the Holy Grail," for Boston Public Library, 1891-1902. A.R.A. 1896; R.A. 1898; painted official picture, "Coronation of Edward VII." Brilliant colorist. Died in London. (1852-1911).

ABDOMEN

Abbot, head of a monastery or abbey. Usually elected for life by the monks and confirmed in office by the Pope or the Bishop of the diocese. There were two classes of abbots: Abbots Regular, as being such in fact, and Abbots Commendatory, as guardians and drawing the revenues.

Abbot, George, Archbishop of Canterbury in the reigns of James I. and Charles I., Vice-chancellor of Oxford University and one of the translators of King James's Bible. In conflict with Laud on theological questions and suspended by Charles for opposing Dr. Sibthorp on non-resistance to royal demands. (1562-1633).

Abbotsford, the residence of Sir Walter Scott near Melrose, on the Tweed, built by him in 1811 on the site of a farm called Cartleyhole.

Abbot's Langley, near Watford, England, believed to be the birthplace of Nicholas Breakspear, Pope Adrian IV. Pop. 5,553.

Abbott, **Rev. Edwin Abbott**, English clergyman, schoolmaster, and author. Wrote chiefly on scholastic and theological subjects. Most important work was his *Shakespearean Grammar* (1870); other works include *Bacon and Essex*, *Francis Bacon*, *The Anglican Career of Cardinal Newman*. (1838-1926).

Abbott, **Lyman**, American Congregationalist minister and editor. Pastor at Terre Haute, Ind., 1860; at New England Church, New York, 1865-1889. Afterwards editor of *Harper's Magazine*. Edited *Illustrated Christian Weekly*, and with Henry Ward Beecher, *Christian Union*, afterwards *Outlook*. Pastor of Plymouth Church, Brooklyn, 1888-1889. (1835-1922).

Abd-el-Kader, Arab emir of Mascara of the French conquest of Algeria; waged war for 15 years, but surrendered to the French in 1847. Released in 1852, he became a faithful friend of France. (1807-1885).

Abdel-Krim, leader of the Rif rebels in Morocco against the French and Spanish. Served Spain during the Great War, but turned against them, and in 1921 nearly annihilated a Spanish army of 20,000 men near Melilla. Came in conflict with the French also with some successes, but in 1926 surrendered at Fez and was exiled to the Mascarene Is.

Abd-el-Rahman, Moorish Governor of Spain who invaded Gaul at the head of a great Mohammedan army, but was defeated and slain by Charles Martel at Tours in 732.

Abdera, a town in ancient Thrace, the birthplace of Democritus and Anaxarchus, but nevertheless proverbial for the stupidity of its inhabitants.

Abdications: the most celebrated are those of the Roman Dictator Sulla in 79 B.C.; Diocletian in A.D. 305; Charles V. in 1556; Christina of Sweden in 1654; Napoleon in 1814 and 1815; Charles X. in 1830; Louis Philippe in 1848; Ferdinand of Austria in 1848; Isabella II. of Spain in 1870; Amadeus I. of Spain in 1873; Milan of Serbia in 1889; Pedro II. of Brazil in 1889; Hamid II. of Turkey in 1909; Manoel of Portugal in 1910; Puyi of China in 1912; Nicholas II. of Russia in 1917; Ferdinand of Bulgaria in 1918; Wilhelm II. of Germany in 1918; Karl of Austria in 1918; Constantine of Greece in 1922; Muhammad VI. of Turkey in 1922; George II. of Greece in 1924, restored to the throne in 1936; Amanullah of Afghanistan in 1929; Farajuddin of Sam, 1934; and Edward VIII. of England, December, 1936.

Abdomen, the lower part of the trunk of the body, resting on the bones of the pelvis and separated from the

ABDUCTION

thorax by the diaphragm. The membrane which lines the wall of the abdominal cavity is called the peritoneum. The upper part of the abdomen contains the stomach, in front of which is the liver, and behind, the spleen, pancreas, and kidneys and, below, the intestines.

Abduction (in law) means the act of taking away a woman against her will, using as a means either force or deceit. The abduction of women and the stealing of children under 14 are accounted felonies and punishable with penal servitude. The abduction and seducing of a girl under 18, however, is reckoned a misdemeanour and punishable with 2 years' imprisonment, or less.

Abdul-Aziz, Sultan of Turkey from 1861 in succession to his brother Abdul-Medjid. Extravagance and misgovernment led to revolts and he was deposed, dying 4 days later. (1830-1876).

Abdul-Hamid II., Sultan of Turkey, key, brother to Abdul-Aziz, and his successor; referred to as Abdul "the Damned" and the "Great Assassin." Under him Turkey suffered serious dismemberment. Christian subjects in Armenia and Crete were massacred with savage atrocity and revolts suppressed with the greatest cruelty. He was himself deposed by the Young Turks in 1909 and parliamentary government, which he had proclaimed and suspended, was established. (1842-1918).

Abdul-Medjid, Sultan of Turkey, succeeded his father Mahmud II. in 1839, shortly after the Turkish defeat at the hands of Egypt. Carried out a number of reforms in the army and public affairs. In support of him against Russia, England and France undertook the Crimean War. (1823-1861).

Abd-ur-Rahman, Sultan of Fez and Morocco 1823-1859. Abandoned levying of tribute for protection from Moorish pirates; spent first 4 years of his reign putting down insurrections. As ally of Abd-el-Kader, he was defeated by Bugaud at Isly, 1844, and made peace with the French. (1778-1859).

Abecedarians, a name formed from the first three letters of the alphabet and given to a sect of Anabaptists in Germany. They maintained that the Scriptures could be communicated direct from God, and consequently they did not read.

A'Beckett, Gilbert Abbott, an English humorist, contributor to *Punch* and other organs; wrote the *Comic Blackstone* and comic histories of England and Rome. (1811-1856).

Abednego, the Babylonian name of Azariah, Daniel's companion, who with Shadrach and Meshach was cast into the fiery furnace by Nebuchadnezzar and miraculously saved. (Dan. iii.).

Abel, the second son of Adam and Eve; slain by his brother Cain out of jealousy because his sacrifice proved more acceptable to God.

Abel, Sir Frederick Augustus, with Professor James Dewar joint inventor of cordite; a famous authority on explosives; chemist to War Dept.; first director of Imperial Institute. (1827-1902).

Abelard, Peter, a theologian and scholastic philosopher of French birth, renowned for his dialectic ability, his learning, his passion for Héloïse, and his misfortunes; made conceivably the best of credibility, and was a great teacher in his day. (1079-1142).

Abele, the English white poplar tree, (*Populus alba*) (q.v.).

Abencerrages, a powerful Moorish tribe in Grenada, whose fate in the 15th Century has been the subject of interesting romance.

ABERDEENSHIRE

Abeokuta, a town in S. Nigeria, capital of Abeokuta province, founded in 1825 by inhabitants of a number of villages as protection from slave-raiders. It is surrounded by a mud wall, and the houses are built for the most part of mud. Area of the prov. 4,266 sq. m. Pop. (town) 53,300; (prov.) 434,526.

Aberavon, a town and seaport in Glamorganshire, Wales, with copper and iron works; for some years the Parliamentary seat of Ramsay MacDonald. The rise of Port Talbot as an industrial centre has led to its decline. Pop. 16,400.

Abercarn, a town in Monmouthshire, England, with collieries, smelting and chemical industries. Pop. 20,554.

Abercorn, Third Duke of, became the first Governor of Northern Ireland in 1922, having at one time sat as M.P. for Londonderry and been Treasurer to the Household. (1869-).

Abercrombie, Lascelles, English poet, lecturer; educated at Malvern and Manchester University; has published several volumes of poetry and some critical essays, his first work, *Interludes and Poems*, appearing in 1908. (1881-1938).

Abercromby,

Sir Ralph, a British general of Scottish birth; distinguished himself in Holland when serving with the Duke of York in 1793 and 1799. Captured Grenada and several islands in the W. Indies in 1796. Fell in Egypt after defeating the French near Alexandria. (1731-1801).



SIR R. ABERCROMBY

Aberdare, an industrial town in Glamorganshire, S. Wales. Large quantities of coal from its mines are exported from S. Wales ports. Also has combustion works, brick works, and other industries. Pop. 48,751.

Aberdeen, the fourth city in Scotland, on the E. coast, between the mouths of the Dee and Don; built of grey granite, with many fine public edifices, a flourishing university, a large trade, and thriving manufactures. Old Aberdeen, on the Don, now incorporated in the municipality, is the site of a cathedral church, and of King's College, founded in 1484. Pop. 167,000.

Aberdeen, George Gordon, Fourth Earl of, a shrewd English statesman, served in the cabinets of the Duke of Wellington (Foreign Secretary 1828-1830) and Sir Robert Peel (Colonial Secretary 1834-1835; Foreign Secretary 1841-1846). Negotiated Oregon Treaty with United States Government in 1846 fixing the Canadian boundaries. Prime Minister 1852-1855, but resigned on a vote of censure on the mismanagement of the Crimean War. (1784-1860).

Aberdeen, Sir John Campbell Gordon, Marquess of Aberdeen and Temair (created 1916). Lord Lieutenant of Ireland 1886 and 1905-1915. Governor General of Canada 1893-1898. (1847-1934).

Aberdeenshire, the sixth largest with a coastline of 65 m. on the North Sea; mountains in SW., whence ranges stretch out in a NE. direction from the Grampians. Chief mountains; Ben Macdui (4,296 ft.), Ben Avon (3,843 ft.), Lochnagar (3,786 ft.). Chief industries; granite-quarrying, fishing, shipping, agriculture, and distilling. County town Aberdeen. Pop. 323,600. Area, 1,971 sq. m.

ABERDOUR

Aberdour, a town in Fifeshire, Scotland, standing on the Firth of Forth, 18 m. from Edinburgh, a seaside resort with good bathing. Pop. 2,055.

Aberdovey, a seaside resort on the estuary of the Dovey, 10 m. from Aberystwyth, Merionethshire, Wales. Pop. 1,203.

Aberfeldy, a burgh of Perthshire, Scotland, on the R. Tay. The Falls of Moness are in the neighbourhood. Pop. 1,500.

Aberfoyle, a village on the R. Forth, 34 m. from Glasgow, Scotland, the scene of incidents in Walter Scott's *Rob Roy*. Pop. 1,100.

Abergavenny, a market town of Monmouthshire, England, at the confluence of the rivers Usk and Gavenny. It was an old Roman Settlement. Has a wool market and there are local mines and iron foundries. Pop. 8,600.

Abergele, a market town and seaside resort, Denbighshire, N. Wales; the site of a Roman camp. Pop. 2,600.

Abernethy, a small burgh in S. Perthshire, Scotland, with a Pictish round tower, and once the capital of the Pictish kingdom. Pop. 600.

Abernethy, John, a distinguished surgeon and authority on stomachic diseases. (1764-1831).

Aberration of Light, a phenomenon due to the fact that light from a star does not reach the earth instantaneously, but takes a measurable time, according to its distance away. A telescope cannot be pointed directly at a star in order to observe it, as could be done if the earth were not rotating. As a consequence, the star appears to describe an ellipse in the heavens, and from careful measurements the speed of the earth in its orbit can be calculated, and hence its distance from the sun.

Chromatic Aberration is due to the fact that rays of different wave-length are differently refracted during their passage through a lens or prism; hence the image formed is not quite in focus for the violet rays if it is exactly in focus for the red ones. The difference is slight, but must be corrected for accurate instruments. This may be done by the use of a combination of lenses of different refracting power.

Abersychan, town of Monmouthshire, England, 10 m. NW. of Newport, with collieries and tin-plate and iron works. Pop. 25,600.

Abertillery, a town in Monmouthshire, England. It has an important tin-plate industry and coal mines in the vicinity. Pop. 31,800.

Aberystwith, market town and summer resort in Cardiganshire, Wales, with a university. The National Library of Wales is also here. Pop. 9,500.

Abeyance, the suspension of action in legal procedure. Titles, estates, and the freehold of a church benefice are said to be in abeyance if there is no present owner or holder.

Abgar XIV., a king of Edessa in Mesopotamia, one of a dynasty of the name. He was a contemporary of Jesus Christ, and is said to have corresponded with Him.

Abhorrrers, the Royalist and High Church party in England under Charles II., so called from their abhorrence of the principles of their opponents.

Abiathar, Hebrew priest during the reigns of David and Solomon; the son of Ahimelech (by mistake the positions of father and son are reversed in 2 Sam. viii. 17), priest of Nob, where Saul massacred the priests and he alone escaped. He fled to David at

ABNER

Adullam, and served as high priest till Solomon's reign. Joined in the rebellion of Adonijah, and was banished to Anathoth.

Abigail, wife of Nabal, gave hospitality to David's messengers when her husband refused it. Ten days later Nabal died and David married her. (1 Sam. xxv.) Also the name of a sister of David.

Abijah, the name of several persons mentioned in the Bible. The most important (also referred to as Abijam) was a son of Rehoboam, and his successor. He made war on Jeroboam successfully in an attempt to recover the Ten Tribes.

Abimelech, (1) King of Gerar, S. Palestine, in time of Abraham, whose wife he innocently took, but restored on learning she was not merely Abraham's sister (Gen. xx). (2) Another King of Gerar, with whom Abraham's son, Isaac, had a similar adventure (Gen. xxvi). (3) Son, by a concubine, of Gideon, upon whose death he murdered all but one of his 70 brethren and proclaimed himself king. His skull was broken by a stone thrown by a woman from the tower at Thebez (Judges ix).

Abingdon, a town in Berkshire, England, 6 m. S. of Oxford, in an agricultural district; site of a Benedictine Abbey, remains of which still exist. Carpets and clothing manufactured. Pop. 7,240.

Abington, Frances, English actress, daughter of an ex-soldier named Barton. Sang at tavern-dooors. Successively milliner's assistant, cookmaid, and actress at Haymarket 1755 and at Drury Lane 1756. 5 years' success in Dublin. Returned to Drury Lane as leading lady. Original Lady Teazle 1777. (1737-1815).

Abiogenesis, the theory that living organisms arose from non-living matter. It has been keenly disputed by modern scientists, who since Darwin's time have been more impressed with the interrelation of all existing and extinct living organisms, though they have so far failed to establish the time, place, and manner of emergence of life. The line of demarcation between non-living matter and the most simple forms of life is not in itself clearly defined, but there is as yet no evidence that abiogenesis does take place.

Abishai, brother of Joab, nephew to David, and one of his best warriors. Accompanied David to the camp of Saul at Hachilah by night. Adhered to David during Absalom's rebellion. Slew the Philistine giant Ishbi-benob when the latter attacked David. (2 Sam. xxi.)

Abjuration, Oath of, instituted by William III. Any person holding public office was required to take this oath, abjuring any claim made by a member of the Stuart family to the throne of England. It also contained a rejection of papal authority in England, and provided that if the King of England were to be excommunicated by the Pope, he did not thereby forfeit the loyalty of his subjects.

Abkhasia, an autonomous state in the Georgia. It has an area of about 2,500 sq. m. and is largely agricultural. It has been under Persian, Georgian, and Turkish rule, and was not pacified by Russia until 1864. Pop. (est.) 200,000. Cap. Sukhum.

Ablution, the ritual purification of the body after contact with the dead or something unclean. It is widely practised, water being the most common medium used. The term is also used in the Catholic Church for the washing of the chalice and the hands of the priest after Mass.

Abner, son of Ner and cousin of Asahel. After the death of Saul, made Ishbosheth King of Israel. During the war with David that followed, he killed Asahel

son of Joab. Later, as a result of dissension with Ishbosheth concerning Rispah, Saul's concubine, he joined David and was treacherously killed by Joab (2 Sam. ii and iii).

Abney, Sir William de Wiveleslie, photographer, chemist, born at Derby. Director, Science and Art Department, S. Kensington 1893-1903. Expert at astronomical and spectral photography. One of the inventors of the emulsion that made instantaneous photographs possible. K.C.B., 1900. (1843-1920).

Abo (also known in Finnish as Turku), the old capital of Finland and seat of the government, on the Gulf of Bothnia, largely destroyed by fire in 1827, when the university was removed to Helsingfors, the present capital. Pop. 69,000. Also, a town in Nigeria, W. Africa, at the head of the Niger Delta. It exports large quantities of palm oil. Pop. 7,900.

Abode (in law), commonly habitation or place of residence; also a synonym for stay or continuance. For some purposes in law a man may be regarded as having an abode where he has his place of business, even though he resides elsewhere; or where he has a temporary residence, though his permanent residence is elsewhere or even abroad.

Abode must be distinguished from "domicile," which means much more than even a place of residence (and is important in the law of settlement and removal of paupers and in questions of nationality), whereas abode does not necessarily imply that. In law, indeed, abode is lower in import than "residence," which strictly means the place where a man lives, i.e., where he sleeps or is at home.

Abolitionists, a society formed in the N. States of America in 1832 to press for abolition of slavery. The society grew in numbers and influence and was the moving force in the war of 1861-1865, which resulted in the victory of the anti-slave States under Abraham Lincoln (q.v.).

Abomey, in the colony of Dahomey in French W. Africa, capital of the ancient kingdom of Dahomey, conquered by the French in 1892. Pop. 20,000.

Aborigines, an old tribe which inhabited Latium; but, derivatively, the earliest known inhabitant of any continent (e.g., the "blackfellow" of Australia), country (e.g., the "Maoris" of New Zealand), or district. Experience shows that aboriginal races are apt to dwindle speedily in numbers when brought into contact with European civilisation. The Maoris, however, are now on the upward grade in population.



AUSTRALIAN
ABORIGINE

Abortion, the premature birth or expulsion of the foetus. Another word for this is miscarriage. To be an abortion it must occur before the seventh month, and may come about naturally, as when the foetus is dead, or be brought about artificially by means of instruments or drugs. The procuring of abortion by a pregnant woman by artificial means is a felony, and so also is an endeavour by any person to procure miscarriage of any woman by such means, the punishment being penal servitude up to 3 years or imprisonment not exceeding 2 years with or without hard labour. An abortion brought about artificially to save the mother from serious illness or death is not a crime.

Aboukir, village near Alexandria, in Egypt, on the bay near which Nelson destroyed the French fleet in 1799; where Napoleon beat the Turks, 1799; and where Sir Ralph Abercromby fell, 1801.

About, Edmond François Valentin, Lorraine, French author; born at Dieuze, Lorraine, educated at Paris and Athens. Wrote: *La Grèce Contemporaine*, a satirical account; *Tolla*, a plagiaristic novel; many short humorous stories; and three serious novels—*Madelon*, *L'Infâme*, and *Le Roman d'un Brave Homme*. After the Second Empire's fall, he conducted a paper. (1828-1885).

Aboyme, village and parish (Aboyme and Scotland, on the Dee, in a forested, mountainous district. Pop. 1,500.

Abracadabra, a magic word supposed to be most effective when written in the form of a triangle. It was used in the past as a spell, and was thought to cure illnesses, subdue devils, and to keep away evil spirits.

Abraham, or **Abram**, son of Terah, Hebrew patriarch and ancestor of the Jews. By Divine command he continued the journey from Ur of the Chaldees which he had commenced with Terah till he came to the land of Canaan. Famine drove him on to Egypt, whence he returned, and settled near Hebron after Pharaoh had taken Sarai into his harem in the belief that she was his sister. Had a son Ishmael by his concubine Hagar, but a son Isaac was born to Sarai (Sarai) when he was 100 years old. Had 6 other children by Keturah, but Isaac was his sole heir. Died aged 175 and was buried beside Sarai in the cave of Machpelah.

Abraham, The Plains of, a plateau, near Quebec, Canada, the scene of the battle in which the English under Wolfe defeated the French under Montcalm in 1759.

Abraham-Men, discharged lunatics from Bethlehem Hospital allowed at one time to roam about England and beg; a term also applied to a set of impostors who wandered about the country affecting lunacy.

Abrantes, town in Portugal, on the Junot, 1807, and giving the title of Duke to him. Pop. 11,000.

Abraxas Stones, stones with the Greek word Abraxas and cabalistic figures engraved on them and used as talismans. The word Abraxas, the Greek letters of which made up the number 365, was used by the Basilidians to signify the 365 orders of spirits which they believed to pervade the Universe.

Abruzzi, Duke of the, Italian geographer, admiral, explorer, and mountaineer, ascended Mt. St. Elias in Alaska in 1897 and Mt. Ruwenzori, Central Africa, 1906, and made attempts on several Himalayan peaks, including K.2 (Mount Godwin Austen). Commanded naval squadron in the Tripolitan War and Italian Navy during part of the Great War. (1873-1933).

Abruzzi e Molise, a department of Central Italy comprising the provinces of Aquila degli Abruzzi, Campobasso, Chieti, Pescara, and Teramo. It includes the central portion of the Apennines, and there are large forests and numerous streams which flow through fertile valleys into the Adriatic. Cattle, pigs, and sheep are raised; other produce includes corn, rice, almonds, and wine. Area 5,952 sq. m. Pop. nearly 1,500,000.

Absalom, the third and favourite son of David, a man of great personal beauty and popularity. Rebelled against his father, but after considerable initial success, during which he occupied Jerusalem and David fled, he rejected the counsels of Ahithophel and was totally defeated in Gilead. While escaping on a mule, his hair was entangled in the branches of an oak, and he was despatched by Joab.

ABSALON

Absalon, Archbishop of Denmark, distinguished as warrior, ecclesiastic, and statesman. During Valdemar's reign he led the forces which cleared the seas of Wendish pirates. (1128-1201).

Abscess, a local collection of pus in the body, caused by the presence of pus-forming bacteria, which liquefy the tissues, destroying the blood-cells that have collected round. Pus will continue to form until the white blood corpuscles are sufficiently strong to kill the bacteria, or until the abscess bursts or is lanced. An abscess can be detected by heat, swelling, and pain, and may occur under the skin, or in an organ, joint, or bone, and frequently in the socket of a tooth.

Absentee, the term applied to a landlord who draws revenues from estates but does not live on them; applied in particular to the landlords who, being English and living in England, did much to impoverish the Irish.

Absinthe, an extremely intoxicating liquor, producing more harmful results than any other form of alcohol. Its characteristic flavour comes from wormwood. Other ingredients are fennel and hyssop. It was chiefly manufactured in France but both manufacture and sale have for some years been prohibited there.

Absolution, a religious ceremony by which a Christian priest sets a person free from the guilt of sin or from excommunication by the Church. The right to give absolution is traced to the teachings of Christ and of St. Paul. Confession was in earlier days made before a congregation and absolution not given until penance had been carried out. At the present time, the Roman Catholic Church gives absolution after confession, stating what penance is then to be performed. The Church of England also reserves to itself the power to give absolution to repentant sinners.

Absorption, the taking up by one substance of another, or the taking up of radiant energy by a substance. In the former sense, it includes the absorption of water by a sponge, of oil by a wick, of soil-solution by the root-hairs of plants, and many similar phenomena. In science, the taking up of a gas by a solid (charcoal, for instance, takes up many times its own volume of ammonia) is called sorption, and includes adsorption, or the taking up of the gas by the surface layer of the solid, and absorption, or the taking up of the gas by the interior of the solid. Adsorption takes place much more quickly than absorption. Absorption of light is the reason why articles appear coloured or black in white light; a red object is red because it absorbs all of the light which falls upon it except the red, this being reflected. A perfectly black object absorbs the whole of the light which falls upon it.

Abstract of Title, an epitome of the evidence of ownership of land (including house property). A contract for the sale of land, or "Property," as it is popularly called, implies an agreement to make a good title to the property sold, and the vendor is bound to deliver to the purchaser an "abstract" of his title, i.e., a summary in writing of all the documents, facts, and events upon which his right to the property depends. The manner in which a given title is to be deduced is strictly defined by law, and especially by the Law of Property Act, 1925, and by the Land Registration Act. (See also **Appointment**, **Power of**.)

Absyrtus, a son of Aëtes, King of Colchis, and brother of Medea, who cut him in pieces as she fled with Jason, pursued by her father, throwing his bones behind her to detain her father, who stopped to pick them up.

ABYSSINIA

Abu, a mountain in Rajputana, 5,653 ft. high, held sacred by the Jains. It has a footprint of Vishnu on the top, and 2 marble temples half-way up.

Abu-Bekr, as the father of Ayesha, hammed. Sole companion of Mohammed in his flight from Mecca, and nominated by him his successor, became the first of the caliphs and the founder of the Sunnites. Encountered severe opposition from impostors and revolting tribes, but was successful in a series of campaigns. His record of the sayings and doings of the Prophet formed the basis of the Koran. d. 634.

Abu-Klea, name of some wells in the Soudan, where Sir H. Stewart defeated the Mahdi's forces in 1885.

Abutilon, a genus of plants of the Malvaceae order; 120 species growing in tropical regions. *A. Avicenna* is cultivated in China for the sake of jute fibre.

Abydos, an ancient city on the Asiatic side of the Hellespont, famous as the home of Leander, who swam the Hellespont every night to visit Hero in Sestos, and as the spot where Naxos, King of the Persians, built his bridge of boats to come into Europe in 480 B.C. Also a place of note in Upper Egypt, one of the most important cities of ancient Egypt, where were temples and royal tombs. The Great Temple of Abydos still stands, an imposing relic.

Abyssal, the term given to the division of marine fauna that dwells in the lowest depths of the sea, where there is a cold temperature, darkness, and intense pressure of water. These creatures are mostly blind, in some cases phosphorescent, and are carnivorous. Their colourings are usually brilliant; sponges are a form of abyssal fauna.



ABYSSAL FISH

Abyssinia (Ethiopia), a mountainous country in E. Africa, divided from the Red Sea and the Gulf of Aden by Eritrea, and French and British Somaliland, bounded on the SE. by Italian Somaliland, in the S. by Kenya, and in the W. by the Anglo-Egyptian Sudan; until 1936 an independent empire under the rulership of Haile Selassie I., the dominant race being the Amharic; now incorporated with Eritrea and Italian Somaliland in the newly-formed colony Italian E. Africa (q.v.). Area about 350,000 sq. m. Pop. (estimated) 7,600,000.

Another name for the country and a more ancient one is Ethiopia. The legendary Queen of Sheba was supposed to have ruled the country, the history of which was connected with that of ancient Egypt and later with that of Palestine. Christianity was received in the 4th Century, but 4 centuries later the Mohammedan conquest took place, and it was not until the middle of the 19th Century that the country took a settled form under one ruler, Kassal or Theodore. He quarrelled with his English advisers and killed himself when compelled to surrender to a punitive expedition under Napier (1868).

In 1882 the Italian Government bought the port of Assab, and in 1885 occupied Beilul and Massawa. The Abyssinians ordered the withdrawal of Italian troops and claimed free trading rights in Massawa. No notice of these demands was taken by the Italians, and the Abyssinians attacked an Italian detachment. In 1888 negotiations took place between the two countries, and a year later, when Menelik claimed the throne, the Treaty of Uccallit was concluded between

them giving the Italians practical control of the country. War broke out once more in 1895, and ended the following year, when the Italians were defeated at Adowa, and by a convention the independence of Abyssinia under Menelik was recognised. In 1906 Great Britain, France, and Italy signed an agreement guaranteeing this independence.

In 1913 Menelik died. His grandson was deposed in favour of his daughter, whose nephew, Ras Tafari, acted as co-ruler. In 1923 Abyssinia was admitted into the League of Nations. The Empress died in 1930 and Tafari became sole ruler, being crowned Negus (or Emperor) Haile Selassie I. A year later the first parliament was opened.

Previously in 1928 Italy had signed a treaty with Abyssinia by which it was agreed that all disputes should be submitted to arbitration. Nevertheless, in 1935 Italy prepared to invade Abyssinia, Mussolini's plans to conquer the country receiving some colour of moral justification through several border disputes, notably the Wal-Wal incident on Dec. 5th, 1934. He rejected arbitration through the League of Nations.

In Oct., 1935, the invasion began, and Haile Selassie mobilised his available forces. The Ethiopian army was not strictly organised; it had no transport and little munition. Adowa was captured by the Italians on Oct. 6th. The League of Nations declared Italy the aggressor, and later, Nov. 18th, economic sanctions were enforced against Italy. Meanwhile Ras Guxsa, one of the Abyssinian leaders, went over to the Italians.

The Italian advance was conducted from the N. under General De Bono (later superseded by General De Badoglio), and from the S. under General Graziani. Bombing and the use of poison gas were mainly responsible for overcoming the Abyssinian resistance. By April 30th, 1936, the defence of Addis Ababa was abandoned, and on May 2nd, the Emperor fled, being taken on an English cruiser from Djibouti to Haifa. Riots followed in the capital, Badoglio finally taking over the town on May 5th; 4 days later the King of Italy was proclaimed at Rome Emperor of Abyssinia.

Acacia, a large genus of shrubs and trees included in the Mimosæ sub-order of the Leguminosæ. There are some 550 species, which are found in almost all tropical and sub-tropical countries. They are especially common in Australia (known as "wattles"), where they form a large part of the scrub. Many species are commercially valuable for their astringent and gum-yielding properties. *A. Senegal* (Africa) and *A. Arabica* (India) yield gum-arabic; *A. Catechu* (E. Indies) cutch; various wattles of Australia yield tannin.

The English False Acacia, *Robinia Pseud-acacia*, belongs to the same natural order.

Academy, a public shady park or place of groves near Athens, where Plato taught his philosophy and whence his school derived its name, of which there are 3 branches, the *Old*, the *Middle*, and the *New*, represented respectively by Plato himself, Arcesilaos, and Carneades. The *French Academy*, of 40 members, was founded by Richelieu in 1635, and is charged with the interests of the French language and literature, and in particular with the duty of compiling an authoritative dictionary of the French language. Besides these, there are in France 4 others with a limited membership in the interests of other departments of science and art, all now associated in the *Institute of France*, which consists in all of 239 members. There are similar institutions in other countries.

Academy, British, founded in 1902 for the promotion of historical, philosophical, and philological studies.

Academy, Royal.

See *Royal Academy of Arts*.

Acadia, or *Acadie*, the French name for Nova Scotia and New Brunswick.

Acanthus, a genus of plants of the Acanthaceæ family; includes some 20 species most of which have a

single herbaceous stalk, thick pinnatifid leaves, and flowers in terminal spikes. *A. mollis* (boar's-breach or branksursine) grows in most Mediterranean countries, and the leaves of this and of *A. spinosa* are supposed to have been the inspiration of the Roman and Greek architectural decoration bearing the name. This consists of a leaf-like carving on the capitals of the columns of certain orders of architecture.



Acapulco, the most important Mexican port on the Pacific; harbour commodious, but climate unhealthy; has suffered severely from earthquakes. Pop. 7,000.

Acarnan and Amphoterus,

sons of Alcmaeon and Callirhoe. When their father was murdered, Callirhoe prayed that they might suddenly grow up and avenge his death on Phegeus, which was granted.

Acarnania, a province of Greece, N. of the Gulf of Corinth; its population once addicted to piracy; to-day incorporated with Ætolia as a province of modern Greece. Area (with Ætolia) 3,000 sq. m. Pop. (with Ætolia) 220,000.

Acastus, legendary Greek, son of Pelias, King of Iolcus; took part in the Calydonian boar hunt and went with the Argos to Colchis; on return, drove Jason and Medea from Iolcus for their share in the murder of his father, Medea having persuaded his sisters to cut up his father and boil him in the hope of restoring his youth. Slain, after a quarrel, by Peleus, son of Æacus, Astydamia, his wife (Acastus's wife), having first tempted and, when rejected, finally accused Peleus of dishonouring her.

Accad, one of the four towns in the land of Shinar which were the beginning of the kingdom of Nimrod. (Gen. x. 10.)

Accadian, the language in which the sacred texts of Assyria and Babylonia were originally written; the language of Accad, a city in N. Babylonia, probably the same as Agada near Sippard.

Acca Laurentia, wife of Faustulus, shepherd of Numa, saved the lives of Romulus and Remus.

Acceleration, the rate of increase in the velocity of a moving body. In the case of a body acted on by the earth's gravity and falling in a vacuum (i.e., removed from the resistance of the air) the acceleration is 32 ft. per sec. per sec., i.e., there is an increase of 32 ft. per sec. in the velocity every second. At the end of the first second the velocity is 32 ft. per sec.; at the end of the second second 64 ft. per sec., and so on.

Accent, (1) the stress or emphasis in a word. In the English language accent is much used, and the same word by a change of accent may have a different meaning, as for example collect the verb, and collect the noun. In English poetry accent forms the basis of its metre, whereas Latin poetry depends on quantity for its rhythm. Accent is sometimes used to signify the tone in which a word is said, but the proper term for this is inflection. A whole word, however, may be accented or unaccented, which means it is said with or without emphasis. (2) There

ACCEPTANCE

are special accents or signs used in French and other languages. In French the acute accent (') the grave (`), and the circumflex (^) are placed above vowels, and denote a certain pronunciation rather than accentuation of the vowel. (3) In music, accent is the emphasis on a note or series of notes.

Acceptance, in law, to be valid, must conform to certain specified requirements; acceptance of a Bill of Exchange, i.e., the signification by the drawee of his assent "to the order of the drawer," must be written on the bill and signed by the drawee, whose mere signature is sufficient to render him liable on the bill; but an "acceptance" which expresses that the drawee will perform his promise by any means other than the payment of money is void.

A contract for sale of goods, £10 or over in value, is not enforceable unless the buyer "accept" part of the goods and actually receive them, or make part payment, or unless there be a memorandum in writing of the contract signed by him, and generally the buyer will be held to have accepted if he does any act in relation to the goods which recognises any pre-existing contract of sale whether there be acceptance in performing the contract or not. A solicitor may accept service of a writ of summons in lieu of personal service on his client but it must be with his client's authorisation.

Accessory, one who is concerned in the commission of a felony. Accessories are of two classes: (a) before the fact, i.e., one who procures, advises, or commands a felony to be committed; (b) after the fact, i.e., one who, knowing a felony has been committed, harbours, relieves, or assists the felon, as by opposing his arrest or rescuing him. (A wife is not punishable for screening her husband.) In (a) the punishment is usually the same as for the principal; in (b), the maximum is imprisonment up to 2

ident, (in law) in its ordinary sense, means any unforeseen or extraordinary incident, or anything that happens otherwise than by design; in logic, it means something in any subject, person, or thing not belonging to the *Essence* or which is not indispensable to the existence of the subject, etc.

In law, it is a word of circumscribed meaning which varies according to the context. In relation to "equitable relief" which a person is seeking in a case where he has no common law remedy, accident means an unforeseen event not due to any negligence or misconduct on the part of the petitioner for relief. In the Criminal Law, an occurrence is "accidental" when caused unintentionally and in such circumstances that a person of ordinary care and prudence could hardly have avoided.

In insurance practice, the meaning of "accident" depends on the context, but it includes occurrences brought about by the negligence of the assured and other persons. In the Workmen's Compensation Acts, the word must be given its ordinary and popular sense, and in the law-courts it has been defined as including e.g. a deliberate assault on the workman, which may be an "accident" for the purpose of statutory compensation.

Accipitriformes, an order of birds which includes the hawks, vultures, and ospreys, all of which, in virtue of their strong, sharp beaks, are adapted to the pursuit of prey. In all of them the upper mandible of the beak is curved downwards and ends in a hook, and the toes (four in number) end in strong curved claws. *Accipiter* is the genus of the order which includes the sparrow-hawks.

Acclimatisation, or **Naturalisation**, the process by which men, animals, or plants adapt them-

ACCOUNTS

selves to a new climate. It sometimes involves the modification of characteristics previously present and the development of new which aid in survival in the new circumstances. It also sometimes involves a disturbance of the existing balance of nature as e.g. when the prickly pear was introduced to Australia from Africa and the rabbit from England. In England the brown rat has almost entirely displaced the indigenous black rat, and the brown squirrel has very largely displaced the red variety.

Accolade, a gentle blow with the flat of a sword on the shoulder given by the king in conferring knighthood.

Accommodation Bill, in law, a bill which a person signs as drawer, acceptor, or endorser, without himself obtaining any value for it, and which he signs merely for the purpose of lending his name to some other person; by so signing, he makes himself liable on the bill to the holder for value, and it is immaterial whether, when the holder took the bill, he knew the person was an accommodation or not. The accommodating party has, of course, a right to be indemnified by the person to whom he lent his name.

Accoramboni, ^{Vittoria}, an Italian lady who married Francesco Peretti, but brought about his murder in order to marry the Duke of Bracciano. Later she had to flee Venice, and after the Duke's death was assassinated on the instigation of Orsini, with whom she was to share the inheritance. (d. 1585).

Accordion, ^a portable musical instrument invented in 1829, consisting of a keyboard, reeds of varying length and thickness, and bellows. The Melodeon, which is a kind of accordion, is a wind instrument with a row of reeds, and is operated by keys.



ACCORDION

Accountancy, a profession concerned with the management of all accounts relating to commercial and official business. Owing to the growth and complexity of business and the need for improvement in the systematic arrangement of accounts, a professional class arose whose efficiency and honesty were guaranteed. Associations of Accountants came into being in the 16th Century, but in Great Britain progress was slow until the middle of the 19th Century and the formation of Limited Liability Companies.

The first society was formed in Edinburgh and incorporated by Royal Charter in 1854. In London the Institute of Chartered Accountants in England and Wales, founded in 1870, was incorporated in 1880; the Society of Incorporated Accountants and Auditors in 1885; the Corporation of Accountants in 1891; and the London Association of Certified Accountants in 1906. Accountants are usually paid by agreement according to standard rates, and, if found responsible for damage arising out of neglect of duty, may be sued.

Accountant-General, or **Accountant-General**, an officer of the Court of Chancery, appointed by Statute to receive all money lodged in Court, and to place it in the Bank of England for security. The office was abolished in 1872 and the duties transferred to the Paymaster-General.

Accounts, ^{Falsification of}, is a misdemeanour and falsification on the part of a clerk, steward, or similar employee, is punishable under the Falsification

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of Accounts Act, 1875, by penal servitude up to 7 years or imprisonment, with or without hard labour, up to 2 years. The falsification of a mechanical means of recording an account, e.g., a taximeter, is within the Act. Officers of Companies and bodies corporate keeping fraudulent accounts are guilty of misdemeanours under the Criminal Consolidation Act and punishable by penal servitude up to 7 years.

Accra, cap. and chief port in British Gold Coast colony. Pop. 67,000.

Accrington, a manufacturing town in Lancashire, England, 22 m. N. of Manchester, noted for cotton, weaving, etc. Pop. 43,000.

Accumulator, or **Storage Cell**, a type of electrical cell described as secondary because the chemical changes in it which produce the electrical energy were themselves rendered possible by the previous application of electrical energy to the cell from an outside source, e.g., a generator or dynamo.

The familiar lead accumulator, invented by Planté in 1859 was improved by Faure and others. It consists essentially of 2 lead plates immersed in dilute sulphuric acid, the surface of one plate being covered with lead peroxide (PbO_2). The latter plate forms the positive terminal of the cell, and when the 2 terminals are connected in a circuit a current flows, the necessary energy being provided by the chemical reaction expressed in the equation: $PbO_2 + Pb + 2H_2SO_4 = 2PbSO_4 + 2H_2O$. Both plates thus become covered with lead sulphate, and sulphuric acid is removed from the solution, which at the same time becomes more dilute owing to the water formed. The specific gravity consequently falls, and when it reaches a certain level the cell should be recharged.

Recharge is effected by connecting the cell to a source of direct current, the current being made to flow through the cell in the opposite direction to that of the current which the cell gives when being used. The reverse chemical change then occurs, and the sulphate is reduced to lead on one plate and oxidised to lead peroxide on the other. Completion of charging is marked by the evolution of gas produced by electrolysis; and the specific gravity of the acid will have reached its original value, unless there has been appreciable loss by evaporation, when the specific gravity will be too high and should be brought down by the addition of a little distilled water.

The average voltage of a fully charged accumulator is 2, and discharge should not be continued below a voltage of 1.8; the cells should not be left discharged, and should if possible be discharged and recharged at short intervals, e.g., once a fortnight. The level of the liquid should also be maintained, while if it has to remain unused for any length of time, it should be fully charged, emptied of its acid, and stored in the dry state.

The modern accumulator economises space by having several positive and negative plates alternately. The Edison or nickel-iron accumulator has certain advantages over the lead-acid accumulator: it consists of a number of perforated nickel tubes packed with nickel hydroxide and fine nickel shavings, and a number of perforated nickel boxes packed with finely divided iron. The former tubes constitute the positive "plate" and the latter the negative. They all stand in a solution of caustic potash (potassium hydroxide). Edison accumulators can be left discharged and may be short-circuited without damage. They are frequently used for electric traction; their average voltage is about 1.2.

Aceldama, the "field of blood" which Judas "bought with the reward of iniquity," and falling headlong, burst asunder in the midst (Acts 1). According

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to Matthew xxvii, Judas cast down the 30 pieces of silver and hanged himself, and with the money the chief priests bought "the potters' field," "the field of blood," to bury strangers in.

Acephali, the levellers in the reign of no head or superior. Also certain ancient heretics, who appeared at the beginning of the 6th Century, and asserted that there was but one substance in Christ and one nature.

Acerca, an ancient city of Campania, Italy, 9 m. N.E. of Naples; it was destroyed by Hannibal, but rebuilt; in those days subject to inundations. Pop. 16,000.

Acestes, in Roman legend, a king of Sicily who helped Priam in the Trojan war. Founder of the city of Acesta, he was supposed to be the son of the river god, Criniscus, and Egesta, a Trojan woman, and to have entertained Aeneas.

Acetaldehyde, a colourless volatile liquid boiling at 21° C. It possesses a pungent smell, and may be made by oxidising ordinary (ethyl) alcohol with potassium dichromate and sulphuric acid. Commercially it is important as an intermediate, and is manufactured by causing acetylene to combine with water under the catalytic influence of mercuric sulphate. On oxidation it yields acetic acid (v.v.). By treatment with acid it is converted into the white solid known as "meta," which is used as a fuel in place of methylated spirit.

Acetic Acid, the acid in vinegar. In its pure state it is manufactured by the oxidation of synthetic acetaldehyde (v.v.), though a certain amount is still obtained by the old method of distilling wood in the absence of air. It is a white, crystalline solid, melting at 17° C. to a colourless liquid with a pungent smell. The salts are called *acetates*, and some, e.g., basic lead acetate ("sugar of lead") and aluminium acetate, are of commercial importance. Much acetic acid is used in the manufacture of celanese (acetate rayon).

Acetone, a colourless liquid obtained by the distillation of calcium acetate. It is used in the manufacture of chloroform, iodoform, and cordite (v.v.).

Acetylene, a colourless gas which, when impure, has an unpleasant smell. The pure gas has a sweetish smell and burns with a hot, luminous, and smoky flame;

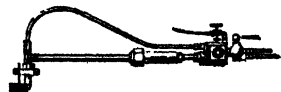
in special burners which supply it with ample air its flame is extremely brilliant and non-smoky. It is prepared by the addition of water to calcium carbide, and is of considerable importance as an "intermediate," i.e., as a compound from which other substances are conveniently obtained (see **Acetaldehyde**). The oxy-acetylene burner, in which acetylene is burned in oxygen, produces an intensely hot flame, and is extensively applied in engineering.

Achæa, the N. district of the Peloponnese in ancient Greek times, eventually the whole of it.

Achæans, Hellenic races; once inhabited Thessaly, whence they migrated to the Peloponnese; a name frequently extended in the Homeric period to the whole race.

Achæmenes, King of ancient Persia and founder of the dynasty of the Achæmenides from whom were descended Cyrus, Cambyses, Darius, Xerxes, etc.

Achard, Franz Karl, a Prussian chemist, one of the first to manufacture beet sugar. (1753-1821).



OXY-ACETYLENE BURNER

Achates, the attendant of Æneas in his Troy, remarkable for, and a proverbial type of, fidelity.

Achelous, or *Akeloos* (modern Aspro-potamo), the largest river in Greece, 130 m. long, rising in the Pindus Mts., and flowing into the Gulf of Patros (Ionian Sea); often mentioned by ancient Greek authors, and giving name to a god.

Achene, in botany, a fruit containing only one seed, dry and indehiscent (i.e., remaining closed at maturity) and the product of one cupule. The *Ranunculus* and the *Potentilla* (a genus of *Rosaceæ*) are true examples, though the term is extended to include fruit of *Compositæ*, *Gramineæ*, etc.

Achensee, a lake in Austria in the Tyrol, the source of the Achen R.

Achenwall, ^{Gottfried}, a German economist, the founder of statistical science. (1719-1772).

Acheron, in ancient Greek mythology a river in the underworld over which the dead were ferried by Charon. It was the name also of several rivers in Greece more or less suggestive of it.

Achievement, the full representation in heraldry of the shield and accessories; also known as *Hatchment*.

Achill, a rocky, boggy, sparsely inhabited island off the W. coast of Ireland (Eire), in Co. Mayo, with a bold headland 2,222 ft. high. Pop. 5,000.

Achillea, hardy perennial plants of the order *Compositæ* with yellow or white flowers; grows to height of 2 to 3 ft.; dwarf variety, 6 ins.; *A. millefolium*, the common yarrow or milfoil, and *A. Ptarmica* are found in Britain.

Achilles, the son of Peleus and Thetis, King of the Greek heroes in the Trojan war, whose wrath and the consequences of it form the subject of the *Iliad* of Homer. His only vulnerable point was in the heel, at the point where his mother held him as she dipped his body in the Styx to render him invulnerable.

Achilles Tendon, the great tendon of the heel, the only place where Achilles was vulnerable.

Achimenes, a genus of deciduous tuberous plants of the order *Gesneraceæ*, mostly native to tropical America and cultivated in greenhouses for the sake of the flowers.

Achish, King of Gath in Philistia. Twice he sheltered David (see 1 Sam. xxi and xxvii).

Achithophel, or *Ahitophel*, the Gilon-father of Bath-sheba: an extremely able but unprincipled counsellor of David, who, however, joined Absalom in rebellion against David: when his advice was ignored he despaired of success and hanged himself.

Achmet I., Sultan of Turkey from 1603 to 1615; A. II., from 1703 to 1730. He gave asylum to Charles XII. of Sweden after his defeat by the Czar at Pultowa.

Achondroplasia, a condition in found in one child of a large family, in which the bones harden too early. The result is a head and face of a normal size and a stunted body, though otherwise the child is healthy and intelligent.



ACHILLES TENDON

Achromatism, the state of being aberration, with special reference to lenses (achromatic lenses) which are corrected for chromatic aberration. See *Aberration of Light*.

Achromatopsis, or *Colour-Blindness*, was first described in 1794 by Dalton, himself a sufferer, his condition being in particular the inability to distinguish red or green.

Acid, in chemistry, originally defined as a substance possessing a sour taste and a characteristic effect upon certain compounds known as indicators (q.v.); thus acids will turn blue litmus red, yellow methyl orange, pink and red phenolphthalein, colourless. They will also cause metallic carbonates (e.g., marble and washing soda) to effervesce in the presence of water, owing to the liberation of carbon dioxide. They invariably contain hydrogen, part or all of which may be replaced by a metal with formation of the corresponding metallic salt. They frequently corrode metals and organic matter, and when diluted are good electrolytes.

The latter property is due to the ease with which they ionise into protons (hydrogen ions) and negative ions; the protons immediately each combine with a molecule of water to form oxonium or hydroxonium ions, H_3O^+ , and it is to these oxonium ions that the characteristic behaviour of acids is due. On the modern theory of acids, any substance capable of "donating" one or more protons to another substance is regarded as an acid; the ease with which the protons are given up is a measure of the strength of the acid.

The principal acids are sulphuric (H_2SO_4), nitric (HNO_3), and hydrochloric (HCl) among the inorganic or mineral group, while acetic (CH_3COOH), hydrocyanic or prussic (HCN), oxalic ($H_2C_2O_4$), tartaric ($H_2C_4O_6$), citric ($C_6H_8O_7$), benzoic (C_6H_5COOH), salicylic ($C_6H_4(OH)COOH$) and picric ($C_6H_3(NO_2)_3OH$) are typical examples of acids containing carbon. Acids neutralise bases (q.v.) with formation of salts and water.

Acidimetry, the chemical processes of determining the amount of acid present in a substance, the usual process being to add alkali of known strength until the acid is neutralised.

Aci-reale, a seaport in Sicily, at the Catania, foot of Mt. Etna, in N.E. Catania, with mineral waters. Pop. 35,000.

Acis, a Sicilian shepherd enamoured of Galatea, whom the Cyclops Polyphemus, out of jealousy, crushed under a rock, from beneath which a river has since flowed.

Acinic Line, the magnetic equator, roughly with the geographical equator along which there is no magnetic dip. If a magnetised needle is suspended so that it can turn in a vertical plane it remains horizontal upon the line itself. The north pole dips if north of the acinic line and the south if south of the line at an angle which increases as the poles are approached.

Acne, a skin disease showing hard, reddish pimples, or tubercles, on the face and shoulders. *Acne rosacea*, a congestion of the skin of the nose and parts adjoining.

Acolyte, a candidate for priesthood in has reached the fourth stage of initiation; originally a youth who assisted in church ritual by carrying candlesticks, lighting candles and carrying the bread and wine at communion, offices now usually performed by laymen.

Aconcagua, (1) A mountainous province of Chile. Cap. San Felipe. Area 5,800 sq. m. Pop. 454,000. Valparaiso is also in this province. (2) An extinct volcano, the highest peak of the Andes about 108 m. N.E. of Valparaiso, 22,867 ft. high.

Aconite, a genus of plants (*Aconitum*) of the order Ranunculaceae.

There are over 100 species, mostly native to Northern temperate upland districts and nearly all poisonous, their roots, which can and have been mistaken for horse-radish, containing alkaloids of the aconitin group (q.v.). The most important species, and one of the most poisonous, is *A. napellus* (monkshood, wolf's bane), which is propagated by bee-pollination, and is almost coextensive with the habitat of the humble-bee. It is common in England.



Aconitine, a most virulent alkaloid poison prepared from aconite (*Aconitum napellus*) and, owing to the very small quantity sufficient to cause death, very difficult of detection. In very small quantities it is used as a drug (sedative) in medicine both externally (in cases of neuralgia) and internally (in some fevers to depress the heart).

Acontius, in Greek mythology, a beautiful youth of Ceos who fell in love with Cydippe at the festival of Artemis. He threw before her an apple bearing the legend "I swear by the sanctuary of Artemis to marry Acontius." She read this aloud and, Artemis hearing her, she was compelled to keep her vow.

Acorn, the fruit of the oak tree (q.v.), consisting of a nut in a cup, the cup being the hardened cupule. When unripe it is of value in tanning. It also provides food for swine, and has been used in the past, ground to a flour, for breadmaking.

Acorn-Shells, or **Scallop Barnacles**, a group of crustaceans found attached to rocks and piers on the seashore and forming the sub-order Operculata, order Cirripedia, closely allied and very similar to the stalked barnacles.

Acoustics, the technical estimation of the effects of sound in an enclosed space and consideration of the methods by which a desired effect may be obtained. The energy of a sound wave on meeting a flat surface, such as the wall of a room, is partly reflected, partly absorbed. Part also may be transmitted through the wall. The acoustic absorption of a surface of any material can be calculated.

Acre, an English unit of square measure, equals 4,840 sq. yds.

Acre, St. Jean d' (or Akke), a seaport in Palestine at the foot of Mt. Carmel, scene of many battles. Taken at an enormous sacrifice of life, by Philip Augustus and Richard Cœur de Lion in 1191; held out against Bonaparte in 1799. Captured from the Turks by Allenby in 1918. It is a very picturesque town, notable for its mosques and for the ruins of the Tower of Flies. Pop. 8,000.

Acridine, a crystalline solid obtained from coal-tar anthracene and used in the preparation of dyestuffs.

Acrisius, son of Abas, King of Argos, and when an oracle foretold that a son of Danaë should kill him, he had her confined in a dungeon. She had a son Perseus by Zeus, however, and though both were exposed to the sea, the oracle was fulfilled.

Acroceraunia, a promontory in Epirus, N. Greece, dangerous to ships.

Acrolein, a colourless volatile liquid with a pungent odour obtained by the destructive distillation of fats.

Acroliths, statues of which the trunk and extremities of the body of stone.

Acromegaly, a disease affecting especially the hands, feet and head, attributed to a defective working of the pituitary gland. The bones become enlarged. Treatment with extract of the pituitary and thyroid glands gives relief in many cases.

Acropolis, a fortified citadel in ancient Greece commanding a city, and usually the nucleus of it. The most famous was the Acropolis at Athens, on which was built the Parthenon, the Erechtheum, the temple of Nike Apteros, etc.

Acrostic, a form of verse, dating historically from the 4th Century, in which the initial letters of the lines, read in order, form a word or phrase.

Acroteria,

statues or ornaments placed on the apex or lower angle of a pediment or the pedestals supporting the statue.



ACROTHERIA

Acta Diurna, a sort of gazette recording daily events in a summary way, established at Rome in 131 B.C., and rendered official by Caesar in 50 B.C.

Acta Sanctorum, a large series of volumes dealing with the lives of the saints of the Catholic Church, begun in the 17th Century by the Jesuits, carried on by the Bollandists, and still incomplete.

Actæon, in Greek legend, son of Aristæus who came upon Artemis when bathing. She changed him into a stag, and he was thereupon devoured by his own dogs.

Acting. See **Drama**; **Theatre**.

Actinic Rays, sometimes termed ultraviolet rays, the invisible rays given off by a body under intense heat. They have a shorter wave-length and more rapid frequency than the violet rays.

Actinium, a radio-active element discovered by Debiere in 1900, one of the products of disintegration of the uranium (q.v.) series, gives rise itself to a series of radio-active substances, the final state being lead; symbol Ac.

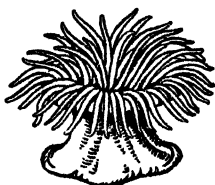
Actinometer, an instrument originally invented by Sir John Herschel to measure the heating effect of the sun's rays. Now includes instruments used by photographers (e.g., exposuremeters) for measuring actinic power of sunlight.

Actinomycosis, a serious and sometimes fatal disease of a fungoid nature on the mouth and lower jaw of cows, but liable to occur also in man. It is characterised by chronic inflammation and lumpy tumours, the latter often discharging pus which infects the lungs and causes acute pulmonary actinomycosis. The infection appears to be carried by cereals, especially barley, and is ascribed to certain bacteria-like organisms known as *Streptothrix* or *Actinomyces*. The discovery of the infective microbes was made by Bollinger in 1877 (cattle) and Israel in 1878 (man). Treatment is usually surgical, though potassium iodide taken internally has sometimes proved successful.

Actinotherapy, the treatment of disease by means of natural or artificial light rays. Niessen, in Denmark, was one of the first to apply this method in medical practice, and it has since been widely adopted.

Actinozoa (Anthozoa), in zoology, a class of animals comprising

the sea anemones and coral polyps. It is to animals of this class that the building of the vast coral reefs is due. Most actinozoa have a central mouth with tentacles around it; their alimentary canal freely passes, by a wide opening, into the general cavity of the body, and this cavity is prolonged into the stomach, which is internal, a character in which the actinozoa differ from the hydrozoa, to which class, however, they are closely allied.



ACTINOZOA
(Sea anemone)

Action, in law, proceedings undertaken to obtain the recognition of one's rights. In civil actions the procedure is first by writ or originating summons, then pleadings are put in, leading up to trial, judgment, and execution. Trials are held in the High Courts, County Courts, and Courts of Summary Jurisdiction, and there are special Courts, such as Ecclesiastical, etc., for certain kinds of cases. In the Higher Courts special juries may be empanelled for important cases. Actions for debt may be followed by a judgment summons when no defence is entered, and committal to prison. An interlocutory judgment is one in which damages are assessed later against a non-appearing defendant.

Actium, a town and promontory at the entrance of the Ambracian Gulf (Gulf of Arta) on the W. Coast of Greece. Here Augustus gained his naval victory over Antony and Cleopatra, Sept. 2, 31 B.C.

Act of Bankruptcy, in law, means the commission of which by a debtor renders him liable to be adjudicated bankrupt if a creditor presents a petition against him within three months of such act.

Act of Congress, in the United States of America means a bill or resolution which has passed both houses of Congress and received the assent of the President.

Act of God, is a legal term for occurrences not attributable to human negligence or that could not have been avoided by ordinary foresight. It is mainly met with in insurance and shipping transactions; practically every charter-party and insurance policy form contains a clause relating to non-liability in the event of an Act of God.

Act of Parliament, in a "private" i.e., local in character, e.g., an Act to promote a dock or railroad undertaking—or public and general—i.e., of general application and scope. Acts of Parliament are the statute law of the realm or the written law, as opposed to the unwritten common law or customary law. Until comparatively recent times, all Acts passed in one Session of Parliament were incorporated in one Statute and cited (e.g.) 20 Vict. c. 17; but now Acts may have short titles which can be used individually.

In England most Acts or Bills, as they are called before they receive the Royal Assent, are initiated in the House of Commons; passage in three successive Sessions of the Commons overrules rejection by the House of Lords. Finance Bills can only originate in the House of Commons, and cannot be rejected by the House of Lords.

Acton, a municipal borough of Middlesex, England, 7 m. from Charing Cross. Henry Fielding, the novelist, and Mrs. Barry, the actress, resided here. It has many industries, including dye works,

motor-car manufacturing and repairing works, and the driving-testing station of the London Passenger Transport Board. Pop. 70,500.

Acton, John Emerich Edward Dalberg Acton, First Baron, a grandson of the following, who became a leader of the Liberal Catholics in England, M.P. for Carlisle, and was made a baron in 1869. He was a man of wide learning, and the projector of the *Cambridge Modern History* which he did not live to see produced. (1834-1902).

Acton, Sir John Francis Edward, Bart., born at Besançon. Served in Tuscan navy; reorganised Neapolitan navy, and finally became Prime Minister of Naples. Owing to inveterate opposition to the French had to flee with the royal family in 1798 on account of French invasion, and again in 1806, (1736-1811).

Acts of the Apostles, a narrative in the New Testament of the founding of the Christian Church chiefly through the ministry of Peter and Paul, attributed to Luke. It commences with the ascent of Christ in the year 33, and concludes with the imprisonment of Paul in Rome in 62.

Actuary, an expert in all matters connected with vital statistics, and one capable of calculating the probabilities of human life for purposes of insurance. In Roman times the actuary was the scribe who recorded the work of the Senate. The word was confirmed in its present specialised meaning by the foundation of the Institute of Actuaries in 1848 (incorporated 1884), followed by the Faculty of Actuaries in Scotland in 1856 (incorporated 1868).

Acunha, Tristan d', a Portuguese navigator, companion of Albuquerque, who gave his name to a group of volcanic islands in the S. Atlantic (1506); **Nuna d'**, his son, viceroy of the Indies from 1528 to 1539; **Rodrique d'**, Archbishop of Lisbon, who in 1640 freed Portugal from the Spanish domination, and established the house of Braganza on the throne.

Adagio, a musical term used to indicate that a passage is intended to be played very slowly; by extension it is applied to whole movements and whole compositions as, e.g., Mozart's Adagio in B Minor.

Adam (i.e., man), the first father, according to the Bible, of the human race. Created of the dust of the ground on the sixth day, with the breath of life breathed into his nostrils, and placed in "a garden eastward in Eden." During a deep sleep, a rib was taken from him, and a woman (Eve) was made. Eve, tempted by the Serpent, ate of the fruit of the tree of the knowledge of good and evil, and persuaded Adam to eat also, for which they were both cast out of Eden. His sons were Cain, Abel and Seth.

Adam, Juliette Lambert, a notable French writer; born at Verberie, Oise. Married (1) La Messine; (2) Edmond Adam. Her salon, of the Second Empire, was the rendezvous of all the artists, writers, and composers of the day, and was politically influential. Wrote on the siege of Paris of 1871, on Egypt, on the Great War. Bitter in her attacks on Bismarck. In 1919 Clemenceau invited her to the signing of the Peace Treaty. (1836-1936).

Adam, Robert, a distinguished British architect, the most celebrated of four brothers (John, Robert, James, and William), born at Kirkcaldy, the son of an architect. Designed the Register House and the University, Edinburgh, though his most notable work was the construction in conjunction with his brother James of the old Adelphi. Left his mark on English interior decoration and furniture also, being particularly successful in his treatment of fireplaces, mantelpieces and ceilings. (1728-1792).

Adamawa, a region in W. Africa, the Cameroons, with a healthy climate and a fertile soil, rich in all tropical products. Watered by the Benue R., a tributary of the Niger. Chief town, Yola. Named after a chief Adamu, who founded the Yola emirate. (d. 1848). Pop. 600,000.

Adamites, visionaries in Africa in Bohemia in the 14th and 15th, who affected innocence, rejected marriage, and went naked.

Adamnan, St., abbot of Iona, of Irish birth, who wrote a life of St. Columba and a work on the Holy Places, of value as the earliest. (625-704).

Adams, John, the second president of the United States (1797-1801). He took a prominent part in the events that led up to the Declaration of Independence. (1735-1826). **John Quincy**, his eldest son, the sixth president. (1767-1848).

Adams, John Couch, an English astronomer, director of Cambridge Observatory, the discoverer simultaneously with the French astronomer Leverrier of the planet Neptune. (1819-1892).

Adam's Apple, (1) is a phrase commonly used to describe the prominence in the throat caused by the larynx and surrounding thyroid cartilage. (2) A popular Italian name for *Citrus limetta*, the sweet lime (order Rutaceae).

Adam's Bridge, a chain of coral reefs and sandbanks connecting Ceylon with India.

Adam's Peak, a conical mountain 7,420 ft. high, with a foot-like depression 5 ft. long and 2½ ft. broad on top, ascribed by the Mohammedans to Adam and by the Buddhists to Buddha.

Adamson, Rt. Hon. William, born at Halbeath, Fife, son of a miner, entered the mines at age 11 and worked there for 28 years. Became Assistant Secretary of Fife, Kinross, and Clackmannan Miners' Association in 1902; General Secretary, 1908. M.P. West Fife, 1910-1931. Secretary for Scotland, January-October 1924, and 1929-1931. Chairman of Labour Party, 1917, and first Labour leader of the Opposition in the Commons. P.C., 1918. Lost his seat to a Conservative, 1931; defeated by a Communist, 1935. A trustee of the National Library of Scotland, 1927. (1863-1936).

Adana (*Seyhan*), vilayet and town of Turkey on the R. Seyhan. 30 m. from the Mediterranean. Cotton, wool, grain and fruit produced. Pop. (vilayet) 387,000; (town) 76,000.

Adanson, Michel, a French botanist, born in Aix, the first to attempt a natural classification of plants. (1727-1806).

Adaptation, the act of suiting or new purpose. A novel may be altered (adapted) to form a play. A play may be adapted to make a film, or a poem adapted to form the words of a song. In music the term usually implies some form of modification. A musician may adapt an orchestral work so that it can be performed by a single instrument.

In biology adaptation is really a form of unconscious evolution. It means the emphasis and growth of certain characteristics which prove useful in aiding survival. The word is also applied to a man who adapts himself consciously to his surroundings, altering his outlook or way of living so as to be more suitable to his immediate needs.

Adcock, A. St. John, English novelist, and journalist. Abandoned law for literature in 1893, and contributed to periodicals a great deal. For some years editor of *The Bookman*. (1864-1930).

Adda, Italian river, tributary of the R. Po, which it joins 8 m. N. of Cremona. It rises in the Rhaetian Alps and flows through Lake Como; on its banks Bonaparte gained famous victories over Austria.

Addams, Jane, American social worker; born at Cedarville, Ill., daughter of Senator John H. Addams, Quaker friend of Lincoln; travelled in Europe; founded Hull House Settlement, Chicago, 1889; organised Women's Peace Party and presided over International Congress of Women at the Hague, 1915; did much to relieve post-war distress in Europe; shared Nobel Peace Prize, 1931. (1860-1935).

Adder. See *Viper*.

Adder's Tongue Fern (*Ophioglossum*)

(*ulatum*), the English name of the fern genus, *Ophioglossum*; the name is suggested by the fact that the fructification is not, as in most ferns, on the back of the frond, but is in a lengthened spike, somewhat resembling a serpent's tongue.



Addington, a district of Croydon, Surrey, 10 m. from London. **Addington Palace** was formerly the residence of the archbishops of Canterbury. It is now a golf club and course.

Addington, Henry, Lord English statesman; was Speaker of the House 1789-1801 and after the retirement of Pitt 1801 formed a Ministry which lasted till 1804. He held other offices afterwards, including those of President of the Council 1805-1812, Lord Privy Seal 1806, and Home Secretary 1812-1821. (1757-1844).

Addis Ababa, capital of Abyssinia (Ethiopia; Italian E. Africa). The palace of the wife of Menelik who signed the treaty with Italy in 1896 is here. The occupation of Addis Ababa by the Italians on May 5, 1936, completed the conquest of the organised resistance of Abyssinia by Italy in the War of 1935-1936. On the approach of the Italians the Emperor, Haile Selassie I., fled and the populace looted the town.

Addiscombe, a district of Croydon, Surrey, England. The College of the East India Company was situated here, and among the famous men to receive training were Sir Henry Lawrence, Lord Napier, and Lord Roberts. Pop. 14,048.

Addison, Dr. Christopher, 1st Baron Addison, Addison of Stallingborough, English politician. After a period as medical professor at Sheffield he entered the House of Commons as M.P. for Hoxton in 1910; became Parliamentary Secretary to the Board of Education and then Minister of Munitions. As Minister of Health he had much to do with the inauguration of the medical panel in the National Health Insurance scheme and was responsible for the Coalition Government's housing scheme. On a dispute arising over this he resigned, and later joined the Labour Party. Elected for Swindon, 1929, but was defeated, 1931; Minister of Agriculture and Fisheries, 1930-1931; re-elected 1934 and defeated again in 1935. Raised to the peerage in 1937. (1869-).

Addison, Joseph, a celebrated English essayist; studied at Oxford. A Whig in politics, he held a succession of Government appointments, resigning the last for a large pension; was pre-eminent among English writers for the purity and elegance of his style. His name is associated with the *Taller*, *Spectator* and *Guardian*, as well as with a number of beautiful hymns. (1672-1719).

Addison's Disease, is a tubercular infection of the adrenal glands, discovered by Dr. Thomas Addison of Guy's Hospital, London, in the middle of the 19th Century. It is a rare but usually fatal disease. The patient loses appetite and weight, and develops intestinal trouble. His skin usually darkens.

Addled Parliament, the second parliament that sat in the reign of James I., in 1614. It was dissolved after sitting for two months without passing a single Bill because it refused to grant the King money until the important question of imports was settled.

Addlestone, a town of Surrey, England, in Chertsey urban district. Pop. 9,000.

Adelaar, the name of honour given to Curt Silvertsen, a famous Norse seaman, who rendered distinguished naval services to Denmark and to Venice against the Turks. (1622-1675).

Adelaide, the capital of S. Australia, on the R. Torrens, which flows through it into St. Vincent Gulf, 7 m. SE. of Port Adelaide; a handsome, admirably planned city, with a cathedral, fine public buildings, a university and an extensive botanical garden; it is the great emporium for S. Australia; exports wool, wine, wheat and copper ore. Pop. 313,000.

Adelaide, Port, the haven of Adelaide (q.v.), a port of call with a commodious harbour.

Adelaide, Queen of William IV. of England, whom she married in 1818 as Duke of Clarence; eldest daughter of George, Duke of Saxe-Meiningen. (1792-1849).

Adeler, Max (pseudonym of Charles Heber Clark), American humorous writer. Author of an extravagant and immensely popular book called *Out of the Early-Burly*, 1874, and several similar works. Under his real name, he was a Philadelphia journalist and a lobbyist for high protection. (1841-1915).

Adelphi, a district of London by Charing Cross within a short distance of Temple Bar. Owing to its fine view of the Thames, Adelphi Terrace, one of the thoroughfares, remained partly residential, and George Bernard Shaw resided there for many years. A street in the district was named after each of the four Adam brothers, James, John, Robert and William, architects of the 18th Century, and the founders of the Adam style of architecture and interior decoration, but the former William Street is now Durham Street. Some of the Adams' buildings including the Terrace have recently (1936) been pulled down.

Adelsberg. See *Postumia-Gretta*.

Aden, a fortified town on a peninsula in British territory S. of Arabia, 105 m. E. of Bab-el-Mandeb; a coaling and military station, in a climate hot but healthy. Separated from Bombay after the passing of the Government of India Act in 1936, when it became a crown colony. N. of the Colony is the Protectorate of Aden, which includes the Hadramaut, 42,000 sq. m. in extent, with a pop. of 100,000.

Adenoids, an enlargement of the lymphatic tissues at the back of the nose and throat. First signs of adenoids are continual colds and catarrhal trouble. Adenoids may become permanently enlarged and the general condition of the child be lowered. The glands of the neck may also become enlarged and breathing obstructed, the child seldom breathing through its nose. In severe cases of adenoids a simple operation is usually advisable. The adenoids and often the tonsils are removed ("enucleation").

Aderno, a town of Sicily, NW. of Catania, the site of an ancient town and some notable ruins. Pop. 40,000.

Adiantum, a genus of Polypodiaceae (maiden-hair ferns), mostly found in tropical America and cultivated elsewhere in hothouses. *A. capillus-veneris* occurs in England, though it is very rare.

Adiaphorists, Lutherans who in the 16th Century maintained that practices of the Romish Church, such as having pictures, lighting candles, wearing surplices and singing certain hymns in worship, obnoxious to others of them, were matters of indifference.

Adige, a river of Italy, which rises in the Rhaetian Alps and falls into the Adriatic after a course of 250 m.; a rapidly flowing river subject to sudden floods. Important battles were fought on its banks in the Great War.

Adipocere, a fatty, wax-like substance produced by the decomposition of animal matter in wet places.

Adipose Tissue, a tissue of small vesicles in the body filled with oily matter, in which there is no sensation, and a layer of which lies under the skin and acts as a fuel reserve, as well as giving smoothness and warmth to the body.

Adirondack Mountains, a high-lying, picturesque granite range in the State of New York; source of the Hudson and a popular holiday resort.

Adit, a horizontal entrance to a mine working; frequently employed in the past when the coal vein was approached horizontally from the sloping sides of a valley.

Adjudication Order, in law, an order made by the Court of Bankruptcy declaring the debtor bankrupt, so that his estate may be vested in a trustee (often the official receiver) and wound up for the benefit of his creditors.

Adjutant, a gigantic Indian stork, about 5 ft. in height, with a tremendous beak, bald head and neck, and an enormous pouch which can be inflated. This bird and two closely allied species in Asia and Africa all have the commercially valuable soft under-tail coverts known as "Marabou." It feeds on carrion and offal.

Also an army rank, denoting a regimental staff-officer who assists a commanding officer in administrative work.

Adler, Nathan Marcus, Jewish scholar and Chief Rabbi in Britain, in which office he was succeeded by his son Herman (1839-1911); born in Hanover; did much towards the establishment of a United Synagogue. (1803-1890).

Ad Libitum (*ad lib.*), essentially a musical term to denote that the performance of a passage is at the pleasure or discretion of the performer, or that an accompaniment is not essential and may be omitted if desired.

Admetus, King of Phæria, in Thessaly, whom Apollo served for a time as goat-herd. See *Alcestis*.

Administration, one of the functions of government, in virtue of which a government or ministry is frequently called "an administration." It consists of the due application and performance of the existing laws, and to that extent is in contradistinction to the other function of a government, which is legislation or the introduction of new laws.



ADJUTANT
STORK

Administrative Counties are those counties or parts of counties, including the County of London and the county boroughs, which, under the Local Government Acts 1888-1929, form separate "administrative counties" of themselves for the purpose of managing, through county councils, the administrative business of their respective areas.

Administrator, a legal term for the person appointed by the High Court (Probate, Divorce, and Admiralty Division) to manage the estate of a person who dies intestate, who has not appointed executors, or whose appointed executors have not survived him. The person next of kin to the deceased is usually appointed administrator; if the next of kin is the husband, his right is unquestioned.

Admiral, the highest rank in the Navy. In Britain there are four grades: Admirals-of-the-Fleet, Admirals, Vice-Admirals, and Rear-Admirals, each rank with a distinctive flag, the red cross of St. George being marked in the cantons.

Admiralty, The Board of, a department of State controlling and maintaining the Navy. The sole responsibility for the Navy was taken away from the Lord High Admiral by Henry VIII. and placed under a Navy Board. The Board continued to maintain political and executive control, but, owing to its being found inefficient and unwieldy in the Napoleonic Wars, it was considerably reformed by Sir James Graham in 1832.

The present Board of Admiralty consists of eight Lords Commissioners, together with the Permanent Secretary, a civil servant, who is responsible for the organisation and financial control of the Admiralty. Of the eight Lords Commissioners, three hold political appointments which are filled by the Government during its period of office, and the remaining five are officers of the R.N.

Admiralty Islands, a group NE. of New Guinea in the Pacific under German administration 1885-1914, but occupied by the Australians in 1914, and since the War under Australian mandate. Pop. 14,918.

Adobe, a Spanish word for sun-dried bricks made of clay or other suitable material mixed when damp with chopped straw, etc. Such bricks are extensively used for building construction in arid countries, the style having originally been introduced to Spain probably from N. Africa, and having been carried from Spain to Mexico and other parts of the New World.

Adolf, Friedrich, King of Sweden, during whose reign the nobles were divided into the two factions of the Caps, or the peace-party, and the Hats, or the war-party. (1710-1771).

Adonijah, son of David by Haggith; a son he proclaimed himself king, and was supported by Joab and Abiathar. David thereupon had Solomon proclaimed. Solomon at first spared Adonijah, but when he asked for Abishag in marriage, Solomon had him slain by Benaiah (1 Kings II).

Adonis, youth beloved by Aphrodite (Venus). He was killed by a boar and the flower anemone sprang from his blood. A dispute arose between Aphrodite and Persephone for the possession of him and was settled by Zeus allowing him to spend half the year with each.

Adonis, a genus of plants of the order Ranunculaceae. *A. autumnalis* is the English Pheasant's Eye.

Adoption, an act whereby a person assumes the responsibilities of parenthood towards the child of another, the

child becoming legally his own. Adoption has only been recognised legally in England subsequent to 1926. Previous to that, it was merely voluntary guardianship. Laws governing adoption had previously existed in other countries (e.g., France, Germany, the U.S.A.) with varying conditions regarding the age of the adopter, who is sometimes also required to be married. In England a proposed adopter must be not less than 25 years of age and the adoption must be sanctioned by a court. The natural parent loses all rights in the person adopted and the adopter takes his place in all respects.

Adoptionists, heretics who in the 8th Century maintained that Christ was the son of God by adoption and not by birth, and was one with Him in character and will.

Adour, a river of France, rising in the Pyrenees and flowing into the Bay of Biscay.

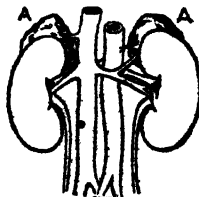
Adowa (or Adua), capital and trade centre of Tigré province, Abyssinia, 6,000 ft. above sea level. Italians under Gen. Baratieri met severe defeat here March 1, 1896. Italo-Abyssinian war 1935-1936 opened here Oct. 3, 1935, by Italian air attack on Adowa, which surrendered to Italian forces Oct. 7. Pop. prior to war, about 5,000.

Adoxaceae, a dicotyledonous order of plants, closely related to the Saxifragaceae, with which it is sometimes included. There is only one species in the order, *Adoxa Moschatellina*, the moschatel, found in N. temperate countries, including England.

Adrastus, a king of Argos, the one of the Seven against Thebes, who died of grief when his son fell in the second.

Adrenalin, a secretion produced from

ated on the upper part of the kidneys. It causes many effects in all parts of the body, altering the blood pressure and the breathing movements. The amount of adrenalin secreted is increased by great fear or violent anger, giving rise to the usual symptoms of these emotions. Adrenalin has been prepared in the laboratory.



Adria, an ancient town of Italy, on the Adriatic between the Po and the Adige; a flourishing seaport at one time, but now 14 m. from the sea. Pop. 15,800.

Adrian, name of six Popes: A. I., from 772 to 795, did much to embellish Rome; A. II., from 867 to 872, zealous to subject the sovereigns of Europe to the Popehood; A. III., from 884 to 885; A. IV., Nicholas Breakpear of Langley, Herts, from 1154 to 1159, the only Englishman who attained to the Papal dignity; A. V., in 1278; A. VI., from 1522 to 1523.

Adrian, St., the chief military saint of second only to St. George; regarded as the patron of soldiers and protector against the plague, died a martyr at Nicomedia, March 4, 303. Festival Sept. 8.

Adrianople. See Edirne.

Adriatic, The, an arm of the Mediterranean, 450 m. long, separating Italy from Yugoslavia and Albania, fringed with islands on the W. side (Yugoslavia) and only 45 m. wide at the Straits of Otranto. Chief ports are (Italian) Fiume,

Trieste, Venice, Ravenna, Ancona, Brindisi and Otranto; Ragusa (Dubrovnik) and Cattaro (Yugoslavia); Durazzo (Albania).

Adriatic Question, The, the question of the control of the Adriatic, involving, more or less, all the four littoral states, Italy, Yugoslavia, Albania and Greece. It was one of the prices paid to Italy (under the 1915 Secret Pact of London) for her participation in the Great War on the side of the Allies, that she should receive back "Italia Irredenta," including Trieste, Pola and a part of Dalmatia. As the inhabitants of the Adriatic littoral are largely Serbs and Croats, there has since been friction between Italy and Yugoslavia almost leading to war. To-day the Adriatic Question is almost non-existent, as Italy commands the entrance to the sea and has virtually absolute control.

Adullam, a royal Canaanitish city with limestone cliffs in the vicinity, a cave in which was David's hiding-place (1 Sam. xxiii. 1).

Adullamites, an English political party so named by John Bright. In 1866 they deserted the Liberal side in protest against a Liberal Franchise Bill then introduced.

Adult Education, before the Great War, consisted mainly of University Tutorial classes run by the University Extensions lecturers and by the Workers' Educational Association. In 1924 the Board of Education realised the need for adult education and published a list of regulations. Grants are provided and classes in a wide range of subjects are taken by paid lecturers.

Adulteration is defined as "the admixture with an article, intended for food or medicinal use, of any other substance, whether noxious or harmless, or the abstraction of any constituent part, whereby in either case the quality, substance, or nature of the article is injuriously affected," and is governed by various Acts of Parliament, of which the principal is the Sale of Food and Drugs Act, 1875.

In the reign of Henry III. the first statute was passed making adulteration of human food a punishable offence. Various Acts to prevent the adulteration of tea and coffee were passed in 1718, 1724, 1730 and 1766. The Adulteration of Hops Act was passed in 1733; the Bread Acts in 1822 and 1836; butter was safeguarded by the Margarine Acts of 1887 and 1907. The duty of preventing adulteration by the terms of the various laws falls on the Local Authorities, who accordingly appoint public analysts.

Adultery, sexual intercourse outside of the lawful union by a married man or woman. In England adultery is not punishable by law, although it may become the basis of a law suit or a divorce case and involve the payment of damages. In ancient times adultery was often punishable by death, and instances of this are found in the Old Testament.

Ad Valorem Duties are those levied according to the value of the articles. The term is used also of stamp duties, which in many cases—e.g., in the case of an award, a bill of exchange and a lease—are payable, under the Stamp Acts, according to the value of the subject-matter of the particular instruments or workings.

Advent, from the Latin *adventus*, is the term given to the four weeks preceding Christmas. It was set by the Christian churches as a period of preparation for the festival of Christmas, and used formerly to be kept, like Lent, as a fast. Advent begins on the nearest Sunday to St. Andrews Day, November 30, which is the first Sunday in Advent, and is the beginning

of the Church year. The term "Second Advent" is used when speaking of the Second Coming of Christ or the Day of Judgment.

Adventists, various sects which believe in the imminence of the Second Coming of our Lord, found chiefly in America. The most famous are the Second Adventists, founded by William Miller in 1831, and the Seventh Day Adventists, founded in 1844.

Advertisement is an announcement, a notice made public.

In Ancient Greece a public crier was employed to advertise, and he published abroad the wares of shopkeepers. The town-crier, announcing events and making known the loss of things, has existed in England for many centuries, and is still found in certain parts. The Romans advertised by the written word. In public ways notices were placed on the walls telling of forthcoming amusements, such as the gladiatorial shows. The Romans also published notices in a gazette.

In England various shopkeepers made known their wares by signs, such as a barber's pole or a hat or a wig, and men selling wares in the street had their cries, such as "Sweet Lavender," one of the old cries of London, the call of the rag-and-bone man, or of the coalman. English printed advertisements first came into fashion in the 17th Century.

Many of these early written advertisements were exaggerated and verbose statements, whereas the tendency to-day, particularly in placard and hoarding advertisements, is towards a shorter and bolder advertisement, skillfully designed to catch the eye. Advertising in its many varied forms, which include electric signs and sky-writing, is now a recognised aid to selling, studied almost as a science.

Advocate, Lord, chief law officer for prosecutor and a member of the administration in power.

Advocates, Faculty of, the body of lawyers qualified to plead at the Scottish bar.

Advocates' Library, a library belonging to the Faculty of Advocates in Edinburgh, founded in 1682. It is now the National Library of Scotland and entitled to receive a copy of every copyright book published.

Advocatus Diaboli, the devil's functionary in the Roman Catholic Church appointed to argue against a proposed canonisation.

Advowson, a perpetual right of presentation to a benefice, originally, for the most part, appendant to a manor. The lord of the manor could grant it away to some private person or to an ecclesiastical or other corporation. At the dissolution of the monasteries the advowsons with great titles passed by Crown grant to some layman.

separation has occurred, the living itself remains a rectory. By the Benefices Act, 1898, an advowson cannot be sold by auction except as appendant to a manor or estate, and separation and sale of next presentation are forbidden. Recent law has much restricted the right of sale of advowsons, and in time this right will cease altogether.

Æacus, in Greek legend, King of the administrators of justice, renowned as an administrator of justice; after death appointed one of the three judges in Hades.

Ædiles, magistrates of ancient Rome. Amongst other duties they had charge of the public buildings and public structures of the city generally, the inspection of corn markets, weights and measures and responsibility for fines.

Ædui (or *Hædui*), a powerful tribe of ancient Gaul inhabiting the country between the Saône and Loire, their capital being Bibracte. They early submitted to Rome, but revolted at the time of Vercingetorix, after which a new capital, Augustodunum (modern Autun), was established.

Ægæan Islands (also known as the *Ægæes* or *Goat Is.*), three in number off the W. coast of Sicily, where was fought the naval battle between the Romans and the Carthaginians, 241 B.C., which brought the first Punic War to an end, the Romans being victorious.

Ægean Sea, and islands, anciently that part of the Mediterranean Sea between Asia Minor and Greece. Most of the Ægean Is. (now known as the Ægean Archipelago) belong to Greece. In the Tripolitan War (1911-1912) Italy occupied certain of the Dodecanese group, then belonging to Turkey, and ceded them to Greece, with the exception of Rhodes, in 1920, by treaty signed at Sévres. This treaty, however, was denounced by Italy after the Treaty of Lausanne, 1923, when Turkey surrendered the islands to Italy. The islands of the Dodecanese group are still claimed by Greece.

Ægeus, the father of Theseus, who threw himself into the Ægean Sea in the mistaken belief that his son, who had been to slay the Minotaur, had been slain by it.

Ægina, a Greek island 20 m. SW. of Athens, in a gulf of the same name. It played a prominent part in ancient Greek history, and has some important antiquities.

Ægis (literally, a goat's skin), the shield of Zeus, made of the hide of the goat Amalthea (*q.v.*), representing originally the storm-cloud in which the god invested himself when he was angry. The Ægis of Athena bore a representation of the Gorgon's head.

Ægisthus. See *Agamemnon*.

Ægospotami, a small river running into the Hellespont. The Athenians met complete defeat by Lysander here in 405 B.C.

Ægyptus, legendary King of Egypt, had fifty sons. When they demanded in marriage the fifty daughters of his twin-brother Danaus, Danaus gave each daughter a dagger and instructions to kill their husbands on the wedding night. This they did with the exception of Hypermetra, who spared Lynceus.

Aehrenthal, Aloys Lexa von, Count, born in Bohemia, Austro-Hungarian Foreign Minister, 1906-1912, and as such responsible for the annexation of Bosnia-Herzegovina in 1908 and the submission of Serbia. (1854-1912).

Ælfric, a Saxon author of the end of the 10th Century, known as the "Grammarian"; Abbot of Cerne, and of Ensham, notable for his *Homilies* translated from the Latin. Another Ælfric was Archbishop of Canterbury 995-1005.

Ælia Capitolina, the name of the Roman colony established in Jerusalem by Hadrian after the expulsion of the Jews and the destruction of the city (c. A.D. 130).

Ælianus, Claudius, an Italian rhetorician who wrote in Greek and whose extant works are valuable for the passages from prior authors which they have preserved for us.

Æmilia Via (the Æmilian Way), a road constructed by M. Æmilius Lepidus, Roman consul, 187 B.C., from Ariminum to Placentia, one of the most famous of the Roman roads.

Æmilius Paulus, the Roman consul who fell at Cannæ, 216 B.C.; also his son, surnamed Macedonicus, so called as having defeated Persesus at Pydna, in Macedonia.

Æneas, a Trojan, the hero of Virgil's *Æneid*, who, after his various wanderings after the fall of Troy, settled in Italy, and was the traditional forefather of the Julian Gens in Rome.

Æneas Silvius. See *Piccolomini*.

Ænesidemus, a sceptical philosopher, born at Knossos in Crete, who flourished shortly after Cicero, and summed up under ten arguments the contention against dogmatism in philosophy.

Æolian Harp, a musical instrument, constructed of a wooden sound-box across which strings are stretched, the strings being set in vibration and the sounds produced by the action of the wind.

Æolian Islands, the Lipari Islands (*q.v.*).

Æolians, one of the Greek races, who, originating in Thessaly, spread N. and S., and emigrated into Asia Minor, giving rise to Æolic, one of the dialects of the ancient Greek language.

Æolus, the Greek god of the winds and ruler of the island of Æolia. According to Homer's *Odyssey*, he gave Odysseus a bag containing the unfavourable winds when he started on his homeward journey, but this was opened by his companions and he was driven back.

Æon, a Greek word literally meaning an age, and, among the Gnostics, one of a succession of powers conceived as emanating from God and presiding over successive creations and transformations of being.

Æpyornis, an enormous and long-extinct bird, the existence

of which probably gave rise to the fabled roc of Arab story. Naturalists refer it to the family Æpyornithidae and include in this family some twelve allied forms. The former existence of the bird was inferred from its eggs found in the marshes of Madagascar, which have a circumference of over 36 ins. and a girth of 30 ins. Later the bones were discovered, from which remains it was found that the bird was similar to, but larger than, the moa (*apteryx*). The bird is said to have resembled an ostrich in appearance, was over 7 ft. high, had long, stout legs, 4-toed feet, rudimentary wings, very small breast-bones and a crest on the forehead.



ÆPYORNIS

Aerated Waters, invented by (1733-1804), consist of water artificially charged with carbon dioxide under pressure, and sometimes contain dissolved salts, sugar and flavouring essences. The simplest kind is made by forcing carbon dioxide into ordinary tap-water, as in a "Sparklet" syphon, the gas being supplied under pressure in a small metallic bulb.

Aerial, in radio or wireless, is a wire or elevated position and insulated from its supports, serving to collect or transmit the electrical radiations; an insulated wire leads from it to the set. In Great Britain, a private receiving aerial must not exceed 100 ft. in length.

Aerial Navigation is carried out in one or more of three ways: viz., by pilotage, dead-reckoning, or navigation pure and simple. For short-distance flights the pilot may travel without a navigator and take his direction from visual objects on the ground.

When an aircraft is flying out of sight of land, the navigator is carried, and the position of the aircraft is determined, and constantly checked, by astronomical observations (as in marine navigation), by directional wireless bearings and by the use of instruments, which include an aero-compass, a drift indicator, an altimeter which registers pressure at different altitudes, and the gyro-turn indicator which records the equilibrium of the machine.

Dead-reckoning is a mixture of pilotage and navigation. A navigator is carried, and instruments, visual objects and wireless are all used to determine the course of the aeroplane, this being checked by the compass, estimation of the wind, drift, etc.

Aerodrome, a ground or water area laid out for the landing and departure of aircraft. There are certain international requirements for a licensed aerodrome. Spaces for landing and departing aeroplanes must be divided and marked off clearly. Signals must be placed on all obstacles, and directional signals to show the direction of the wind must be visible. The tariff of charges must be displayed clearly and the aerodrome must possess adequate first-aid equipment. There must be sufficient lighting for night landing (such as the Neon lights at Croydon). There is generally an aerial lighthouse. Large aerodromes possess a Traffic Officer, on whose word alone aeroplanes may land or depart. The control tower is equipped with wireless, being connected by land-line to masts some distance away.

Aerodynamics, a comparatively new and still very largely empirical branch of physics, dealing with the forces existing between the atmosphere and an object when the two are in motion relatively to one another. Its development has been largely due to progress in aviation, which in turn has benefited from aerodynamical research. One of the principal methods is to experiment with scale models in wind-tunnels, such as that at the National Physical Laboratory at Teddington, though the application of the data so obtained to larger craft often encounters considerable difficulties.

Design of airships, and of aeroplane wings, to reduce friction and drag (streamlining), and to increase stability, owes much to aerodynamics. The mathematical difficulties are much greater when very high velocities have to be treated, for at low velocities—up to some 300 m.p.h.—air behaves roughly as though it were incompressible as far as aeronautical problems are concerned, while at higher velocities new and complicated phenomena appear.

Aero-Engines are essentially internal-combustion engines in which the ratio of weight to power is kept as low as possible; this is all the more important inasmuch as the weight of fuel to be carried is considerable, while a great deal of the energy of combustion is wasted in the exhaust gases. In early aeroplanes the engine was usually of the rotary type, consisting of a number of cylinders arranged radially and rotating round a fixed crank, but the high centrifugal force so produced has caused the rotary engine to become obsolete.

In the fixed radial type the cylinders rotate the crank, but are themselves stationary. Both fixed and rotary radial aero-engines are air-cooled, but water-cooling is used in a further type in which the cylinders are arranged much as in a motor-car. Attempts

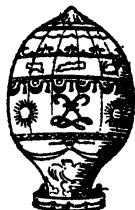
are being made to perfect engines of the diesel type for use in aeroplanes, since the running costs would be lower and the fuel radius greatly increased.

Aerolite.

Meteorite.

Aeronautics. The term covers both aerostation and aviation, the former being flight by the aid of something lighter than air, the latter by the aid of a machine heavier than air. Stories of attempted flight and experiments to that end go back to the earliest history of man, but it was not until the time of Henry Cavendish that aerostation became a practical possibility. In 1766 he discovered that hydrogen was lighter than air, and this led to various experiments, among which may be mentioned that of Tiberius Cavallo, an Italian physicist, who inflated soap-bubbles with hydrogen and floated them.

The discovery of the balloon, however, was proceeding in France along different lines when in 1782 two brothers, French paper-makers of Annonay, Etienne and Joseph Montgolfier, succeeded in raising a silk balloon, as a result of heating the air contained in it. In 1783 Pilâtre de Rozier made the first flight in a heated-air balloon, but in the same year, Professor Charles, also a Frenchman, was making successful experiments with hydrogen-filled balloons. In 1784, in England, Lunardi made a two-hours' flight across country in a Montgolfiers' balloon, while a year later Blanchard and Jeffries made a hazardous flight across the Channel. An important landmark was the ascent in 1803 of a balloon with steering apparatus and carrying 14 passengers.



THE
MONTGOLFIER'S
BALLOON

Those early experiments led to the construction of dirigible airships, Count Zeppelin producing one in 1900. With the present century came experiments with gliders, some with machinery attached. Lilienthal, a German mechanic, made several successful flights in an apparatus of his own design, until he was eventually killed. In the U.S.A. Farman and Wilbur and Orville Wright were pioneers in the construction and use of the aeroplane. In England, however, in 1868 Stringfellow built a successful steam-driven machine with vertical screw propellers, combining "aero-planes" with aerial screws and reaching a high speed along a wire. Between 1890 and 1908, Ader, a Frenchman, and Orville Wright made important flights, the latter covering over 50 m. In 1909, Blériot crossed the Channel in a monoplane, and from then until 1914 progress was steady if slow.

The Great War gave an impetus to aviation, and design improved so rapidly that in 1919 Sir John Alcock and Sir A. W. Brown flew in a biplane across the Atlantic from Newfoundland to Ireland, 1,890 m. in just under 16 hrs. The same year a British airship crossed from Scotland to New York in 41 days. Commercial aviation now became a practical possibility, and international laws were drawn up for its control.

In 1925 Sir Alan Cobham flew to Cape Town and the following year made the return journey. In 1926 also he flew to Australia and back. An epoch-making flight was that of Charles Lindbergh who in 1927 made the first solo flight across the Atlantic, crossing from New York to Paris in a monoplane. In 1928 Capt. H. J. Hinkler, an Australian aviator, flew from England (Croydon) to Australia (Port Darwin), covering the distance (12,000 m.) in 16 days. This time was lowered to 10 days by Wing-Commander Kingsford-Smith in 1930.

In May of the same year a new record for the London-to-India solo flight was created by Miss Amy Johnson, who reached Karachi in 8 days. In 1929 a regular air-mail service had been established from London to India, and a network of air-lines had already spread over Europe. Meanwhile the Pacific was crossed in a three-engined monoplane, the *Southern Cross*, with a crew of four, including Kingsford-Smith. The N. Pole submitted to air conquest when in 1926 Admiral Byrd of the U.S. Navy with Pilot Bennett flew from Amsterdam Island to the N. Pole and back, 1,600 m. in about 16 hrs. Hubert Wilkins, the explorer, also crossed from Alaska to Spitzbergen, 2,000 m.

The Schneider Trophy, for which international aviation contests had been held at intervals since 1913, has been the occasion of high-speed flying. The Trophy was won in perpetuity in 1929 when Flying Officer Wag-



SCHNEIDER TROPHY WINNING PLANE

born won the race for Great Britain with an average speed of 328.6 m.p.h. In 1931 there was no race, but Flight-Lieut. Stainforth completed the course at an average speed of 388.67 m.p.h., his fastest circuit being at 408.288 m.p.h. The race was discontinued in 1932. In 1934 Stainforth's speed was exceeded by Francesco Angello, of the Italian Air Force, who reached an average speed of 440.68 m.p.h. over a two-mile course.

Several notable flights to Australia were made between 1930 and 1934. In the latter year the time taken was lowered to 2 days 22 hrs. 54 mins. 18 secs. as a result of the England-to-Melbourne International Air Race for a trophy presented by Sir Macpherson Robertson, won by C. W. A. Scott and T. Campbell Black in a D.H. "Comet" machine, built especially for the race.

A regular air service was opened from Croydon to Cape Town in 1932, following individual flights by J. A. Mollison, by his wife, Amy Johnson, and by two French fliers, Coulette and Sahel. A Portsmouth-Johannesburg air race was flown in Oct. 1936 and was won by C. W. A. Scott and G. Guthrie in a Percival Vega Gull machine. Their time was 2 days 4 hrs. 56 mins.

Other notable flights were the round-the-world flight (1930) by Post (U.S.A.) and Gatty (Australia) in 9 days, the non-stop flight (1933) from Cranwell to Walvis Bay in a Fairey (Napier) monoplane in 2 days 9 hrs. 25 mins. (5,309 m.), and the non-stop flight (also 1933) from New York to Syria by Codos and Rossi in a Blériot (Hispano Suiza) monoplane in 2 days 6 hrs. 44 mins. (5,657 m.). In 1935 Captains Stevens and Anderson of the U.S.A. in a stratosphere balloon had mounted to 74,000 ft. (over 14 m.) but the highest altitude reached by an aeroplane is 56,017 ft. (over 10 m.) flown by Lieut.-Colonel Mario Pezzi, an Italian Air Force pilot, on Oct. 22, 1938.

In 1937 a new record for the flight in each direction from England to Cape Town was set up by Clouston and Mrs. Kirby-Green. A U.S.S.R. machine flew 6,700 m. non-stop from Moscow to California via the N. Pole. Miss Joan Batten set up a new record for a solo flight from England to Australia. Five two-way crossings of the Atlantic were made successfully by Imperial Airways, paving the way for a regular trans-Atlantic mail and passenger service. In 1938 Flying Officer A. E. Clouston flew from England to New Zealand and back in less than 11 days and a service machine flew from

Edinburgh to London in 48 mins. In April 1938 H. F. Broadbent, an Australian flier, flew from Darwin (Australia) to Lymington in 5 days 4 hrs. 21 min., the previous record being that of the Australian woman flier, Jean Batten, who, in 1937, flew from Darwin to Croydon in 5 days 18 hrs. 15 min. In July 1938 Howard Hughes, an American, flew round the world in 4 days. Two out of three specially prepared British Wellesley long-range bombers broke the Russian-held long-distance record by flying 7,162 m. direct from Ismailia, Egypt, to Darwin, Australia. The third broke the record by 300 m. before landing on Timor Island for petrol.

Gliding has become an important part of aeronautics in recent years, both in Germany and in England. In 1936 Dittman reached an altitude of 8,860 ft. carrying a passenger, whilst in July 1938 an Englishman, Mr. J. F. Fox, flew 96 m. from Dunstable to Norwich. The British Gliding Association holds annual competitions. In 1938 Flight-Lt. Murray and Mr. J. S. Sproule stayed in the air 28 hours.

Interesting developments in aeronautics have been the construction of the autogyro (see *Aeroplane*) and of the Mayo Composite Aeroplane. The Mayo composite aeroplane consists of a big flying-boat carrying on its back a highly powered float seaplane. The two are locked together at the take-off, but at a height of three or four thousand feet the seaplane is released to pursue its course alone. By this means the seaplane is launched with a load of petrol, etc., which would prevent a take-off from the sea. A flight across the Atlantic has already been made, an unsuccessful attempt on the long-distance record and non-stop mail trips from England to Alexandria.

Aeroplane, or *Airplane*, a heavier-moving under its own power; similar machines without engines are known as gliders. The chief parts of an aeroplane are the wings or planes, the engine or engines, the air-screw or "propeller" (actually the aeroplane is propelled only when the screw is at the back), the fuselage and the rudders. Monoplanes have the advantage of lightness and less air-resistance, and are therefore as a class speedier than biplanes; the latter, however, possess the compensation of greater stability and safety.

The frame of an aeroplane is mainly constructed of some light metallic alloy such as duralumin, while the wings are of fabric or thin metal; in a biplane the wings are connected by vertical struts. The wings are slightly curved in section, and are set at a small angle to the horizontal; hence when the aeroplane moves, a lifting force is produced. As the machine gathers speed, this force finally becomes equal to its weight, and the plane rises. Should the flying speed be lowered too much, the lifting force becomes less than the weight of the machine, and the plane "stalls."

To prevent stalling, and thus to allow landings to be made at comparatively low velocities, various devices have been introduced which suitably alter the resistance of the wings to the air and thus modify the lifting force; such, for example, are the Handley-Page slots in the wings, by opening or closing which—coupled with judicious use of the ailerons (hinged rear portions of the wings)—the pilot can maintain control in conditions where stalling would otherwise be inevitable.

To facilitate landing in confined spaces, aeroplanes of the autogyro and helicopter varieties have been invented. Both possess horizontal vanes rotating round a vertical axis, rotation in the autogyro being affected by the forward motion of the machine and in the helicopter by direct application of motive energy from the engine. The autogyro can fly at very low speeds, while the helicopter

can practically hover. The automatic control of pilotless aeroplanes has now reached a high level of achievement, and the day when such planes will carry out mail and cargo services is perhaps not far distant. The control is made by wireless, with astonishing precision, while the machines themselves are made to mark their course on a chart at the control station.

Aerotherapeutics, the treatment of disease by administration of air under varied conditions, e.g., enriched with oxygen or at lower or higher pressure than normal. It is usually also taken to include the open-air treatment of consumption, bronchitis, hay-fever and similar complaints.

Aerschot, a town in Brabant, Belgium, on the river Demer, 20 m. from Brussels. It was captured by the Germans Aug. 19, 1914. It was retaken and held for a few days by the Belgians in the following month, when it again fell to the Germans, remaining in their hands till the end of the Great War. Pop. 7,500.

Æschines, a celebrated Athenian orator, rival of Demosthenes, who in the end prevailed over him by persuading the citizens to believe he was betraying them to Philip of Macedon, so that he left Athens and settled in Rhodes, where he founded a school as a rhetorician (389-314 B.C.).

Æschylus, great Greek tragedian, who as a soldier at the battles of Marathon and Salamis before he wrote as a poet. It is said that he wrote some seventy dramas, though only seven of them are extant—the *Suppliants*, the *Persæ*, the *Seven against Thebes*, the *Prometheus Bound*, *Agamemnon*, *Chaphori* and the *Eumenides*, his plays being tragedies; born at Eleusis and died in Sicily. (525-456 B.C.).

Æsculapius, a son of Apollo and the nymph Coronis. He was taught the art of healing by Chelron, but destroyed by Zeus with a thunderbolt for restoring Hippolytus to life, and afterwards admitted among the gods as god of medicine. The chief centre of his worship was at Epidauros, whence it was introduced to Rome. His chief attribute as a god was a staff with a serpent coiled round it, now used as the badge of the R.A.M.C.



ÆSCULAPIUS

Æsculus, the only genus of trees of the order Hippocastanaceae. There are 25 species found in N. temperate regions and in S. America. *A. Hippocastanum* is the familiar horse-chestnut.

Æsir, a generic name given to the Gods in Scandinavian mythology; their number is stated at twelve or more, but is uncertain.

Æsop, a celebrated Greek fable writer of the 6th Century B.C., concerning whom little is known except that he was originally a slave, manumitted by Iadmon of Samos, and put to death by the Delphians, probably for some witticism at their expense.

Æsthetics, the science or philosophy of the fine arts, including the analysis of the theories and conceptions employed by artists in their work (whether formulated or unformulated), philosophic attempts to establish the nature and laws of Beauty, and the establishment of standards of taste and criticism in art.

Some perception and appreciation of beauty is implied in every work of art, and so it may be taken as axiomatic that the history of æsthetics must go back to the

earliest works of art, even before views about the nature of beauty were consciously formulated. It is also a curious fact that when man's creative artistic output has been greatest he has been least apt to philosophise about the conceptions he has been using.

Theorising about Beauty commenced in ancient Greece. Socrates thought a thing beautiful only so far as it was fitted to its purpose. Plato, the father of Idealism, saw in every beautiful object an outer or sensible form and an inner, invisible and permanent idea. These ideal forms of things, he claimed, can be perceived by man, and science consists of recalling the nature, forms, harmonies and proportions of those perfect and immutable essences. "Beauty in every form is one and the same," and to the man who perceives this will be revealed "a simple science, the science of Beauty everywhere, of Beauty everlasting, not growing or decaying, not waxing and waning, but Beauty absolute, separate, simple and everlasting."

Aristotle was concerned more with the analysis of matter-of-fact experience. He recognised that Beauty could exist in a state of repose (e.g., in still life). He did not identify the Beautiful with the Good, as did Plato, nor with the useful, like Socrates. On the other hand, when he formulated his three unities of tragedy he established standards of taste which have dominated many succeeding creative periods.

Since Greek days a tremendous body of literature has been built up on the subject. Baumgarten, the father of the science in Germany, identified the Beautiful with the perfect, and claimed (in his *Æsthetica*) it to be the purpose of Art to imitate Nature, since it is in Nature that we find the greatest perfection. Lessing in his *Laocœn* defined Beauty as "visible perfection, an imperfect image of the supreme perfection." Kant, who examined our faculty of pleasure and pain in his *Critique of Judgment* in order to discover its *a priori* principles, found Beauty to consist of a consciousness of disinterested pleasure. Schiller derived our artistic instincts from the *spieltrieb*, the play impulses, the natural outcome of an overabundant enjoyment of life. Hegel regarded Beauty as the disclosure of mind in the sensuous forms of things, and considered the Beauty of Art as higher than the Beauty of Nature in so far as mind is higher than Nature. Schopenhauer regarded a work of genius as being achieved through a kind of ecstasy and as existing for itself alone. "To be useless is its patent of nobility," he wrote.

Modern speculation is mainly concerned with the analysis of the psychological reactions of the observer to what he regards as beautiful. Harmony, proportion and colour all play their part in the make-up of a beautiful object, but the extent of the disagreement between man and man, race and race, and one age and another makes it certain that to some extent at least beauty is "in the beholder's eye."

Æstivation, a botanical term indicating the arrangement of the sepals and petals in the flower-bud. It is said to be *open* if they do not touch, *valvate* if they touch without overlapping, *imbricate* if they overlap. In zoology it means the state of torpor in which some animals pass the summer time.

Ætôn, a Greek painter of the 4th Century B.C., who executed a picture representing the raptures of Alexander and Roxanda. The president of the Olympic Games at which it was exhibited gave him his daughter in marriage.

Ætius, a native of Conio-Syria, lived in the 4th Century; leader of an extreme view in Arrianism, for which he suffered banishment.

Ætius, a Roman general, who resisted the aggressions of the Barbarians for twenty years, and defeated Attila the Hun at Chalons, 451; assassinated out of jealousy by the Emperor Valentinian III., 454.

Ætolia, a country of ancient Greece, N. of the Gulf of Corinth, now, with Acarnania (q.v.), a province of Greece.

Affidavit, an old legal form still in use, being a written statement of evidence given on oath before a magistrate or commissioner for oaths.

Affiliation, a legal process whereby the father of a child born out of wedlock is made responsible for its maintenance. The mother's evidence as to the paternity of the child is accepted provided there is certain corroborative evidence. The process is governed by the Bastardy Acts of 1845, 1872 and 1873, supplemented by the Affiliation Orders Act, 1914, and the Bastardy Act of 1923, by which a father is liable for maintenance up to £1 a week.

Affinity, in law, relationship through marriage, marriage, i.e., the relationship of a husband to his wife's blood relations and of a wife to her husband's blood relations. Secondary affinity is the relationship between a husband's relations and a wife's relations. Marriage is prohibited within the same degrees of affinity as of consanguinity (i.e., blood-relationship), with the one exception that a husband may marry his deceased wife's sister and the wife her deceased husband's brother.

Affirmation, a solemn statement unaccompanied by oath. It applies particularly to the deposition of evidence, the customary oath having long been omitted if the person affirming be a Quaker, Moravian, or Separatist. Later, by the Oaths Act, 1869, anyone objecting to an oath on conscientious grounds was permitted to affirm. The law, however, did not apply to the oath of allegiance given by Members of Parliament, but as Charles Bradlaugh refused to take the oath in 1880 on the ground that he had no religious belief, the law was amended. In 1888 a further Oaths Act was passed permitting affirmation in all circumstances.

Afforestation, as a science, dates back to the 18th Century. The depletion of the forest lands and failure to take steps to restore them had resulted in a serious shortage of timber. Marked variations of climate, less equable temperature, land erosion and floods were incidental results.

Afforestation, the process of replanting forests, is based on the science of forestry (i.e., consideration of climatic conditions, of the nature of the soil, and of the economic factors involved in the demand and supply of timber). The science was developed particularly in Germany and Switzerland, but the replanting of forest lands on a large scale is a development of the 20th Century.

In the British Isles the Forestry Commission, set up in 1919, was empowered to acquire land for replanting and to give grants for the afforestation of private land. Many hundreds of thousands of acres have been acquired by the Commission, and a large part planted, including land in the Esk and Duddon Valleys. Afforestation plans in the Lake District have aroused a great deal of controversy and some opposition.

Afghanistan, a country in the centre of Asia, between India on the E. and Persia on the W., its length about 600 m. and its breadth about 500 m., occupying 278,000 sq. m., with a mixed turbulent population, majority Afghans. Long a bone of contention between England and Russia, it is now independent.

The country is mountainous, the lofty ranges including the Hindu Kush. Communication with India is via the Khyber Pass, the

Gomal Pass and the Bolan Pass. The largest river is the Helmand. Others include the Kabul and the Hari Rud. The climate is extremely cold in the higher and intensely hot in the lower regions. The principal crops are wheat, barley, rice and maize. Other products include castor-oil, tobacco, fruit, cotton. The chief towns are Kabul (the capital), Kandahar, Ghazni and Herat.

Afghanistan first became an independent State when Ahmad Shah established himself as King of the Duranis in 1747. He extended his dominion into Persia and into India where he inflicted a crushing defeat on the Mahrattas at Panipat.

Afghanistan has twice been involved in war with England. The First Afghan War ended in 1819 with the complete defeat of the Afghans and Sikhs at Guzerat after a massacre of the British at Kabul in 1841 and other reverses. The Second Afghan War ended in 1878 after the capture of Kandahar and Jalalabad, and England gained control of Afghan foreign policy.

In 1919 Habibullah Khan was assassinated and shortly afterwards Amanullah succeeded to the throne. In 1921 Britain recognised the independence of Afghanistan and the existing boundaries were accepted. In 1927-1928 King Amanullah and Queen Suraya visited Europe. Amanullah was an enlightened king and tried to impose Western culture on Afghanistan. The people revolted and he abdicated in favour of his brother Inayatullah. Amanullah returned to the throne in 1929, but a few months later again abdicated and fled the country. The present king is Zadr Shah, successor to his father Nadir Shah, a former minister of Amanullah, who was elected king after a period of internal strife, but who was assassinated in 1933. Pop. estimated at 11,000,000.

Afghans, The, a fine and noble but the Mohammedan faith living in and giving their name to Afghanistan. The Afghans proper are called Pathans in India, and call themselves Beni Israel (sons of Israel), tracing their descent from King Saul.

Africa, one of the five great divisions of the globe, three times larger than Europe, seven-tenths of it within the torrid zone, and containing over 200,000,000 inhabitants of more or less dark-skinned races. Long a *terra incognita*, it was in the 19th Century parcelled out by European nations, chiefly Britain, France and Belgium.

Africa is almost entirely an enormous plateau, except in the extreme NW. and SW. It is higher in the S. and E. than in the N., where the continent is widest. A broad belt stretching in a N.E. to SW. direction reaches a minimum elevation of 3,000-4,000 ft., and is crossed by the great Rift Valley. The principal mountains are the Drakensburg, Karroo, in the S., the mountains of Livingstone, Kenya and Abyssinia in the E., and the Atlas mountains of the NW. The principal rivers are the Niger, Congo, Orange, Limpopo, Zambesi and Nile, but, owing to the plateau formation of the continent, are of little value, being navigable only in part by river steamers. There are numerous lakes, the largest being Victoria, Tanganyika and Nyasa. In the N. lies the vast Sahara desert, while in the SW. is the Kalahari desert.

Most of the continent lies within the tropics. The mean annual temperature is therefore high except in the highlands. The equatorial belt is remarkable for its equable temperature, there being little difference between day and night and summer and winter temperatures. The equatorial belt is a region of heavy rainfall. In January, when the sun is overhead in the Southern Hemisphere, the area of heaviest rainfall is in the S., while in July the reverse is noticed. In the NW. and

there is winter rain followed by summer drought typical of Mediterranean climate.

The vegetation of N. Africa resembles that of the shores of the Mediterranean. In these subtropical regions are oranges, olives and dates, as well as wheat, barley, evergreen oak and cork trees. The baobab or monkey-bread tree, the cassava, the yam and the ground-nut (pea-nut, valuable in soap and margarine manufacture) thrive in the Sudan, as well as cotton, oil palms and sago palms. In Central Africa are dense belts of tropical forest, similar to those found by the Amazon, and in S. Africa are large tracts of grassland, prickly pear and aloe trees.

Animals of Africa include among pachyderms the elephant, the hippopotamus and the rhinoceros. Antelopes abound in S. Africa and zebras and giraffes in the E. Gorilla, chimpanzee, baboon and mandrill are varieties of primates found in Africa, while other characteristic animals are carnivora including lion, leopard, hyena and jackal. Among birds the ostrich is peculiar to Africa, while myriads of flamingoes throng the great lakes. The most important mineral products are gold, diamonds, copper, coal and iron. Gold is mined in the Transvaal, diamonds at Kimberley, coal in Natal and Cape Colony and iron in Algiers.

The chief territorial divisions of Africa are: (1) British—Union of S. Africa, Tanganyika, Kenya, Anglo-Egyptian Sudan, British Somaliland, Nigeria, Gold Coast and Sierra Leone. (2) French—Algeria, Morocco, Tunis, French W. Africa, French Equatorial Africa, French Somaliland and Madagascar. (3) Portuguese—Portuguese W. Africa, Portuguese E. Africa. (4) Spain—Rio de Oro, Spanish Guinea and Spanish Morocco. (5) Italy—Libya, Italian Somaliland, Eritrea and Abyssinia. (6) Independent—Egypt, Liberia and, until 1936, Abyssinia.

Exploration. Africa was known as Libya to the Greeks and Romans. In 1487 Diaz discovered the Cape of Good Hope, and ten years later da Gama discovered the Cape route to India. Portuguese exploration continued along the coast and French adventurers journeyed into the interior at Senegal. Later Dutch settlements were established at the Cape, while the British explorer Mungo Park in 1795 reached Timbuktoo. Richard Landes reached the Niger mouth in 1830. In 1849 Livingstone explored Tanganyika, while Burton and Speke discovered the lake of that name shortly after. Speke, Grant and Baker extended the work, while Stanley crossed the continent from E. to W. in 1877.

Peoples and population. The most thickly populated parts of Africa are the Nile delta, the Lower Nile Valley and the basin of the Congo and Niger. The original inhabitants include Negroes, Hottentots, Bantus, Bushmen and dwarf tribes, such as the pygmies. European settlers include British, Dutch, Portuguese, French, Spanish, Italians, Germans and Turks, who occupy the extreme N. and S. Asiatic settlers include Hamites, Semites and Hindus. Berbers are descendants of the Semites, and Tauregs are a mixture of Berbers and Negroes.

Inland communication is defective. There are railways in the S. and N., and camel caravans solve transport problems in the great Sahara area, the two chief routes being the Eastern Caravan Route from Tripoli to Lake Chad, and the Western Caravan Route from Tafillet to Timbuktoo. The projected Cape-to-Cairo railway is not yet completed, though it is possible to traverse the continent from N. to S. by waterways when the railway fails. Modern motor roads and passenger air service, however, are bringing Africa nearer to Europe. Most of the ocean maritime trade is in the hands of the British.

Africa, German East, a former German colony, conquered by the Allies during the Great War after twenty months' fighting by a comparatively small force, renounced by Germany under the Treaty of Versailles, and now held under Mandates by Britain (Tanganyika territory, *q.v.*) and Belgium.

Afridis, a treacherous tribe of eight other, inhabiting a mountainous region on the NW. frontier of India W. of Peshawar.

Afrikander Bond, a South African party appealing to the Dutch whose purpose it was to bring about the union of South Africa in a republic. It secured the official use of the Dutch language in Parliament and the Law Courts. Under the influence of Cecil Rhodes the anti-British feeling in the Bond was modified.

Agá Khan (Sultan Sir Mahomed Shah), a head of the Ismaili Mohammedans, a keen traveller and noted race-horse owner. For his loyal services during the Great War he was granted the status of a first-class chief. He spends much of his time in England. Played a prominent part in the Indian Round-table Conference, 1930-1931. P.C. 1934. In 1937 he was elected President of the League of Nations. (1875-)



THE
AGA KHAN

Agadir, a port of Morocco at the mouth of the Sus some 20 m. S. of Cape Ghir, where in 1911 the German gunboat *Panther* was sent with promises of assistance to the natives in their struggle against France. Relations were severely strained, and a European war was only narrowly averted. Now a free port. Pop. 2,000.

Agag, King of the Amalekites, captured alive and spared by Saul, but hewn in pieces by Samuel (1 Sam. xv).

Agamemnon, a son or grandson of Mycenae; married Clytemnestra, sister of Helen, and became general-in-chief of the Greeks in the war against Troy after Paris had carried off Helen. On the advice of the soothsayer Calchas, sacrificed his daughter Iphigenia (*q.v.*) for the success of the enterprise he conducted. He and Cassandra, daughter of Priam of Troy, who had fallen to his lot, were assassinated by Egisthus and Clytemnestra on his return from the war. One of the principal characters in Homer's *Iliad*. His fate and that of his house are the subject of Aeschylus's trilogy *Oresteia*.

Agapæ, love-feasts among the primitive Christians in commemoration of the Last Supper at which the poor were entertained and succoured; closely associated with the eucharist. The feast and the eucharist were later separated and the agapæ finally suppressed by the Church owing to abuses which crept in.

Agapemonites, is the name given to persons who belonged to a community founded by H. J. Prince, a former clergyman of the Church of England, at Charlchurch in England in 1859. The community consisted of men and women who lived in one building, sharing their goods under the leadership of Prince, who was termed "the Lord" (Agapemone, the name of the community, signifies "the abode of love"). Other such societies existed before in England, such as the one known as the Family of Love in the 16th Century, and one was formed later in 1896, the members of which called themselves the "Children of the Resurrection."

Agar-Agar, a gum resembling gelatine extracted from a sea-wood and used as a medium for bacteria culture.

Agaricus, a genus of fungi of the sub-order Basidiomycetes, which includes the mushrooms and many so-called toadstools. They have a fleshy pileus or cap, with a number of almost parallel or radiating gills on the lower side, bearing spores, the whole being supported on a lengthened stalk. A vast number of species exist, usually classified according to the colour of the spores, some of them being edible, some poisonous. *A. campestris* is the common mushroom.



SECTION OF COMMON MUSHROOM

Agassiz, Louis, a celebrated Swiss naturalist, in the department especially of ichthyology, and in connection with the glaciers; settled as a professor of zoology and geology in the United States in 1846. (1807-1873).

Agate, a comprehensive name for the forms of the mineral silica, among which are included chalcedony, amethyst, cornelian, jasper, the so-called "Scotch pebbles" and opal. The stones are polished for decoration and are also used as burnishers for gold-leaf. The chief European working of agate is in Germany. They are also found in Canada (Ontario), Australia, Africa and India.

Agatha, St., a Sicilian virgin who suffered martyrdom at Palermo under Decius in 251; represented in art as crowned with a long veil and bearing a pair of shears, the instruments with which her breasts were cut off. Festival, Feb. 5.

Agave, a genus of plants of the order Amaryllidaceae, having a short stem and bearing large, fleshy, pointed leaves with a spiny edge in a large rosette. It grows slowly and flowers only once after a period of 10 to 60 years. The principal species, *Americana* (Century Plant or American aloe), grows chiefly in Mexico, but may be cultivated as a greenhouse plant in England. In Mexico the head of the rapidly growing inflorescence is cut off and the sap collected, this, after fermentation, yielding pulque, the national drink of Mexico. By distillation mescal is produced. Other species yield fibre of commercial value including sisal.

Agde, a French Mediterranean seaport in the dept. of Hérault and 3 miles from the mouth of the Hérault. Pop. 9,500.

Agen, a town in France on the Garonne, 84 m. above Bordeaux, capital of the dept. of Lot-et-Garonne. Pop. 23,000.

Agent, in law a person authorised to do certain acts by another person, called his principal. This authority can sometimes be delegated. His powers may be general or for a special purpose. Agents may be public or private, and may be classified into brokers, factors, bailiffs, etc. Generally speaking, the maxim *qui facit per alium, facit per se* (i.e., the act of an agent is considered as an act of his principal) applies; and the principal is liable for damage done to third parties through his agent's negligence or want of skill.

Agésilas, a Spartan king, victorious over the Persians in Asia and over the allied Thebans and Athenians at Coronea, but defeated by Epaminondas at Mantinea after a campaign in Egypt; d. 360-B.C., aged 84.

Agincourt, a small village of France in Pas-de-Calais, where Henry V. in a bloody battle defeated the French, Oct. 25, 1415.

Agistment, in law, a form of contract (agister) undertakes to receive the carthorses or other animals of another and graze them on his land. He is liable under the contract for negligence or for not taking proper care of the animals.

Aglaia. See *Graces*.

Agnano, Lake of, a lake near Naples, now drained and the water used for medicinal baths; occupied the crater of an extinct volcano, its waters in a state of constant ebullition.

Agnes, St., a virgin who suffered martyrdom, was beheaded because the flames would not touch her body, in 303 during the reign of Diocletian; represented in art as holding a palm-branch in her hand and a lamb at her feet or in her arms.

Agni, the god of fire in the Vedic times, mythology, begets the gods, organises the world, produces universal life; one of the three terms of the Vedic trinity, Soma and Indra being the other two; is depicted as having three legs, seven arms, and two faces and accompanied by a lamb.

Agnosticism, the doctrine which disclaims all knowledge of the supersensuous, or denies that we know or can know the absolute, the infinite, or God. The word itself was coined by Professor Huxley in 1869 and the exponents were Herbert Spencer and Tyndall, while the chief conclusions of modern agnosticism are stated in the philosophy of Kant.

Agnus Dei, the figure of a lamb bearing a cross as a symbol of Christ, or a medal with this device; also a prayer in the Mass beginning with the words, "Lamb of God."

Agonic Line, a line drawn on a map of the world through all parts at which the magnetic needle points due N. and S.

Agora, the public meeting and marketplace and centre of civic life of an ancient Grecian city, corresponding to the Roman forum.

Agoraphobia, a neurasthenic condition, the characteristic of which is a fear of open spaces. The nervous disorder with opposite symptoms is claustrophobia.

Agouti, Marie Catherine Sophie de Flavigny Comtesse d', a French authoress under the pseudonym of Daniel Stern. Formed a *liaison* with Liatz, by whom she had three children, one of whom, Cosima, married Wagner. (1806-1876).

Agouti, (Aguti)

a rodent of the order Dasypodidae, native of Brazil, Paraguay and Guinea; very destructive to roots and sugar-canes.



AGOUTI

Agra, a hand-some city on the Jumna, in a province of the same name, which with Oudh forms the United Provinces. Famous for, among other monuments, the Taj Mahal, a magnificent mausoleum erected near it by the Emperor Shah Jehan for himself and his favourite wife; it is a centre of trade and seat of manufactures of Indian wares. Pop. 230,000.

Agram. See *Zagreb*.

Agricola, Cnæus Julius, a Roman general, and father-in-law of Tacitus, who wrote a biography of him. Spent a number of years in Britain, during which he conquered N. Wales and Mona (Anglesey, the seat of Druidism) and advanced

as far as the Forth and Clyde. He was recalled by the Emperor Domitian in 87, and retired into private life. (87-93).

Agricola, Johann, a follower and friend of Luther, who became his antagonist in the Antinomian controversy as to whether the Mosaic law or the law of the Gospels alone was binding on Christians. (1492-1566).

Agricola, Rodolphus, a learned and accomplished Dutchman, much esteemed by Erasmus, and much in advance of his time; his most important work, *Dialectica*, being an attack on the scholastic system. (1442-1485).

Agricultural Co-operation, systems of organised marketing, consisting of local associations, the members of which are paid for all produce at an agreed rate, subject to later increase from any profits that may accrue; also of organised buying of agricultural requisites. Has developed on widely different lines in different countries, the governing factor being the question whether the industry is supplying a home or an export market. Advance has been more notable in countries such as Denmark than in England.

Agricultural Credit. Since the beginning of the century a movement to assist agriculture by the formation of credit banks or co-operative societies has been progressing, especially in Germany and the Continent generally. These banks exist for the provision of long and short credit, the former for land mortgage, and the latter for financing the work of producing and marketing the crops. They raise money either by issuing shares or by borrowing from joint-stock banks on the security of their whole membership. Agricultural credit on these lines has not been very successful in England.

Agriculture, originally only the cultivation of the soil, now stands for farming generally, including stock-raising. Stick-digging and hoeing go back to very early times, and it is known that the invention of the plough was prehistoric.

Owing to the fact that growing crops need protection, agriculture encourages the formation of communities. The early Eastern civilisations developed irrigation, but Greek methods were non-irrigated. The system of fallow-land prevailed. The Romans followed the Greeks, but were not conspicuous as agriculturists. Rotation of crops, however, became the widely recognised system.

In northern Europe agriculture developed on the same lines, although even in the Middle Ages implements were crude. In England even in Saxon times rotation of crops was practised. Some land was left permanent pasture, some cultivated in a series of three fields—one under grain, one legumes, one fallow. Feudalism encouraged farming, but later, towards the 16th Century, agriculture for purposes of local food supply began to give way to agriculture and land development for general profit.

The soil now underwent more thorough cultivation. Seed was sown in drills instead of broadcast, and a four-field system of rotation was introduced. Potatoes and root-crops were introduced into England in the 17th Century, and the same century saw great improvements in stock-breeding. In the 18th and 19th Centuries enclosure of farmland (commons, &c.) was enforced, causing great hardship to the labourer and smallholder, but agriculture was put on the footing of a national industry. By 1850 England was capable of feeding 17,000,000 people on home-grown food.

To-day English agriculture tends to decline, for although the land is capable of growing some of the finest wheat and produce in the

world, competition with foreign and Dominion imports of grain, cattle and meat has so depressed prices that in several branches of agriculture a remunerative return is to be had only through a Government subsidy, or a quota system.

Modern farming is aided by research in agricultural science, and by improvements in agricultural machinery. Many farms in England, however, have been worked out and would, under present conditions, prove too costly to restore to a profitable state of cultivation. Soil, even under rotation cultivation, needs replenishing with expensive manures, and the combined cost of manuring and draining poor soil is prohibitive.

Trenches and draining are essential for heavy clay and marshland. Clay soil is benefited by an autumn dressing of such manures as lime and basic slag. Farmyard manure, a more or less complete fertiliser, is good for both light and heavy soils. The straw in its composition binds the former and lightens the latter. It is spread on the fields in autumn. In addition to artificial manures, green manuring (*e.g.*, lucerne) must be mentioned; and for this purpose a rapidly-growing green crop, such as clover, is sown, and when in full leaf is dug or ploughed into the ground.

Grassland on a farm may be either temporary or permanent. If permanent, it may be sown for grazing or for hay. Grassland usually needs manuring with farmyard manure over and above what is obtained from the cattle grazing on it. Heavy grassland is benefited by basic slag in autumn and superphosphate in spring. Temporary grassland will be converted periodically back into arable land.

The regular rotation of crops usually consists of an autumn-sown cereal followed by a root crop for fodder, a spring-sown cereal, and a leguminous forage crop. Crops grown will include such cereals as wheat and oats sown in autumn, barley and oats sown in spring. Root-crops include potato, sugar-beet, turnip, carrot and parsnip. Pulse-crops are beans and peas, and forage crops may consist of lucerne, vetches, clovers, kale and cabbages.

Agriculture and Fisheries,

Ministry of, that Whitehall Government department which is concerned with the interests of agriculture and fisheries in England and Wales. Its predecessors were the Board of Agriculture created in 1793 and the Fishery Department of the Board of Trade. Its many duties include the administration of the Agricultural Holdings Acts, research, marketing schemes and legislation, and agricultural credits. There are analogous but separate departments in Scotland and Northern Ireland.

Agriculture, International Institute of, formed in 1905 to collate and publish information on all agricultural topics. Most of the leading nations of the world are represented.

Agrigentum, an ancient city, now Girgenti, on the S. of Sicily, still showing traces of its former grandeur.

Agrimony, is the English name for a small, yellow-flowered plant growing in dry places. The flowers grow one above the other on a tall spike. The botanical name is *Agrimonia eupatoria*; it belongs to the natural order Rosaceae, of the class Icosandria. The name is also given popularly to other plants, including hemp agrimony (*Eupatorium cannabinum*).



AGRIMONY
(*Agrimonia eupatoria*)

Agrippa, Herod. See Herod.

Agrippa, M. Vipsanius, a Roman general, the son-in-law and favourite of Augustus, who distinguished himself at the battle of Actium, and built the Pantheon of Rome. (63-12 B.C.).

Agrippina, the daughter of Vipsanius and the granddaughter of Augustus; married Germanicus. Banished from Rome by Tiberius, and d. in 33.

Agrippina, the daughter of Germanicus and the former, born at Cologne, and the mother of Nero. Her third husband was her uncle, the Emperor Claudian, whom she got to adopt her son, and then poisoned him, in order to place her son on the throne; but the latter, resenting her intolerable ascendancy, had her put to death in 59.

Agtelek (or *Aggtelek*), a village N.E. of Budapest, in Hungary, with vast stalactite caverns, some of them of great height.

Aguas Calientes, a high-lying inland state and trading town in Mexico, so named from hot springs there. Pop. 82,000.

Ague, an old-fashioned name for the alternate shivering and sweating.

Agulhas, Cape (i.e., the Needles), the most southerly point of Africa, 100 m. ESE. of the Cape, and, with the bank of the whole S. coast, dangerous to shipping.

Ahab, son of Omri and King of Israel; fond of splendour. Married Jezebel, daughter of the King of the Zidonians, and worshipped Baal, the worship of God being restored by Elijah after a three years' famine. Coveted Naboth's vineyard, as a result of which Jezebel secured a false accusation of blasphemy against Naboth and had him stoned to death. Was slain in battle at Ramoth-gilead.

Ahasuerus, the name of several kings of Persia mentioned in the Bible. One of them, mentioned in Ezra iv. 6, has been identified with Cambyse. Another, mentioned in Esther i and x, who repudiated his wife Vashti and married Esther, has been identified with Xerxes.

Ahaz, a King of Judah who first brought Judea under tribute to Assyria when he sought help against the kings of Damascus and Israel (2 Kings xvi and 2 Chron. xxviii).

Ahaziah: (1) eighth King of Israel (896-895 B.C.); son of Ahab and Jezebel. He was on the point of setting out against the Moabites, who had refused their yearly tribute, when he fell through a lattice at his palace. He appealed to the oracle at Baalzebub, but was rebuked by Elijah, who prophesied that he would not rise again from his bed. (2) The fifth King of Judah, an idolater who allied himself with Jehoram. Revolution broke out in Israel under the direction of Jehu and Elishah. Ahaziah was mortally wounded and died at Megiddo.

Ahimelech, Jewish high-priest at Nob; son of Ahitub and great-grandson of Eli. Deceived by David, Ahimelech succoured him when he fled from Saul, and gave him back the sword of Goliath in the presence of Doeg, who at Saul's command slew him and eighty-four other priests (1 Sam. xxi, xxii).

Ahuachapan, a town and coastal dept. of the Republic of Salvador, Central America. Pop. (town) 29,500.

Ahwaz, a town of SW. Iran (Persia) on the R. Karun. Pop. 30,000.

Ahmadnagar, a considerable Hindu town 122 m. E. of Bombay. Captured from the Mahrattas in 1803 by Gen. Wellesley and ceded to the British in 1817. Pop. 50,000.

U.E.

Ahmed Shah, son of Sammaun Khan, the founder of the Afghan dynasty and the Afghan power; after the murder of Nadir Shah elected King of the Duranis in Afghanistan, in 1747; invaded India in 1748, and in 1756 captured Delhi and installed a viceroy. His viceroy was displaced and in a further campaign he utterly defeated the Mahrattas at Panipat. (1724-1773).

Ahmedabad, the chief town of Gujarat, in the Bombay Presidency, a populous city and of great splendour in the last century of which gorgeous relics remain. Pop. 314,000.

Aid, in the feudal system a payment or tax made by tenants of land to the king. Such tax was taken when the king's eldest son was knighted; when his eldest daughter was married; and when he himself stood in need of ransom. It was abolished in the reign of Charles I. A grant-in-aid is a payment made by the Imperial Government, as, e.g., by way of subsidy to a depressed industry, or to a Colonial government to meet expenditure beyond the capacity of the local revenue.

Aidan, St., Bishop of Lindisfarne, founder of the monastery there and the apostle of Northumbria, sent thither from Iona on the invitation of King Oswald in 635. (d. 651).

Aide-de-Camp, in the army a staff officer, responsible for conveying the commands of the general or chief of staff to the officers concerned. A number of aides-de-camp are attached to the king's household.

Aigues Mortes, a port in the French dept. of Gard, 3 m. from the Mediterranean with which it is connected by canal. St. Louis sailed from here in 1248 and 1270 for the Crusades. Pop. 4,500.

Aiguillon, Duc d', corrupt minister of France, previously under trial for official plunder of money, which was quashed at the court of Louis XV. He was the tool of Mme. Du Barry. (1720-1782).

Ailanthus, a genus of eight Asiatic natural order Simarubaceae. *A. glandulosa*, the "tree of heaven," was introduced to England from China in 1751. It is deciduous and is notable for its foliage, the leaves being somewhat palm like, and its decorative fruits. Other species are useful timber trees in Australia.

Ailsa Craig, a rocky islet of Ayrshire, Scotland, 10 m. NW. of Girvan and 2 m. in circumference, rising abruptly out of the sea at the mouth of the Firth of Clyde to a height of 1,097 ft.

Ain, a French river, has its source in the Jura Mts., and falls into the Rhone. Also a dept. of France between the Rhone and Savoy. Pop. 317,000. Cap. Bourg.

Ainley, Henry, English actor. Born at Leeds, he worked in a bank before going on the stage, and made his first London appearance in 1900 at the Lyceum. He won a name chiefly for his acting in melodramas and in Shakespeare. (1879-).

Ainos, a primitive, thick-set, hairy race, now confined to Yezo and the islands N. of Japan, aboriginal to that quarter of the globe, and fast dying out. They are animal-worshippers and frequently set up on the outskirts of their villages curious cleft poles with the head of an animal in the fork. (See illustration on right.)

Ainsworth, William Harrison, See Ainos

historical novelist, the author, amongst other



popular books, of *Rookwood*, *Jack Sheppard*, *Old St. Paul's*, *The Tower of London*, etc. (1805-1882).

Ain-Tab (Turkish, Gaziyaintap), town in Turkey in Asia Minor, 60 m. NE. of Aleppo; trade in hides, leather and cotton. Pop. 40,000.

Aintree, a village in Lancashire, 6 m. from Liverpool. It has a race-course on which the Grand National is run.

Air, the gaseous envelope which surrounds the earth, is a mixture of several gases, the chief of which are nitrogen (78%), oxygen (21%), argon and its congeners (about 1%), and carbon dioxide (0.03-0.04%); the proportions are given by volume. Oxygen is the gas which supports life and combustion and causes rusting; the nitrogen acts as a diluent and is now the chief source of nitrogenous compounds (see *Ammonia*); the carbon dioxide is the principal food of green plants, its removal by the latter being counterbalanced by the respiration of animals and plants and the combustion of coal, coke, petrol and other carbonaceous fuels; argon and neon are extracted from the air for use in electric filament and discharge lamps.

Airbrake, a mechanism whereby the brakes on the wheels of the coaches in a railway train may be applied. The first airbrake was invented by George Westinghouse in 1869; modern Westinghouse brakes are automatic.

Air Council, consists of the President, who is Secretary of State for Air, the Vice-President, who is the Under-Secretary of State for Air, the Chief of Air Staff and Senior Air Member of the Council, the Air Member for Personnel, the Air Member for Supply and Organisation, the Air Member for Research and Development, and the Permanent Secretary of the Air Ministry. The Council was established by the Air Force (Constitution) Act of 1917, and is responsible for the control of the R.A.F. The Director and Committee controlling the Meteorological Office are appointed by the Air Council.

Aircraft-Carrier, an armed vessel built to carry aircraft and providing facilities for air operations while at sea. Battleships and cruisers equipped with catapults for launching aeroplanes are to be distinguished from aircraft-carriers proper.

Aird, Sir John, famous contracting engineer. With his father he was responsible for the erection of the Crystal Palace and for its removal from Hyde Park to Sydenham, and for numerous docks and railways all over the world. Also built the Assouan and Assiut dams on the Nile, and sat in Parliament from 1887-1905. (1833-1911).

Airdrie, a town in Lanarkshire, 11 m. E. of Glasgow, in a district rich in iron and coal; has cotton-mills, foundries, etc. Pop. 26,000.

Aire, a river of Yorkshire, England, a tributary of the R. Ouse; rises in the Pennines and flows through the Aire Gap; Leeds stands on its banks.

Airedale, a popular variety of terrier, said to be a cross between the Welsh terrier and the otter-hound; first bred in 1853. Larger than the original terrier, it has a hard, close, wiry coat of a rich tan and black, weighs from 40 to 45 lb. It has a short back, straight, sloping shoulders, deep chest and powerful jaws.

Air Engine, an engine in which air is heated and so expands, pushing the working piston along a cylinder. The air is sub-

sequently cooled and returns to its original volume. The practical difficulties of such engines are very great, and with the advent of the internal-combustion engine and cheap electrical power they have become of little general importance. They possess, however, the advantage of being comparatively fool-proof, and so are occasionally used for pumping, etc., in cases where skilled attention is unobtainable or too expensive.

Air Force, Royal, was constituted by Act of Parliament in 1917 by amalgamating the Royal Flying Corps with the Royal Naval Air Service. In 1918 this amalgamated force was organised and controlled by a newly-created Air Ministry. The R.A.F. consists of the Royal Air Force proper, the Air Force Reserve, the Auxiliary Air Force Reserve and the Territorial Air Force. The Air Council controls matters relating to the R.A.F. and the defence of the realm by air.

The R.A.F. is organised into the Air Defence of Great Britain and the Overseas Commands; the former comprises five Commands—namely, Western Area, Central Area, Fighting Area No. 1, Air Defence Group and Inland Area—together with the separate home commands at Halton and Cranwell and the Coastal Area Command. The Overseas Commands are the Middle East, India, Iraq, Aden, the Mediterranean and the Far East.

The R.A.F. possesses four main classes of aircraft: bombers, fighters, bomber-transport machines and flying-boats. The R.A.F., besides having its own use as a fighting unit, co-operates with the Army and Navy.

Air Mail. See *Aviation*, *Civil*.

Air Ministry, The. See *Air Council*.

Airport, an aerodrome used for the purposes of civil aviation, in particular for international air traffic which demands the presence of customs facilities. See also *Aerodrome*.

Air Pumps, are devices for exhausting air from vessels, or for driving air through vessels at increased pressure; in the latter sense they are usually called air blowers. The earliest pump was invented in 1650 by Otto von Guericke, Burgomaster of Magdeburg (Saxony), and improvements were soon made by the Hon. Robert Boyle and Robert Hooke, who constructed the first efficient "pneumatical engine."

Air-Raid Precautions (commonly referred to by the initial letters, A.R.P.). Owing to the development of aerial warfare, attention has been more and more focused on protection for towns and the civilian population against explosive, incendiary and gas attack from the air in any future war. Most European countries have been experimenting and developing precautionary measures. In England, where the population is concentrated in large urban centres and aerial attack might prove particularly disastrous, an Air Raid Precautions Bill received the Royal Assent on Dec. 22, 1937.

Plans for protection are far-reaching and include the provision of bomb-proof shelters, special fire-fighting apparatus and squads to deal with the effects of incendiary attack, the provision of gas-masks for the whole population (by Dec. 1, 1937, a special factory has turned out 20,000,000 masks), instructions to the general populace for rendering rooms gas-proof, and decontamination squads for ridding the streets of such gases as mustard gas, which are liable to hang about for periods.

London, with its population of 8,000,000 (one-fifth of the population of the British Isles), presents a special problem. In the event of a future war a barrage of wire



AIREDALE

supported by balloons will be used as in the Great War, and plans have been made for at least a partial evacuation of the population. Sound-detectors will be used to discover the presence of enemy aeroplanes immediately they cross the coast, and anti-aircraft guns and fighter aeroplanes will challenge any invaders.

Experiments in "blacking-out" districts have been made in order to bring a closer reality of the problem to civilians. All lights are extinguished and squads of trained men are given experience in fire-fighting and in gas-decontamination as though a raid had actually taken place.

Air Raids, attacks from the air upon the ground or, more especially, upon the civilian population in towns. During the Great War the first Zeppelin raid on England was over Norfolk on January 19, 1915. Raids followed over the Tyne, over Southend and in May over London. Up to 1917, 52 Zeppelin raids killed and wounded 1,800 people, including military. With increased defences against Zeppelins, aeroplane raids proved more effective, and the daylight raid over London on June 13, 1917, killed 137. Aeroplane raids at night continued at frequent intervals, the casualties amounting to 2,500 killed and wounded. Air raids and air attacks have been extensively used as an instrument of modern warfare in Abyssinia, Spain and China.

Airship, a type of lighter-than-air from the free balloon. There are three types: non-rigid, semi-rigid and rigid. The non-rigid or dirigible balloon consists of a gas-filled envelope from which is suspended a car with engine to propel it. Experiments in Great Britain before the Great War were mainly with this type. One was built in 1916, 262 ft. long, 57 ft. wide, and with two 240-h.p. engines, was capable of 58 m.p.h.

The semi-rigid have a long, rigid keel attached to the bottom of the envelope, thus permitting a greater load. The largest and with the greatest carrying power are the rigid, constructed of a framework of light metal, such as an alloy of aluminium, with a light cover, inside which the gas is carried in a series of chambers. Count Zeppelin completed the first in 1900.

The English airship R.100 crossed the Atlantic and back, but it is now dismantled, following the disaster to its sister-ship, R.101, which crashed in flames in 1930, and airship construction has been abandoned in England.

It is the opinion of many authorities that airships are impracticable, although this was somewhat discounted by the commercial success on a regular Friedrichshafen-New York crossing of the German *Graf Zeppelin* and the *Hindenburg*. The disaster to the *Hindenburg* in 1937 resulted in the withdrawal of the German trans-Atlantic airship service for a time. Since then an agreement has been discussed between Germany and the U.S.A. for a supply of the non-inflammable gas helium (produced almost solely in the U.S.A.) for commercial airships.

Airy, Sir George Biddell, English astronomer. Professor of astronomy and mathematics at Cambridge, and Astronomer Royal 1836-1881. He was the first to enunciate the complete theory of the rainbow and helped in the preparation of a catalogue of stars. President of the British Association in 1851. (1801-1892).

Aisle, in a church or other building a gangway between seats, especially that on each side of the nave. In architecture it may also mean any long narrow space separated from the body of a building by a column of arches or piers.

Aisne, a French river which, after a course of 150 m., falls into the Oise near Compiègne. Also a dept. in the N. of

France. Area 2,866 sq. m. Pop. 485,000. Capital Laon. It was the scene of three battles in the Great War, in the autumn of 1914, after the Battle of the Marne, in the spring of 1917, when Nivelle vainly attacked the "Hindenburg Line," and in the summer of 1918, when the Germans were making their final advance.

Aisse, Mile., a Circassienne brought to France about 1700; left letters on French society in the 18th Century. (d. 1733).

Aix, a town, the ancient capital of Provence, 20 m. N. of Marseilles, the seat of an archbishopric and a university; founded by the Romans 123 B.C.; near it Marius defeated the Teutons. Pop. 38,000.

Aix, Isle of, a fortified French island in the Atlantic, at the mouth of the Charente.

Aix-la-Chapelle. See *Aachen*.

Aix-les-Bains, a small town near Chambéry, in the dept. of Savoy, and much frequented by invalids for its waters and baths. Pop. 9,000.

Ajaccio, the capital of Corsica, the birthplace of the Bonaparte family, of Cardinal Fesch, and Bacciocchi. Pop. 24,000.

Ajaigarh, a salute state in Bundelkhand, Central India Agency. Pop. 85,000. Also a hill fort in the state.

Ajalon, Valley of, in Palestine, scene of a battle between Joshua and five Canaanitish kings, during which the sun and moon stood still at the prayer of Joshua, to enable him to finish his victory (Josh. x). Allotted in the first place to the tribe of Dan. It is the modern Yalo.

Ajanta, the name of a range of hills in Hyderabad and Berar, and a village in Hyderabad near which have been discovered a series of caves with unparalleled examples of Buddhist fresco-painting, "the most perfect and complete Buddhist Caves in India, without any admixture of Brahmanism."

Ajax, the name of two Greek heroes in the Trojan war, and the synonym of a fiery and impetuous warrior: one, the son of Telamon of Salamis, who, on the death of Achilles, contended with Ulysses for his arms, but was defeated, in consequence of which he lost his reason and put an end to his life; the other, the son of Oileus, swift of foot, like Achilles, suffered shipwreck on his homeward voyage, as a judgment for an outrage he perpetrated on the person of Cassandra in the temple of Athena in Troy.

Ajmer, a city in the heart of Rajasthan, putana, capital of the province of Ajmer-Merwara; well built, and contains some famous edifices. Pop. 120,000.

Ajodhya, an ancient city of Oudh, 77 m. E. of Lucknow, once, on religious grounds, one of the largest and most magnificent cities of India, now in ruins; the modern town is an insignificant place, but has an annual fair, attended by often 600,000 pilgrims.

Akabah, a gulf between the Sinai Peninsula and Arabia, forming the N.E. inlet of the Red Sea. On the E. side is the town of Akabah, the sole sea outlet of the British mandated territory of Trans-Jordan.

Akbar (Jehal-ed-Din Mohammed), the great Mogul emperor of India, who, after a minority of a few years, assumed the reins of government at the age of eighteen, and in ten or twelve years had the whole of India N. of the Vindhya Mts. subject to his rule. He was wise in government as well as powerful in war, and one of the largest-minded rulers in history. (1542-1605).

Akenside, Mark, an English physician, who wrote, among other productions and pieces, the *Hymn to the*

Naiads and a poem of a didactic nature entitled the *Pleasures of Imagination* much quoted from at one time. (1721-1770).

Akh(e)naton, name adopted Amen-hotep IV.,

Pharaoh of the 18th dynasty, who tried to establish a monotheism—prohibiting all worship except of the sun-god, Aten. He removed the Egyptian capital from Thebes to Tel-el-Amarna. He is the Nefer-Khopru-Ra of the Amarna Tablets; his wife was Nefer-titi. His intolerance helped to defeat his ends; but he is the subject of the enthusiastic *Life and Times of Akhnaton*, 1910, by A. E. P. B. Weigall. He reigned 17 years, beginning about 1375 B.C.



AKH(E)NATON

Akhmim, a town in Egypt on the right bank of the Nile with relics of very early days and a cotton industry that is still famous. Pop. 28,000.

Akiba, Ben Joseph, a famous Jewish authority in the matter of Jewish tradition; flayed alive by the Romans for being concerned in a revolt in 135.

Akkad. See **Accadians**.

Akkas, a wandering race of negro dwarfs in Central Africa, with large heads and hairy bodies, who live by hunting.

Akkerman. See **Cetatea Alba**.

Akmolinsk, province of Kazak S.S.R., Russia. Also the capital of the province. Pop. (town) 10,000.

Akron, a town in Ohio, U.S.A., capital of Summit Co., Ohio, and on the Ohio Canal, seat of manufactures and centre of traffic. Pop. 255,000.

Akyab, a district (on the N.E. of the Bay of Bengal) and town, in the Arakan division of Burma, the town since 1826 having been the seat of government of Arakan. Pop. (town) 36,000; (district) 480,000. Area (district) 5,136 sq. m.

Alabama, one of the United States of America, traversed by a river of the name, a little larger than England, highly fertile and a great cotton-growing country, and abounding in iron, coal and marble; bounded on the W. by the Mississippi, on the N. by Tennessee, and the E. by Georgia. First explored 1540; admitted to the Union 1819; in the civil war as a Confederate State sent almost the whole white population to fight. Cap. Montgomery. Pop. 2,646,000.

Alabama, The, a war vessel built at Birkenhead for the Confederates in the American Civil War, for the devastation done by which, according to the decision of a court of arbitration, the English Government had to pay heavy damages of three millions of money.

Alabaster is of two kinds. In the past the alabaster used for carving was a marble-like carbonate of lime. That of to-day is a softer sulphate of lime, and looks something like white marble. This type is used in Italy a great deal for small carvings, such as statuettes.

Alagoas, a maritime state of Brazil, S.W. of Pernambuco, of which it was formerly a part, with tropical products as well as fine timber and dye-woods. Cap. Maceio. Pop. (estimated) 1,310,000. Also a town, formerly capital of the same province. Pop. 5,050.

Alais (*Ales*), a town at the foot of the Cevennes, in the dept. of Gard, France, in the centre of a mining district; once the stronghold of French Protestantism. Pop. 36,000.

Aland Isles, a group of 300 small islands in the Gulf of Bothnia, of which 80 are inhabited; fortified by Russia; restored to Sweden 1919. Used by the Germans in the Great War as a naval base. Now part of the Finnish Republic. Pop. 27,000.

Alans, a barbarous horde from the East, who invaded W. Europe in the 4th and 5th Centuries, but were partly exterminated and partly ousted by the Visigoths.

Alarcon y Mendoza, Juan Ruiz de, a Spanish dramatist born in Mexico, who, though depreciated by his contemporaries, ranks among the foremost dramatic geniuses of Spain; he was a humpback and was very unpopular; d. in 1639.

Alaric I., King of the Visigoths, a man of noble birth, who at the end of the 4th and beginning of the 5th Centuries ravaged Greece, invaded Italy, and took and pillaged Rome in 410; died at Cosenza, in Calabria, the same year, at the early age of thirty-four.

Alaric II., King of the Visigoths, whose dominions included all Gaul and most of Spain; defeated by the Franks at Poitiers, and killed by the hand of Clovis, their king, in 507.

Ala-Shan, a sparsely-inhabited, almost barren province of Mongolia, in the Gobi Desert, bounded E. by the Ala-shan Mts., which reach 11,000 ft.

Alaska, an immense territory belonging to the U.S.A. by purchase from Russia, extending from the W. of Canada to Behring Strait; it was the scene of the Klondyke Gold Rush of 1896, prior to which the inhabitants, chiefly Indians and Eskimos, lived by hunting and fishing and by the export of salmon. Chief industries: salmon-fishing, mining, furs, sealing (the fur seals being protected by the U.S.A. on the Pribilof Is.). Area 490,880 sq. m. Pop. 59,000, rather more than half being whites and the rest mainly Eskimos and Indians. Cap. Juneau.

Alasio, a fishing town and seaside resort of Liguria, on the Italian Riviera, province of Genoa. The surrounding hills are thickly wooded. Pop. 6,000.

Alava, the southernmost of the three Basque provinces of Spain, largest, but least populous; rich in minerals, and fertile in soil. Area 1,180 sq. m. Pop. 90,000. Cap. Vitoria.

Alb, a long linen robe worn by officiating priests; formerly it was also used by those newly baptised, whence the first Sunday after Easter, on which they appeared in it, was called *Dominica in albis*—i.e., literally, the Lord's day in Albs.

13TH-CENTURY
ALB

Albacete, a province in Spain, with a capital of the same name, 140 m. S.E. of Madrid. Pop. (town) 42,000; (province) 325,000.

Alba Longa, a city of Latium older than Rome, and reputed to have been founded by Ascanius, son of Aeneas. Destroyed by Tullus Hostilius.

Alban, St., the first martyr in Britain to the Christian faith in 303; represented in art as carrying his head between his hands, having been beheaded. Supposedly put to death at St. Albans, where a church was built to commemorate him and a monastery subsequently added.

Albani, Mme., adopted name of Marie Emma Lafenestre, an operatic soprano singer, of French-Canadian descent, born in Chambly, Quebec; made her opera debut at Messina at the age of 18. From 1872 to 1896 appeared regularly at Covent Garden, and in 1911 made her farewell appearance at the London Albert Hall. Made a D.L.E. in 1925. (1852-1930).

Albania, a democratic monarchy in the Balkans with its coast on the Adriatic and an area of 20,000 sq. m., comprising the former Turkish province of Scutari and parts of Kossovo and Yanina. In Nov. 1912, during the 1st Balkan War, Ismail Kemal and 80 Albanian chiefs proclaimed the independence of Albania, and this was recognised in 1913 by the Treaty of London. The country was invaded by troops on both sides during the Great War. In 1917 Italy occupied the whole country and established a protectorate. An Albanian government was set up, however. Albania became a member of the League of Nations in 1920. A Republic was declared in 1925 and Ahmed Zogu became President. In 1928 Zogu became the first king, as Zog I. Cap. Tirana. Pop. 1,003,000.

Albano, lake of, a small crater-like lake, 15 m. SE. of Rome, near which rises the Castel Gaudolfo, where the Pope has a villa. The lake lies at the foot of Mt. Albano, the highest point in the Alban Hills. Near the lake, and on the ancient Apian Way, is a town of the same name. Pop. 8,000.

Albany, the old Celtic name for the Scottish highlands. Also famous bachelor chambers off Piccadilly, where Gladstone and Macaulay, among others, were residents.

Albany, a town in W. Australia, on King George Sound, 261 m. SE. of Perth, a port of call for Australian liners. Pop. 4,000. Also the capital of the State of New York, on the Hudson R., a well-appointed city; seat of justice for the State, with a large trade and numerous manufactures. Pop. 127,000. Other towns of the same name are (1) the county town of Dougherty Co., Georgia, U.S.A. Pop. 14,500; (2) county town of Lynn Co., Oregon, U.S.A. Pop. 4,800; (3) county town of Gentry Co., Missouri, U.S.A. Pop. 3,000.

Albany, river of Canada, 450 m. long, rising in Lake St. Joseph and flowing into James Bay. Fort Albany and Albany I. are at the mouth.

Albany, Louise Maximilienne Caroline, Countess of, daughter of Prince Adolphus of Stolberg, wife of the English Young Pretender, Prince Charles Stuart. The marriage was a failure and she fled, being released in 1788 by the death of Charles. She visited England in the company of the Italian poet Alfieri, to whom she was rumoured to be married. (1752-1824).

Albany, Dukedom of, earliest dukedom in Scotland, conferred 1398 under Robert III. (christened John) on his brother Robert Stewart (c. 1340-1420), whose son and successor, Murdoch, was put to death, with his son Walter, by James I., 1425. Title conferred by James II., c. 1456, on his second son, Alexander (c. 1454-c. 1485), and extinguished in Alexander's son John, 1536. Arthur, second son of James V. (b. and d. 1541), styled Duke of Albany at birth. Lord Darnley, husband of Queen Mary, made Duke of Albany 1565. Before his accession to the throne in 1567 James VI. was Duke of Albany; his son Charles also, from 1600 till he became Charles I., 1625. James II. of Great Britain was Duke of Albany 1660-1685. The title was included with the dukedoms of York created 1717, 1760 and 1784. Leopold, youngest son of Queen Victoria, was

made Duke of Albany in 1881 (1853-1884); succeeded by his posthumous son Leopold, Duke of Saxe-Coburg and Gotha from 1900, who became an alien enemy and lost title 1918.

Albatross, the largest and strongest of sea-birds; ranges over the

southern seas, often seen far from land. It is a white bird of the Diomedidae family, which is included in the Procellari-

ALBATROSS

iformes or Petrel tribe, and has a powerful hooked beak and webbed feet. Three genera and fifteen species are recognised, the largest being the Wandering Albatross (*Diomedea exulans*), the wing-spread of which is as much as 11 ft. It is a superstition among sailors that it is disastrous to shoot one (*cf.* Coleridge's *Ancient Mariner*).

Albeniz, Isaac, Spanish composer and pianist, born in Gerona. Composed several operas and many great piano-forte pieces. (1860-1909).

Alberoni, Giulio, an Italian of humble birth, became a Cardinal of the Church and Prime Minister to Philip V. of Spain, wrought hard to restore Spain to its ancient grandeur, was defeated in his project by the quadruple alliance of England, France, Austria, and Holland, and obliged to retire. (1661-1732).

Albert, a French village in the dept. of the Somme on the Ancre, which was used as a base by British troops in the Great War.

Albert, King of the Belgians; born in Philip Count of Flanders, and nephew of King Leopold II.; became Count of Flanders in 1905 on the death of his father, and after travelling succeeded to the throne in 1909. A popular monarch, the events of 1914 established his reputation in the eyes of the world. He took command of the Belgian forces after the German invasion, and in 1918 led an offensive of the Allies which ended in the recapture of the Belgian coast. He was killed through a fall while mountaineering in the Meuse Valley. (1875-1934).

Albert I., emperor of Germany from 1298 to 1308, eldest son of Rudolf of Hapsburg, "a most clutching, strong-fisted, dreadfully hungry, tough, and unbeautiful man, whom his nephew at last had to assassinate, and did assassinate, as he crossed the river Reuss with him in a boat, May 1, 1308."

Albert II., a successor, "who got three crowns—Hungary, Bohemia, and the Imperial—in one year, and we hope a fourth," says the old historian, "which was a heavenly and eternal one," for he died the next year, 1439.

Albert, Margrave of Brandenburg, surname "the Bear," founder of the Margravate of Brandenburg and of the greatness of Prussia; distinguished as a soldier and for his services in the interests of Christianity and civilisation. (1100-1170).

Albert, Prince, second son of Ernest, Duke of Saxe-Coburg-Gotha; born Aug. 26, 1819, he became the consort of Queen Victoria in 1840, and from his prudence and tact was held in high honour by the whole community; he died at Windsor of typhoid fever in 1861. (1819-1861).

Albert Hall, a large circular hall in Kensington, London, used for oratorios, concerts, public meetings, etc., and capable of holding 10,000 persons. It stands opposite the Albert Memorial to the Prince Consort, and its building was completed in 1871. Possesses one of the greatest organs in the world.

Albert Medal, a medal of gold (1st class) and of bronze (2nd class) instituted in 1886 by Queen Victoria in memory of the Prince Consort, awarded to civilians for gallantry in saving life at sea, though since 1877 it has been awarded for similar gallantry on land. The ribbon is of blue and white vertical stripes (for bravery at sea) and crimson and white stripes (for bravery on land). For bravery at sea an anchor is intertwined with the monogram V.A.



ALBERT MEDAL
FOR GALLANTRY
AT SEA

Albert Memorial, a monument in memory of Albert the Prince Consort, husband of Queen Victoria, erected in Kensington Gardens. It was designed by Sir Gilbert Scott.

Albert (Albert Nyanza), a lake in Equatorial Africa, forming the boundary between the Belgian Congo and Uganda Protectorate, discovered by Sir Samuel Baker in 1864. 110 m. long by 25 broad, and 2,500 ft. above sea-level, in the Great Rift Valley. The White Nile has its source in this lake.

Albert, the last Grandmaster of the Teutonic knights, who took zealously to Protestantism and came under the influence of Luther, who advised him to declare himself Duke of Prussia, under the wing of Sigismund of Poland. In so doing he became founder of the Prussian State. (1490-1568).

Alberta, a fertile prairie province of W. Canada, with large forests, on the E. slope of the Rocky Mountains, the S. abounding in cattle ranches, and the mountainous districts in minerals; produces wheat and coal. Bounded by British Columbia on the W., Saskatchewan on the E., and the U.S.A. on the S. Established as a province in 1905. Area 255,285 sq. m. Pop. 731,605. Cap. Edmonton.

Albertus Magnus, one of the scholastic philosophers and theologians of the Middle Ages, teacher of Thomas Aquinas, supreme in knowledge of the arts and sciences of the time, and regarded by his contemporaries in consequence as a sorcerer. (1190-1280).

Albertville, (1) a town in the dept. of Savoie, France, near Chambéry. Chief among its many manufactures is pottery. Pop. 5,500. (2) A settlement in the Belgian Congo on Lake Tanganyika. It is the terminus of the Congo Railway.

Albi, a town and archbishopric of some Tarn in the S. of France, 22 m. NE. of Toulouse. Pop. 29,000.

Albigenses, a religious sect, odious as which sprang up about Albi, in the S. of France, in the 12th Century, against which Pope Innocent III. proclaimed a crusade, which was carried on by Simon de Montfort in the 13th Century, and by the Inquisition afterwards, to their utter annihilation.

Alboin, King of the Lombards in the 6th Century, from 561 to 573; invaded Italy as far as the Tiber, and set up his capital in Pavia; incurred the resentment of his wife, who had him assassinated for forcing her to drink wine out of the skull of her father.

Alboni, Marietta, a former famous Italian operatic (contralto) singer, a pupil of Rossini; appeared with great success in many capitals. (1823-1894).

Albuera, a Spanish village 12 m. SE. of Badajoz, scene of a victory (May 16, 1811) of General Beresford over Marshal Soult.

Albufera, a lake on the coast of Valencia, Spain, 7 m. S. of Valencia, near which Marshal Suchet gained a victory over the English in 1812.

Albumins, or proteins, are colourless, tasteless and usually amorphous (i.e., non-crystalline) substances, forming essential constituents of plants and animals. One of the commonest is white of egg or *egg albumin*—which differs from most of its class in being crystalline. With water, albumins form colloidal solutions (see *Colloids*), and on heating such solutions the albumins coagulate. Coagulation may also be brought about by the addition of alcohol. The elements carbon, hydrogen, oxygen and nitrogen are present in all albumins, while some contain sulphur and phosphorus as well. In the body they provide for growth and repair. Their structure is extremely complicated and has not yet been elucidated.

Albuquerque, the largest city of New Mexico, U.S.A., on the Rio Grande; an important railway junction and centre of a timber and agricultural district. Pop. 26,000.

Albuquerque, Alfonso d', a celebrated Portuguese patriot and navigator, the founder of the Portuguese power in India, who, after securing a footing in India for Portugal by the capture of Goa, headed a number of expeditions to Malacca, the Malabar coast and Aden. He was recalled, but died at sea and was buried at Goa. (1453-1515).

Alburnum, sap-wood, the part of the tree lying immediately under the bark and outside the heart of the tree, up which the sap rises.

Albury, a town in New South Wales, Australia, the centre of a wine-growing district on the R. Murray. It is on the banks of the R. Murray, 386 m. by rail from Sydney. Pop. 10,542.

Alcala de Henares, a town in the province of Madrid, the birthplace of Cervantes, long the seat of a famous university founded by Cardinal Ximenes, which was removed to Madrid in 1836. Pop. 12,000.

Alcamenes, a distinguished Greek sculptor, chiefly known for his statues of Hephestus and Aphrodite (5th Century B.C.).

Alcamo, a town of Sicily in a fertile district where olives, lemons and oranges are produced, once a Saracen town. Pop. 58,000.

Alcantara, a town of Spain, on the Tagus, near Portugal, with a bridge of six arches, 670 ft. long and 210 ft. high, built in honour of Trajan in 104. The Order of Alcantara, a religious and military order, was established in 1176 here, for defence against the Moors, and was suppressed as such in 1835. Pop. 3,000.

Alcazar, a town of Spain in the province of Ciudad Real, with an old Moorish castle. Pop. 16,000.

Alcedo, a genus of birds of the water kingfisher sub-family (Alcedinæ), to which belongs the English Common Kingfisher (*A. ispida*) (q.v.).

Alcester, a market town in Warwickshire, England, at the confluence of the rivers Aino and Arrow. Pop. 2,196.

Alcester, Frederick Beauchamp Paget Seymour, Baron, English admiral who served in the Crimean war, and who commanded the English fleet which bombarded Alexandria in 1882, for which he was made a baron. (1821-1895).

Alcestis, the wife of Admetus, who saved her husband. Hercules descended to the lower world and brought her back. She is the subject of one of the tragedies of Euripides.

Alchemy, the early analysis of substances which has in modern times developed into chemistry, and which aimed chiefly at the discovery of the philosopher's stone, of a universal solvent, and of the elixir of life.

Alcibiades, an Athenian of high birth, possessed of a handsome person, brilliant abilities and great wealth, but of a wayward temper and depraved, whom Socrates tried hard to win over to virtue, but failed. He involved his country in a rash expedition against Sicily, served and betrayed it by turns in the Peloponnesian war, and died by assassination in exile. (450-404 B.C.).

Alcidae, the name of the family of birds, which includes the Auks, Pullins, Razor-bills, Guillemots, etc.

Alcira, a walled town in Spain in the province of Valencia. Pop. 22,000.

Alcmene, the wife of Amphitryon and the mother of Hercules.

Alcock, John, an eminent ecclesiastic of the reign of Edward IV., founder of Jesus College, Cambridge, and distinguished for his love of learning and learned men; d. 1509.

Alcock, Sir John William, with Sir A. W. Brown made the first

trans-Atlantic aeroplane flight from Newfoundland to Clifden, Ireland, in 16 hrs. on June 14, 1919, a feat for which he was knighted. During the Great War he had been taken prisoner by the Turks when in the Royal Naval Air Service. He died as a result of a flying accident six months after the Atlantic crossing. (1892-1919).

Alcohol, an Arabic word formerly applied to the substances (lead sulphide and antimony sulphide) used to blacken the eyelids and eyelashes (modern kohl), but now used to denote several groups of carbon compounds, and, in particular, spirit of wine or ethyl alcohol. Its last significance was given to it, quite arbitrarily, by Paracelsus (1493-1541).

The simplest alcohols are of the general formula $C_nH_{2n+1}OH$, where n is a whole number; the first members are methyl alcohol or methanol (wood spirit), ethyl alcohol or ethanol (ordinary alcohol), propyl alcohol, or propanol, butyl alcohol or butanol and amyl alcohol or pentanol, while succeeding members are named according to the number of carbon atoms in them—hexanol, heptanol, etc.

Methanol is a colourless, volatile, inflammable liquid made by the distillation of wood, but more frequently synthesised by passing a mixture of carbon monoxide and hydrogen over a heated catalyst (oxides of zinc and chromium). It is very poisonous, and is used for denaturing ordinary alcohol—*i.e.*, for rendering it unfit for human consumption.

Ethyl alcohol or plain "alcohol" is obtained by the fermentation of sugar (as in the preparation of wines) or of starch (as in the industrial process). Like methanol, it is a colourless, volatile liquid, burning with a blue and very hot flame, but its poisonous character is much less marked. Pure or "absolute" alcohol is,

however, very toxic, and even when diluted it rapidly causes intoxication. It is the basis of all intoxicating drinks.

Methylated spirit is ethyl alcohol which has been made non-potable by the admixture of methanol, pyridine, a violet dye, etc.; another variety is less adulterated and is suitable for many industrial processes. Glycerol, a sweet, colourless and somewhat syrupy liquid, is used as an anti-freezing liquid in motor-car radiators. Glycerol or glycerine is more syrupy than glycol, and is obtained as a by-product in the manufacture of soap. It is used as an "anti-freeze" and in a large number of other ways—*e.g.*, in making nitroglycerine and dynamite.

Alcott, Louisa May, American authoress, who acted as a nurse to the wounded during the Civil War; her works, of which *Little Women* is most widely known, were addressed to the young. (1832-1888).

Alcoy, a town in Spain in the province of Alicante; staple manufacture, paper. Pop. 36,000.

Alcuin, a learned Englishman, born at the Cathedral school there. Invited by Charlemagne to introduce scholarly culture into the Frankish empire and establish libraries and schools of learning, he settled on the continent and eventually became Abbot of St. Martin's at Tours. Wrote homilies, letters, a number of lives of saints, etc. (735-804).

Alcyone, daughter of Æolus, who threw herself into the sea after her husband, who had perished in shipwreck, and was changed into the kingfisher.

Aldan, the name of a plateau and of a river in the S. of the Yakutsk S.S.R. in Asiatic Russia. The river is a tributary of the Lena, over 1,000 m. long, and useful for navigation.

Aldebaran, a conspicuous star of first magnitude in constellation Taurus; a "giant" of diameter 34 million miles and composed of material of very low density.

Aldehydes, a family of organic substances obtained by the oxidation of different alcohols. *Formaldehyde* is used as an antiseptic in the solution known as formalin. *Acetaldehyde* is a colourless liquid with an unpleasant smell, which polymerises to give *Paraldehyde*, which is used in medicine as a soporific.

Alder, or alnus, a group of trees of the Birch. The common or black alder, *Alnus glutinosa*, is common in Britain, and grows best in damp places. It will reach 50 ft. in height, has oval leaves with serrated edges, and bears male and female catkins on the same tree.

Alderley Edge, urban district of m. SW. of Stockport, a residential district for Manchester. Pop. 3,000.

Alderman, in early English history a title given to Governors and Chiefs. Later earldoms were conferred on the holders of the office, and the name was applied to heads of Guilds and such bodies. By the Municipal Corporations Act of 1835, aldermen became members of a Municipal Council and were elected by Councillors to serve for six years, one half retiring every three years.

The City of London Corporation was excluded from the Act and the Courts of 26 aldermen elected by the freemen of the Wards except in the case of one for Southwark, chosen by the aldermen. The Local Government Act of 1933 provides that one-half of the number of the senior aldermen of a County Council must retire in every third year, being the year in which County Councillors are elected.



SIR J. ALCOCK'S
AEROPLANE

Alderney, one of the Channel Islands, 3 or 4 m. long by 2 m. broad, celebrated for its breed of cows; separated from Cape de la Hague by the dangerous Race of Alderney. Pop. 1,500.

Aldersgate, an early gate of London in the NW. of the city. It is mentioned, 100 A.D., as *Ealdrodesgate*, and may have been named after someone of that name, although Stow believed it was named from its age. The gate was damaged in the Fire of London, but was restored, to be finally demolished in 1761.



ALDERSGATE

Aldershot, a permanent camp, established in 1855 for instruction in military manoeuvres, on a moorland in Hampshire, 35 m. SW. of London. It has become the largest of such camps in the United Kingdom and the village of Aldershot has become a town with a pop. of 35,000.

Aldgate, one of the gates of London, called Eastgate in Saxon times, and later Alegate. Excavations in 1908 established the fact that there had been a Roman gate here. It was rebuilt in the 12th Century, but finally demolished in 1761.

Aldine Editions, chiefly of the classics, issued from the press of Aldus Manutius in Venice and remarkable for the correctness of the text and the beauty and clearness of the printing.

Aldred, Bishop of Worcester in the reign of Edward the Confessor, made a pilgrimage to Jerusalem, became Archbishop of York, and crowned the last of the Saxon and the first of the Norman kings of England; d. 1069.

Aldus Manutius, or *Aldo Manuzio*, an Italian printer, born at Bassano, established a printing-office in Venice in 1488, issued the celebrated Aldine Editions of the classics, and invented the italic type. Some attribute this invention to his typesetter, Francesco de Bologna. (1447-1515).

Alekhine, *Alexander*, chess champion, born in Moscow of noble family; won world-championship from Capablanca, 1927, world's record score, San Remo, 1930; world's blindfold champion. (1892-).

Alemanni, a confederacy of tribes of the Rhine in the 3rd Century, and for long gave no small trouble to Rome, but whose incursions were arrested, first by Maximinus, and finally by Clovis in 496, who made them subject to the Franks, hence the modern names in French for Germany and the Germans.

Alemtejo, a southern province of Portugal; soil fertile to the E. Area 9,200 sq. m. Pop. 588,000. Cap. Evora.

Alençon, a French town in the dept. of Orne, 105 m. W. of Paris, once famous for its lace. Pop. 17,000.

Alençon, *Counts and Dukes of*, a title borne by several members of the house of Valois—*c.g.*, Charles of Valois, who fell at Crécy (1346); Jean, 4th Count and 1st Duke, who fell at Agincourt (1415).

Aleppo, a city in N. Syria, one of the greatest trading centres in the world. The Iraq oil pipe-line has one of its two termini here. In the Great War it became the final

ground of Turkish resistance to Allenby, who captured the town in the autumn of 1918. After the War the town and district were joined with Damascus to form the Syrian State under French Mandatory rule. Pop. 177,000.

Alesia, a strong place in the E. of Gaul, now known as *Alise-Sto-Reine*, in the dept. of Côte-d'Or, which, as situated on a hill and garrisoned by 80,000 Gauls, cost Caesar no small trouble to take. The surrender of Vercingetorix here in 52 B.C. marked the final conquest of Gaul.

Alessandria, a strongly fortified and stirring town on the Tonaro, capital of the province of the same name in Piedmont, N. Italy; the centre of eight railways. Pop. (town) 78,000; (province) 820,000. Area (province) 1,970 sq. m.

Aletsch Glacier, in Switzerland, the largest of the glaciers of the Alps, which descends round the S. of the Jungfrau into the valley of the Upper Rhône. *Aletschhorn*, a peak 13,700 ft. high, is in the Bernese Alps.

Aleutian Islands, a chain of volcanic islands, 150 in number, stretching over the N. Pacific from Alaska, in N. America, to Kamchatka, in Asia, with fishing and sealing industries which afford a living to about 1,000 people. Constitute part of Alaska, U.S.A.

Alexander Archipelago, a group of over 1,000 islands off the SW. coast of Alaska, U.S.A., rising boldly from the sea and wooded on top.

Alexander, King of the Hellenes (Greece), became king in 1917 on the dethronement of his father Constantine II. He died in 1920 as the result of a bite from a pet monkey, the government for that short period having been in the hands of Venizelos. (1893-1920).

Alexander, King of Yugoslavia, son of King Peter of Serbia. He took an active part in the Balkan War, and in the Great War led the Serbian forces. Appointed by his father regent of Serbia in 1914, in 1918 he became regent of the newly-formed state of Yugoslavia, and succeeded his father as king in 1921. He was assassinated by a Croat malcontent, together with M. Barthou, French Foreign Minister, in Marseilles in October, 1934. (1888-1934).

Alexander the Great, the king of Macedonia, son of Philip by Olympias, daughter of Neoptolemus, king of Epirus; born at Pella, 356 B.C.; had the philosopher Aristotle for tutor, and being instructed by him in all kinds of serviceable knowledge, ascended the throne on the death of his father, at the age of 20; after subduing Greece, had himself proclaimed generalissimo of the Greeks against the Persians, and 2 years later crossed the Hellespont, followed by 30,000 foot and 5,000 horse; with these conquered the army of Darius the Persian at Granicus in 334, and at Issus in 333; subdued the principal cities of Syria, overran Egypt, and crossing the Euphrates and Tigris, routed the Persians at Arbela; hurrying on farther, he swept everything before him, till the Macedonians refusing to advance, he returned to Babylon, where he suddenly fell ill of fever, and in eleven days died at the early age of 32. The inspiring idea of his life is defined to have been the



ALEXANDER THE GREAT

right of Greek intelligence to override and rule the merely glittering barbarity of the East. (356-323 B.C.).

Alexander III., pope, successor to Adrian IV., an able man, whose election Barbarossa at first opposed, but finally assented to; took the part of Thomas à Becket against Henry II. and canonised him, as also St. Bernard. Pope from 1159 to 1181.

Alexander VI., called Borgia from his mother, a Spaniard by birth, obtained the popehood by bribery in 1492 in succession to Innocent VIII., lived a licentious life and had several children, among others the celebrated Lucretia and the infamous Caesar Borgia; d. 1503, after a career of crime, not without suspicion of poison. In addition to Alexanders III. and VI., six of the name were popes; A. I., pope from 106 to 115; A. II., pope from 1061 to 1073; A. IV., pope from 1254 to 1261; A. V., pope from 1409 to 1410; A. VII., pope from 1655 to 1667; A. VIII., pope from 1689 to 1691.

Alexander I., first Prince of Bulgaria, a nephew of Alexander II. of Russia. At the outset he was in the hands of Russophiles; in 1881 he assumed absolute power. He restored the constitution in 1883, but after the Serbo-Bulgarian War, which resulted in the union of Bulgaria and E. Rumelia, he was seized and compelled to abdicate. He returned in triumph, but abdicated again in the same year. (1857-1893).

Alexander I., Emperor of Russia, son of Paul I., took part in the European strife against the encroachments of Napoleon, was present at the Battle of Austerlitz, fought the French at Pultusk and Eylau, was defeated at Friedland, had an interview with Napoleon at Tilsit in 1813, entered into a coalition with the other Powers against France, which ended in the capture of Paris and the abdication of Napoleon in 1814. Under his reign Russia rose into political importance in Europe. (1777-1825).

Alexander II., Emperor of Russia, son and successor of Nicholas I., fell heir to the throne while the siege of Sebastopol was going on; on the conclusion of a peace applied himself to reforms in the state and the consolidation and extension of the empire. His reign is distinguished by a ukase decreeing in 1861 the emancipation of the serfs, numbering 23 millions, by the extension of the empire in the Caucasus and Central Asia, and by the war with Turkey in the interest of the Slavs in 1877-1878. His later years were clouded with great anxiety, owing to the spread of Nihilism, and he was killed by a bomb thrown at him by a Nihilist. (1818-1881).

Alexander I., King of Serbia, became king under a regency upon the abdication of his father King Milan in 1889. Assassinated with his wife, Draga, in his palace by military conspirators. (1876-1903).

Alexander, Rt. Hon. Albert Victor, Secretary, Parliamentary Committee, Co-operative Congress, Chief Clerk for Higher Education, Somerset County Council, till 1920. M.P. (Co-op.), Hillsborough division of Sheffield, 1922-1931 and since 1935; Parliamentary Secretary, Board of Trade, 1924; Privy Councillor, 1929; 1st Lord of the Admiralty, 1929-1931. (1885-).

Alexander, Samuel, O.M., honorary Manchester University; born in New South Wales, Australia, but graduated at Oxford. By analogy with chemical science he arrives at his doctrine of Emergent Evolution, in his *Space, Time and Deity*, 1920. (1859-).

Alexander Nevsky, grand-^{duke} of Russia, conquered the Swedes, the Danes, and the Teutonic knights on the banks of the Neva, freed Russia from tribute to the Tartars; is one of the saints of the Russian Church. (1220-1263).

Alexander Severus, a Roman wise, virtuous and pious prince, conquered Artaxerxes, King of Persia, but in the course of an expedition against the Germans, fell a victim, with his mother, to an insurrection among his troops near Mainz. (205-235).

Alexandra, Queen, wife of Edward VII. and mother of King George V. She was a daughter of King Christian IX. of Denmark, and married in 1863. Her other children were Prince Albert Victor, who died 1892, Princess Louise, who married the 1st Duke of Fife, Princess Victoria, Princess Maud (Queen of Norway, wife of Haakon VII.) and Prince John. (1844-1925).

Alexandra Day, June 26, commemorates the arrival of Queen Alexandra in England, in 1862, the year prior to her marriage. Artificial roses are sold in the streets for the benefit of the hospitals.

Alexandra Palace, situated on Alexandra Park, in North London, opened in 1863, the year of the marriage of Queen Alexandra, queen of Edward VII. Threatened with demolition in recent years, it was finally bought for the public by various local councils. The N.E. tower has now been removed and a television mast installed in its place, all this part of the Palace being taken over by the British Broadcasting Corporation for television broadcasts.

Alexandretta, a coast town of N. Syria on the Alexandretta Gulf. It was founded by Alexander the Great in commemoration of his victory at the Issus, 333 B.C. Its importance is due to its proximity to the Belian Pass. At the close of the Great War it was occupied by British and French troops. Pop. 14,500.

Alexandria, the chief port of Egypt, founded by Alexander the Great in 332 B.C. at one time a great centre of learning, and in possession of the largest library of antique literature in the world, dispersed during the wars of Caesar and Theodosius; at one time a place of great commerce, but has very materially decayed since the opening of the Suez Canal. Pompey's Pillar, 88 ft. high, various Græco-Roman antiquities, and the catacombs are among the most interesting relics. Two obelisks known as Cleopatra's Needles, also survive, one standing now on the Thames embankment, the other in New York.

The modern city lies partly on a small peninsula and partly on the isthmus formed in more recent times by silted deposit. It has been the scene of much fighting in the past. It was captured by the French in 1798, recaptured by the British in 1801. In the British bombardment of 1882 much damage was done to the antiquities. Alexandria, from its intimate connection with both East and West, gave birth in early times to a speculative philosophy which drew its principles from Eastern as well as Western sources. Pop. 573,000.

Alexandria, (1) a town in Virginia, 7 m. S. of Washington, accessible to vessels or the largest size. Pop. 24,000. (2) A city of Louisiana, U.S.A., centre of a rice and cotton growing district. Pop. 23,000. (3) A thriving town in Scotland on the R. Leven, 3 m. N. of Dumbarton. Pop. 10,000. (4) Town of Rumania on the R. Vede. Pop. 19,000.

Alexandrian Codex, a Greek MS. of the Bible now in the British Museum and assigned to the year 450.

Alexandrine Verse, is which each line consists of twelve syllables (six iambs). It is usually written in rhymed couplets, and has been the chief measure used in French heroic poetry. It is said to have been first employed by Alexander of Paris in a poem on Alexander the Great.

Alexandropol. See Leninakhan.

Alexeieff, Michael Vassilievitch, Russian general. The son of a private, he began his military career in the Russo-Turkish War of 1877, and in the Russo-Japanese War of 1904 he acted as quartermaster-general and chief of staff to one of the Russian armies. Until the Czar took command of the Russian troops in the Great War Alexeieff was chief of staff to General Ivanoff, but he became the real leader of the army under the Czar, a position he held until the first revolution of 1917, when he was replaced by Brussiloff. On the ascendancy of Lenin and Trotsky he retired and endeavoured to organise a counter-revolution, dying before he could complete his plans. (1857-1913).

Alexis Michaelovitch, Czar of Russia, father of Peter the Great, the first Czar who acted on the policy of cultivating friendly relations with other European states. (1630-1677).

Alexius Comnenus, Emperor of the East, began life as a soldier, was a great favourite with the troops, who, in a period of anarchy, raised him to the throne at the time of the first crusade, when the empire was infested by Turks on the one hand and by Normans on the other, while the crusaders who passed through his territory proved more troublesome than either. He succeeded in holding the empire together in spite of these troubles, and to stave off the doom that impended all through his reign of thirty-seven years. (1048-1118).

Alfalfa. See Lucerne.

Alfieri, Vittorio, Count, an Italian dramatist, spent his youth in dissipation before turning to the dramatic art; on the success of *Cleopatra*, met at Florence with the Countess of Albuvi, the wife of Charles Edward Stuart, on whose death he married her; was at Paris when the Revolution broke out, and returned to Florence, where he died and was buried. Tragedy was his forte as a dramatist. (1749-1803).

Alfonsine Tables, astronomical tables drawn up at Toledo by order of Alfonso X. in 1252 to correct the anomalies in the Ptolemaic tables; they divided the year into 365 days, 5 hours, 49 minutes, 16 seconds.

Alfonso III., surnamed the Great, King of Asturias, ascended the throne in 866, fought against and gained numerous victories over the Moors; died in Zamora, 910.

Alfonso X., the Wise, or the Astronomer, King of Castile and a philosopher; after various successes over the Moors, first one son and then another rose against him and drove him from the throne; died at Seville two years later. His fame connects itself with the preparation of the Alfonsine Tables. (1226-1284).

Alfonso I., the "Conqueror," founder of the kingdom of Portugal, was the first king, originally only count, as his father before him; in that capacity took up arms against the Moors, and defeating them had himself proclaimed king on the field of battle. (1110-1185).

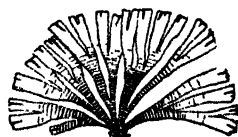
Alfonso XIII., of Spain, a post-humous son of Alfonso XII. He succeeded to the throne on the day of his birth, his mother, Queen Maria, acting as regent till 1906, in which year the king married Victoria Eugenie, niece of Edward VII., of England. There was an attempt to assassinate the king and queen on their wedding day. Outbreaks of a similar character occurred on several subsequent occasions, and finally after the fall and death of the Dictator, Primo de Rivera, the Republican movement made such headway that Alfonso fled the country, 1931, and has since lived in retirement in England. (1886-).

Alfred The Great, King of the W. Saxons, the most celebrated and the greatest of all the Saxon kings. His troubles were with the Danes, who at the time of his accession infested the whole country N. of the Thames; with these he fought nine battles with varied success, till after a lull of some years he was surprised by Guthrum, then king, in 878, and driven to seek refuge on the island of Athelney. Not long after this he left his retreat and engaged Guthrum at Edington, and after defeating him formed a treaty with him. After this Alfred devoted himself to legislation, the administration of government, and the encouragement of learning. It was he who in the creation of a fleet laid the first foundation of England's greatness as monarch of the deep. His literary works were translations of the *General History* of Orosius, the *Ecclesiastical History* of Bede, Boethius's *Consolations of Philosophy* and the *Cura Pastoralis* of Pope Gregory. (849-901).

Alfreton, a market town in Derbyshire, England. The manufactures include hosiery, hats and pottery, and there are stone and iron works. Pop. 21,200.

Algae, a subdivision of the *Thallophyta*, the lowest section of plant life,

comprising seaweeds, pond-scum and similar plants inhabiting fresh and salt water. They show great diversity of form, and are characterised by a general simplicity of structure and of reproductive processes. They are flowerless, stemless and cellular throughout. The other subdivision of the *Thallophyta* is the fungi, with which the algae have some characteristics in common.



ALGAE (A COMMON SEA-WEED)

Algarve, the most southerly province of Portugal, hilly, but traversed with rich valleys, which yield olives, vines, oranges, etc. Cape St. Vincent, off which the British fleet defeated the Spaniards in 1797, is in this province. Area, 1,937 sq. m. Pop. 300,000. Cap. Faro.

Algebra, a universal arithmetic of Arabian origin or Arabian transmission, in which symbols are employed to denote operations, and letters to represent number and quantity. The letters used in algebra stand for any number or quantity, and therefore the results contained in the algebraical expression must be equally true of all numbers.

Algieras, a town and port in Spain on the Bay of Gibraltar, 5 m. across the bay; for centuries a stronghold of the Moors, but taken from them by Alfonso IX. after a siege of twenty months. Algieras Bay was the scene of a battle between the French and English in 1801. Considerable damage was done by Spanish government warships in 1936 during the Spanish Civil War. Pop. 20,000.

Algeria, in the N. of Africa, belongs to France, stretches between Morocco on the W. and Libya and Tunis on the E., the country being divided into the Tell along the sea-coast, which is fertile, the Atlas Highlands overlooking it on the S., on the southern slopes of which are marshy lakes called "shots," on which alfalfa grows wild; the Steppes, a pastoral region; and thirdly, the Sahara beyond, rendered habitable here and there by the creation of artesian wells; its extent nearly equal in area to that of France, with a population numbering about seven millions, of whom only 900,000 are French.

The country is organised in two divisions, the Northern of which includes the three depts. of Algiers, Oran and Constantine, each sending three deputies to the French chamber. S. Algeria comprises the territories of Ain-Sefra, Guardaia, Touggourt and the Sahara Ouses. A Governor-General is appointed by France. French citizenship has been extended to natives with certain qualifications.

It has been successively under the sway of the Carthaginians, the Romans, the Vandals, the Arabs, the Byzantines, and the Berbers, which last were in the 16th Century supplanted by the Turks. At the end of this period it became a nest of pirates, against whom a succession of expeditions were sent from several countries of Europe, but it was only with the conquest of it by the French in 1830 that this state of things was brought to an end.

Algiers, the capital of Algeria, founded by the Arabs in 935, called the "silver city," from the glistening white of its buildings as seen sloping up from the sea, presenting a striking appearance; was for centuries under its Bey the headquarters of piracy in the Mediterranean, which only began to cease when Lord Exmouth bombarded the town and destroyed the fleet in the harbour. Since it fell into the hands of the French the city has been greatly improved, the fortifications have been strengthened, and its neighbourhood has become a frequent resort of English people in winter. It is a French naval station. Pop. 257,000.

Algin, a viscous gum obtained from certain sea-weeds; used as size for textile fabrics, and for thickening soups and jellies.

Algoa Bay, an inlet at the E. of Cape Colony, South Africa, 20 m. wide, on which Port Elizabeth stands, 425 m. E. of the Cape of Good Hope.

Algol, a variable double star in Perseus, normally of second magnitude, but fading to fourth magnitude for about 20 minutes at intervals of three days, due to the eclipse of the brighter member by the fainter, which revolves round it.

Algonquins, one of the three aboriginal races of N. American Indians, originally occupying nearly the whole region from the Churchill and Hudson Bay southward to N. Carolina, and from the E. of the Rocky Mts. to Newfoundland.

Alhambra (Red Castle), an ancient palace and stronghold of the Moorish kings of Granada in Spain, founded by Muhammed II. in 1213, decorated with gorgeous arabesques by Yusuf I. (1345), erected on the crest of a hill which overlooks Granada; has suffered from neglect, bad usage, and earthquake.

Alhambra, a city of California, U.S.A., on the outskirts of Los Angeles, primarily residential. Pop. 30,000.

Alhazen, an Arab mathematician and astronomer, an authority on optics of the 11th Century. He boasted of his ability to control the Nile, but when called on by the Caliph to do so, feigned madness until his death.

Ali (Ali-Ben-Abu-Talib), the cousin of Mohammed, one of his first followers at the age of sixteen, and fourth of the Caliphs, "a noble-minded creature, full of affection and fiery daring. Something chivalrous in him; brave as a lion; yet with a grace, a truth and affection worthy of Christian knighthood." Became Caliph in 656; died by assassination in the Mosque at Bagdad. (600-661).

Alibi, a legal defence, often used in criminal cases, to prove the absence of the person charged with the offence from the scene of the crime at the time it was committed.

Alicante, the third seaport-town in Spain, with a spacious harbour and strongly fortified, in a province of the same name on the Mediterranean. Pop. (town) 75,000; (province) 550,000.

Alice Maud Mary, Princess, daughter of Queen Victoria, married Prince Louis (Grand-duke) of Hesse. Her six children included Alix, Czarina of Russia. (1843-1878).

Alice Springs, a telegraph station in Australia, 1,120 m. by rail from Adelaide, S. Australia.

Alien, a person resident in a country of which he is not by birth or naturalisation a subject. The naturalisation of the father subsequent to the birth of the child does not affect the nationality of the child. Questions relating to aliens in Great Britain are governed by the British Nationality and Status of Aliens Act, 1914, amended by the Acts of 1918, 1922 and 1933.

By the present law an alien is permitted to hold real and personal property with assured succession. An alien, however, cannot vote in parliamentary or municipal elections and may not take office. If he buys a British ship, it ceases to be British. In the army he cannot hold commissioned rank. The Aliens Restriction Amendments Act, 1919, provides that aliens may be prohibited from entering or leaving the United Kingdom, while on the other hand they are subject to deportation, registration, etc.

Alienation, a legal term for the voluntary transfer of property by conveyance and not by inheritance.

Aligarh, a city and district in the United Provinces of India, between Agra and Delhi. Fortified by Sindbia in 1759 and captured by the British in 1803. Has an important Mohammedan University. Area of district 1,957 sq. m. Pop. (city) 67,000; (district) 1,200,000.

Alimentary Canal, a passage five or six times the length of the body, lined throughout with mucous membrane, extends from the mouth to the anus, and includes mouth, fauces, pharynx, oesophagus, stomach, and small and large intestines.

Alimony, the allowance ordered by the husband's estate for the maintenance of his wife subsequent to a divorce or judicial separation.

Ali Pasha, Pasha of Janina, a bold and crafty Albanian, able man, and notorious for his cruelty as well as craft, finally killed at the instigation of the Sultan. (1741-1822).

Alison, Sir Archibald, a lawyer and historian, his great work being a *History of Europe from the French Revolution to the Fall of Napoleon*, afterwards extended to the *Accession of Louis Napoleon*. (1792-1867).

Aliwal, a village in India in the Punjab, on the Sutlej, where Sir Harry Smith gained a brilliant victory over the Sikhs, who were provided with forces in superior numbers, in 1816.

Aliwal North, town and health resort of Cape Province, S. Africa, on the Orange River, in a district of the same name. It has sulphur springs, and diamonds have been found. Pop. 5,500. It and Aliwal south, near Mosse Bay, were named after Sir Harry Smith, victor of Aliwal and Governor of Cape Colony, 1847-1852.

Alix (*Alexandra Feodorovna*), daughter of Princess Alice of Hesse and granddaughter of Queen Victoria; married Nicholas II. Czar of Russia, and was killed with him at Ekaterinburg. Had one son, Alexis, on account of whose delicate health she fell under the influence of Rasputin; had a bad influence on the Czar during the War. (1872-1918).

Alkahest, the presumed universal solvent of the alchemists; a term invented by Paracelsus.

Alkaline Earths, name given to the metals calcium, barium and strontium, which are distinguished from the alkalis soda and potash by their small solubility in water.

Alkalis, substances which when in solution turn red litmus blue and have other characteristic actions on indicators (*q.v.*). They are soluble bases (*q.v.*), and the chief of them, sodium hydroxide (caustic soda), potassium hydroxide (caustic potash) and lime, find extensive application in the chemical and other industries. Alkalis neutralise acids, forming salts and water; the caustic alkalis have a corrosive action upon flesh. Washing-soda, sodium carbonate, is alkaline in solution owing to chemical change, and is sometimes described as a "mild" alkali.

Alkaloids, complex nitrogenous organic compounds of basic character, mostly derivatives of pyridine, quinoline, isoquinoline, pyrrol, etc. The first alkaloid to be isolated was morphine, which was obtained from opium by Sertuerner in 1817. Common alkaloids are quinine, strychnine, brucine, conifine, nicotine, atropine, hyoscyamine, cocaine and curarine.

Practically all alkaloids possess a bitter taste and intense physiological activity, and many are exceedingly poisonous; thus curare, a bitter resinous substance extracted from the S. American plant *Strychnos toxifera*, and used by natives for poisoning arrows, owes its toxic character to the presence in it of curarine.

Several alkaloids are of great medicinal importance—*e.g.*, quinine in cases of malaria and atropine in paralysing the accommodation of the eye for ophthalmic examination. Some of the simpler alkaloids have been synthesised, while new ones have been prepared from those which occur naturally.

Alkmaar, a town in N. Holland, 25 m. NW. of Amsterdam, and situated on the N. Holland canal, with a large trade in cattle, grain and cheese. Pop. 30,000.

Allah, the Arab name for God, adopted by the Mohammedans as the name of the one God.

Allahabad, the City of God, a central city of British India and capital of the United Provinces, on the confluence of the Ganges and the Jumna, 550 m. from Calcutta, and on the railway between that city and Bombay. The most conspicuous building is the fort. Other notable features are the two cathedrals, the Mayo Memorial Hall and a pillar of Asoka. During the Indian Mutiny it was the scene of a massacre. Pop. 184,000.

Allen, David, a Scottish portrait and historical painter, born at Alloa; illustrated Ramsay's "Gentle Shepherd"; his greatest work is the "Origin of Painting," now in the National Gallery at Edinburgh. (1744-1798).

Allan, Sir William, a distinguished Scottish historical painter, born at Edinburgh, many of his paintings being on national subjects; he was a friend of Scott, who patronised his work, and in succession to Wilkie president of the Royal Scottish Academy; painted "Circassian Captives" and "Slave-Market at Constantinople." (1782-1850).

Alleghany Mountains, a range of Appalachian system in U.S.A., extending from Pennsylvania to N. Carolina; do not exceed 2,400 ft. in height, run parallel with the Atlantic coast, and form the watershed between the Atlantic rivers and the Mississippi.

Allegheny, a manufacturing city in Pennsylvania, U.S.A., on the Ohio, opposite Pittsburg, of which it is a kind of suburb, being connected by six bridges. Pop. 135,000.

Allegiance, the bond between the subject and the State or head of the State in return for which the subject receives the protection of the State. In England the allegiance is due to the king, and every one born in the king's dominions (with the exception of the children of ambassadors) owes such allegiance. Many public officials (including Members of Parliament, recruits to the Forces, etc.) have to take an actual oath of allegiance. Aliens owe temporary allegiance while they enjoy the king's protection. Within one month of taking out papers of naturalisation an alien is required to take an oath of allegiance. A breach of allegiance constitutes the crime of treason.

Allegory, a figurative mode of representation, in which a subject of a higher spiritual order is described in terms of that of a lower which resembles it in properties and circumstances, the principal subject being so kept out of view that we are left to construe the drift of it from the resemblance of the secondary to the primary subject.

Allegri, Gregorio, an Italian composer, born at Rome; member of the choir of the Sistine Chapel and author of a *Miserere*, which is still sung there every year in Holy Week. (1580-1632).

Allegro, a musical direction indicating a brisk, lively movement.

Allen, Bog of, a dreary expanse of bogs of peat E. of the Shannon, in Offaly (King's Co.) and Kildare, Ireland (Eire); the Lough of Allen is an expansion of the waters of the Shannon.

Allen, Charles Grant, novelist. Born in Canada, he was educated at Birmingham and Oxford, and later became a professor in Jamaica. He wrote on biological subjects, though it is as a novelist he is chiefly remembered, his most famous book being *The Woman Who Did*. (1848-1899).

Allen, Sir Hugh Percy, director of Royal College of Music 1913-1937. Organist: St. Asaph's Cathedral, 1897; Ely Cathedral, 1898; New College, Oxford, 1901-1918. Director of Music, University College, Reading, 1908. Knighted 1920; G.C.V.O., 1935. Professor of Music, Oxford University, since 1918. Has conducted Bach choirs, London and Oxford, and often at Leeds Festivals. (1869-).

Allenby, Field-Marshal Sir Edmund Henry Hynman, Viscount of Megiddo and Felixstowe, entered the Army in 1879, fought in the Zulu and Boer wars, and was British cavalry leader at Mons in 1914 and on the Somme. Promoted commander of the 3rd Army Corps in 1915 and played a distinguished part in the battle of Arras. In 1917 he took command of the forces in Egypt, leading the offensive that won Palestine from the Turks, and by capturing

Jerusalem achieved the object for which the Crusaders had fought six centuries earlier. For his war services he received a viscounty and a Parliamentary grant of £30,000. After the War he became a field-marshal and High Commissioner for Egypt for some years. (1831-1936).

Allenstein, town of E. Prussia, 64 m. S. of Königsberg, in Allenstein province (pop. 640,000). Taken by the Russians in Aug. 1914, it was evacuated during the Battle of Tannenberg. Pop. 38,000.

Allentown, county town of Lehigh County, Pennsylvania, U.S.A., on the Lehigh R., 50 m. NW. of Philadelphia, the great centre of the iron trade in the U.S.A. Pop. 92,000.

Alleppey, the chief seaport of Travancore, India, with a considerable export trade. Pop. 32,000.

Alleyn, Edward, a celebrated actor in the reigns of Elizabeth and James I., the founder of Dulwich College; as theatrical manager and proprietor acquired much wealth; bear-master to James I.; contemporary of Shakespeare. (1566-1626).

Allia, a stream flowing into the Tiber 11 m. from Rome, where the Romans were defeated by the Gauls under Brennus, 390 B.C.

Alliance, **The Triple**, in 1668, between England, Holland and Sweden against Louis XIV.; **the Quadruple**, in 1718, between France, England, Holland and the Empire to maintain the Treaty of Utrecht; **the Holy**, in 1815, between Russia, Austria and Prussia, an effort to seek peace on the basis of the Gospels; **the Triple**, in 1882, between Germany, Austria and Russia, at the instigation of Bismarck, from which Russia withdrew in 1886, when Italy stepped into her place. Under it the signatories, in 1887, guaranteed the integrity of their respective territories. It was broken up at the end of the Great War, at the outbreak of which in 1914 Italy withdrew.

Allier, a affluent of the Loire, in France, 270 m. long, rising in the dept. of Lozère and joining the Loire near Nevers; also one of the départements through which it flows. Area 2,850 sq. m. Pop. 374,000. Cap. Moulins.

Alligator, a fresh-water reptile of the Crocodylidae, crocodile family, but differing from the true crocodile in several features, notably the shape of the head and the jagged fringe on the hind legs. There are two species, *A. mississippiensis*, which is common in the Mississippi and the lakes and rivers of Louisiana and Carolina, and *A. sinensis* of the Yang-tse-kiang. The Crocodonids of Central and S. America differ from the alligator only in having a shield of bony plates on the under-side of the body.



CHINESE ALLIGATOR
(*A. sinensis*)

Alliteration, is the term given to the repetition, usually in a poem, of words beginning with the same initial letter, sound or vowel. It is a poetical device frequently found in Celtic poetry, and rhymelless alliterative verse was the basis of the old English epic *Beowulf*, as of practically all old English poetry. *Piers Plowman*, a 14th-Century poem by Langland, is also written entirely in alliterative verse.

Alloa, a thriving seaport on N. bank of the Forth, in Clackmannan, Scotland, 6 m. below Stirling, famous for its ale. Pop. 18,250.

Allopathy, in opposition to homeopathy, the treatment of disease by producing a condition of the system different from or opposite to the condition essential to the disease to be cured.

Allotment, usually means a small piece of ground under cultivation, not exceeding 40 poles, mainly producing crops for the benefit of the allotment-holder and his family. The size of an allotment has varied under various Acts, from 40 rods (1922) to 5 acres (1925), while a small-holding is from 1 to 50 acres.

Allotropy, the phenomenon of a chemical substance being found in two or more entirely different forms—e.g., charcoal, graphite, and diamond are all composed of carbon, but differ entirely in physical properties, and are known as the allotropic modifications of carbon. Sulphur and phosphorus both exist in allotropic modifications. Ozone is an allotrope of oxygen, having the chemical formula O_3 (oxygen = O_2).

Alloway, the birthplace of Burns, on the Doon, in Scotland, 2 m. from Ayr, the assumed scene of Tam o' Shanter's adventure. Pop. 1,000.

Alloy, a coherent mixture of metals. Where two metals have been welded together, the mixture is termed an alloy only if the two component metals are indistinguishable. The commonest methods of forming an alloy are by fusing the metals together when in a molten state, or by reducing an ore already composed of two metals. The composition of an alloy should be uniform, although in solidifying the component metals may separate (segregate) to a certain extent. Many alloys have commercial use, notably brass, an alloy of copper and zinc, and steel, aluminium and magnesium alloys.

All-Saints' Day (**All-Hallows**, **Hallowmas**), Nov. 1, a feast dedicated to all the Saints.

All Souls' College, a college of Oxford University founded by Henry Chichele (q.v.), Archbishop of Canterbury in 1432.

All Souls' Day, a Roman Catholic festival held on Nov. 2, when prayers are said for the dead.

Alspice, the berry of the pimento or *Pimenta officinalis*, a tree of the Myrtaceae (myrtle) family, indigenous to Central America and the W. Indies which, dried when unripe, is widely used for flavouring purposes.

All-the-Talents Ministry, was formed by William Wyndham, Lord Grenville (1759-1834) in 1806. Under him Fox and his followers united with the aristocratic Whigs together with the Tories under Lord Sidmouth. The best work of the ministry was the abolition of the slave trade in 1807, but Grenville failed to make a successful peace with Napoleon, and the name of the ministry, which had begun as a complimentary title, became a term of derision. Grenville resigned in 1807.

Alma, a river in the Crimea, half-way between Eupatoria and Sebastopol, where the allied English, French, and Turkish armies defeated the Russians under Prince Menshikoff. Sept. 20, 1854.

Almaden, a town in the province of Ciudad Real on the northern slope of the Sierra Morena, in Spain, with rich mines of quick-silver. Pop. 10,000.

Almagest, is the name of a treatise on astronomy written by Claudius Ptolemaeus (Ptolemy), who was born in Egypt and lived in Alexandria in the 2nd Century. Ptolemy's theory of the solar system, known as the Ptolemaic system, was that the earth was the centre of a sphere

which carried the heavenly bodies along in its daily revolution.

He accounted for the revolutions of the sun and moon by supposing they moved in eccentric circles round the earth, and regarded the planets as moving in epicycles round a point which itself revolved in an eccentric circle round the earth. This theory was believed in Europe for many centuries. The Almagest was divided into sections, and included a list of the then known stars.

Almagro, **Diego d'**, a confederate of Pizarro in the conquest of Peru, but a quarrel with the brothers of Pizarro about the division of the spoil on the capture of Cuzco led to his imprisonment and death. (1475-1538). **Diego d'**, his son, who avenged his death by killing Pizarro, but being conquered by Vaca de Castro, was himself put to death. (1520-1542).

Almanac, a form of calendar with special features added, such as astronomical occurrences, church festivals, political statistics, etc. Well-known almanacs include the *Nautical Almanac of Great Britain*, *Almanach de Gotha* of Germany, a kind of European peerage of late years extended to include statesmen and military people and statistical information, and *Ephemeris* of the U.S.A. A general almanac known as *Whitaker's Almanac* is a popular reference book in this country. The first almanac, called *Prognostications*, was published about 1450.

Almansa, a town of S.E. Spain, in Albacete province, scene of a British defeat in 1707. Pop. 12,000.

Alma-Tadema, **Sir Lawrence**, a distinguished artist of Dutch descent, settled in London; famous for his highly-finished treatment of classical subjects. (1836-1912).

Almeida, **Francisco d'**, the first Portuguese Viceroy of India, a firm and wise governor, superseded by Albuquerque, and killed on his way home by the Kaffirs at the Cape in 1510. (1450-1510). **Lorenzo**, his son, acting under him, distinguished himself in the Indian seas, and made Ceylon tributary to Portugal. Killed at sea by the Egyptians, 1508.

Almelo; a town of Holland, in the province of Overysel, at the junction of canals and railways. Has considerable textile industries. Pop. 32,500.

Almeria, a chief town and seaport in the S. of Spain, an important and flourishing place, next to Granada, under the Moors, and at one time a nest of pirates more formidable than those of Algiers. Bombarded on May 31, 1937, by German warships as a reprisal for an attack on the *Deutschland*. Capital of the fruit-growing province of Almeria. Area (prov.) 3,390 sq. m. Pop. (prov.) 340,000. (town) 55,000.

Almond, (*Prunus amygdalus*), an early flowering tree, a species of *Prunus* of the natural order Rosaceae, frequently cultivated in English gardens. The flowers appear before the leaves in early spring. The kernel of the seeds is eaten as a nut, and from the kernels almond oil is extracted.

Almoner, originally the officer of a religious house who distributed to the poor one-tenth of the revenue of the house. There were also almoners attached to the persons of kings and bishops. In England the King's Bounty is distributed twice a year by the Lord High Almoner, who is frequently a bishop.

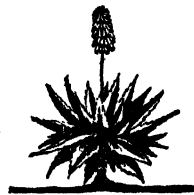
Almora, a high-lying town and district of British India, at the foot of the Himalayas, 85 m. N. of Bareilly and one of the chief means of access to Tibet. Supposed to be particularly healthy. Pop. 10,000.

Almshouse, a building, usually erected and endowed, in England, by private charity, where poor and aged

persons may live. Many almshouses date from a long time ago, one of the most ancient being the mediæval Hospital of St. Cross, near Winchester, which was founded in 1136. In America the term "almshouse" implies an institution supported by the State—a poor-house.

Alnwick, the county town of North-Aln; at the north entrance is Alnwick Castle, the seat of the Duke of Northumberland, one of the most magnificent structures of the kind in England, and during the Border wars a place of great strength. Pop. 7,000.

Aloe, a genus of succulent plants of the order Liliaceae, embracing 180 species, the majority natives of S. Africa, valuable in medicine, in particular for a purgative from the juice of the leaves of several species.



ALOE

Aloes Wood, the heart of the Asiatic of the order Thymellaceae, which yields a fragrant resinous substance formerly of great value and still used in India and the East.

Alopecia Ariata, the medical term of round bald patches on the head due to the hair falling out. It may result in complete baldness. The cause is unknown and treatment is by stimulating the scalp as, e.g., by rubbing, application of ointments and by violet rays.

Alost (or **Alost**), a Belgian town on the Dender, 19 m. NW. from Brussels, with a cathedral, one of the grandest in Belgium, which contains a famous painting by Rubens, "St. Roche beseeching Christ to arrest the Plague at Alost." Pop. 40,000.

Aloysius, St., an Italian nobleman, who joined the Society of Jesus; canonized for his devotion to the sick during a plague in Rome, to which he himself fell a victim, June 21, 1591. See **Gonzaga**.

Alpaca, a gregarious ruminant of the camel family, a native of the Andes, and particularly the tablelands of Chile and Peru; is covered with a long, soft, silky wool, of which textile fabrics are woven; in appearance resembles a sheep, but is larger in size, and has a long, erect neck with a handsome head.

Alpes, three departments in S.E. France; the **Basses-A.**, in N.E. part of Provence, bounded by Hautes-Alpes on the N. and Var on the S., sterile in the N., fertile in the S., cap. Digne; **Hautes-A.**, forming part of Dauphiné, traversed by the Cottian Alps, climate severe, cap. Gap; **A. Maritimes**, E. of the Basses-A., bordering on Italy and the Mediterranean, cap. Nice.

Alphabet, as the basis of written language among a people, of indefinite origin. Whilst the Egyptian system of hieroglyphs and the Babylonian cuneiform writing are older, the first true alphabet is that known as Semitic. The earliest record of this is the inscription on the Moabite Stone (q.v.). From the Semite was derived the Greek alphabet, which in turn, with certain literal changes, inspired the Roman, and it is in the last-named that the English alphabet had its origin. Of other alphabets the Arabic comes from the Aramean (a Phœnician derivative), and the several Indian forms from another similar source known as Sabæan. The Runic alphabet originated in Scandinavia, but whether it is Phœnician, Greek, or Latin in origin is doubtful. The Ogham alphabet (5th Century A.D.), while

believed by some scholars to be from the Runic, is attributed by others to Roman influence.

Alpha Particles, the positively charged particles expelled during certain radioactive changes. Their velocities, which vary somewhat, are about one-twentieth that of light. They are less penetrating than Beta particles (q.v.), but produce a greater effect within their smaller range; they cannot pass through more than 10 cm. of air or $\frac{1}{16}$ mm. of aluminium. They are detected and measured by the ionisation they produce in a gas, shown by the rate of discharge of an electroscope. Alpha particles appear to be atoms of helium which have lost their two outer electrons. See **Radioactivity and Ions**.

Alpheus, a river in the Peloponnesus, in Arcadia; also the name of the river-god enamoured of the nymph Arothusa, whom he pursued under the sea as far as Sicily, where he overtook her and was wedded to her.

Alpine Club, an English club devoted primarily in the Alps, but also in other districts; founded 1857-1858.

Alps, The, the vastest mountain system in Europe; forms the boundary between France, Germany, Switzerland, and Austria on the N. and W., and Italy on the S., their peaks mostly covered with perpetual snow, the highest being Mont Blanc, within the frontiers of France. According to height, they have been distributed into *Fore*, *Middle*, and *High*; the *Fore* rising to the limit of trees; the *Middle* to the line of perpetual snow; and the *High* above the snow-line. In respect of range or extent, they have been distributed into *Western*, *Middle*, and *Eastern*; the *Western*, including the Maritime, the Cottian, the Dauphiné, and the Graian, extend from the Mediterranean to Mont Blanc; the *Middle*, including the Pennine and Bernese, extend from Mont Blanc to the Brenner Pass; and the *Eastern*, including the Dolomite, the Julian, and the Dinaric, extend from the Brenner and Hungarian plains to the Danube.

Alsace-Lorraine, a territory originally, ally of the Holy Roman empire, ceded to Louis XIV. by the peace of Westphalia in 1648; restored to Germany after the Franco-German War in 1870-1871, by the peace of Frankfurt; restored to France by the Treaty of Versailles, 1919. Its area is 5,665 sq. m. and the pop. 1,898,376. Under the German system the province was divided into three districts: Lorraine, Upper Alsace and Lower Alsace. By the law of 1911 a constitution was granted to Alsace-Lorraine by which it received three votes in the Federal Council.

The three chief towns are Strassburg, Mulhausen, and Metz. The chief crops are wheat, rye, barley, oats, potatoes, and hay. The potash deposits are superior to those of Strassfurt, Germany. The province forms part of the Rhine basin, and is served by the tributaries Ill, Saar, Moder and Moselle.

Alsatia, Whitefriars, London, which at one time enjoyed the privilege of a debtors' sanctuary, and, till abolished in 1697, had become a haunt of all kinds of nefarious characters.

Alsatian Dog.

is another name for a breed of German sheepdog derived from a mixture of varieties of N. and S. German sheepdogs. They are often used as police dogs.



ALSATIAN

Alsen, a Danish island adjacent to Slesvig, one of the finest in the Baltic. It was ceded to Germany by Denmark in 1864, but returned to Denmark again in 1919.

Altai Mountains, in Central Asia, stretching W. from the Desert of Gobi, and forming the S. boundary of Asiatic Russia, abounding, to the profit of Russia, in silver and copper, as well as other metals.

Altamira, a cave in N. Spain, in which Early Stone Age wall paintings of animals.

Altamura, an ancient town of the Apulia dept. of Italy. It trades in wine and cattle. Its Romanesque cathedral was founded in 1230. Pop. 25,800.

Altar, an erection in a church for the purposes of prayer and sacrifice; among the earliest peoples usually constructed of rough stones for the purpose of offerings or sacrifice. In later times made of wood or stone, or, as in King Solomon's temple, of gold and brass. For many centuries the altar provided a sanctuary for those fleeing from justice.

Altazimuth, an instrument based on the theodolite by means of which the altitudes and azimuths of heavenly bodies are determined.

Aldorf, an old town and capital of the Swiss canton Uri, at the S. end of the Lake of Lucerne; associated with the story of William Tell; a place of transit trade. Pop. 4,000.

Aldorfer, Albrecht, a German painter and engraver, a pupil of Albert Dürer, and, as a painter, inspired with his spirit; his "Battle of Arbedo" adorns the Munich Picture Gallery. (1488-1538).

Altenburg, a town in Thuringia, Germany, once the capital of Saxe-Altenburg and 24 m. S. of Leipzig; its castle is the scene of the famous *Princenraub*, related by Carlyle in his *Miscellanies*. Pop. 41,000.

Alternating Current, a current which changes its direction several times a second. Low-frequency currents—about 50 cycles per second—are used for electric motors, while those of high frequency—up to a million cycles or more—are utilised in wireless. Alternating current is economical owing to the fact that it is possible to transmit across long distances at high voltage, and step down to the required pressure by means of a transformer.

Alternator. See **Dynamo**.

Althæa, a genus of plants of the order Malvaceæ of which there are 15 species, two being found in Britain, viz., *A. officinalis*, the marshmallow, and *A. rosea*, the hollyhock.

Althing, the parliamentary assembly of Iceland; instituted in 928 and reconstituted in 1874; it meets at Reykjavik, is bi-cameral, and its membership varies, but must not exceed 49.

Alto, in music the highest pitch of the male voice.

Alton, a town of Hampshire, England, on the River Wey. It is the centre of a hop-growing and agricultural district, and its breweries are renowned. Paper-milling is also carried on. Pop. 6,172. Also a city in Madison Co., Illinois, U.S.A., a busy trade and manufacturing centre. Pop. 30,000.

Altona, a town and seaport of Schleswig-Holstein, Germany, close to Hamburg, on the right bank of the Elbe, and practically forming one city with it. Pop. 242,000.

Altoona, city of Pennsylvania, U.S.A., 116 m. E. of Pittsburgh. Here are locomotive and carriage works, and machine shops of the Pennsylvania Railroad Co. Pop. 82,000.

Alto-Relievo, figures carved out of so as to project at least one half from its surface.

Altrincham (Altringham), a market town of Cheshire, England, 8 m. from Manchester. It has saw-mills and engineering works, and market-gardening is extensively carried on in the district. Pop. 21,356.

Altruism, a Comtist doctrine which, for the good of others as a social instinct in man, inculcates it as the ideal of human action. Herbert Spencer, in his *Data of Ethics*, purports to show how altruism and egoism will become reconciled with each other in the course of social evolution.

Alum, the name applied to a class of double sulphates. Potash alum is what is generally known as "alum," and is a mixture of potassium sulphate and crude aluminium sulphate. It is soluble in water, and is a strong astringent with a sweet-sour taste. It is much used in medicine and the arts.

Aluminium (Aluminium in U.S.A.), is a light, metallic element with no common analogues. Symbol Al, atomic number 13, atomic weight 27.1. First isolated by Woehler in 1827, but was comparatively rare until 1886, when electrolytic methods of preparing it were invented independently by Hall in America and Héroult in France. The chief ore is bauxite.

Aluminium has a bluish-white colour and a low specific gravity (2.7); it is fairly hard, and very resistant to atmospheric corrosion. This combination of valuable qualities renders it suitable for a wide variety of purposes—e.g., domestic cooking utensils, aeroplane construction, electric cables, motor-car parts and so on. It also forms light but strong alloys, such as duralumin and magnalium, extensively used in aeronautical engineering.

Alured of Beverley, an English chronicler of the 12th Century; his annals comprise the history of the Britons, Saxons and Normans up to his own time; d. 1129.

Alva, a town of Clackmannanshire, Scotland; woollens are manufactured. Pop. 4,800.

Alva, Fernando Alvarez de Toledo, Duke of, of a general of the armies of Charles V. and Philip of Spain; his career as a general was uniformly successful, but as a governor his cruelty was merciless, especially as the viceroy of Philip in the Low Countries. (1508-1583).

Alvarado, Pedro de, one of the Spanish conquerors of Mexico, and comrade of Cortez; was appointed Governor of Guatemala by Charles V. as a reward for his valiant services in the interest of Spain. (1495-1541).

Alvarez, Don Jose, the most distinguished of Spanish sculptors, born near Cordova, and patronised by Napoleon, who presented him with a gold medal, but of whom, for his treatment of his country, he conceived so great a hatred, that he would never model a bust. (1768-1827).

Alverstone, R. E. Webster, Viscount, in 1885 he entered the House of Commons, becoming Attorney-General in the Conservative Governments of that year and 1886 and 1895; led for *The Times* at the Parnell enquiry; Master of the Rolls 1900, and Lord Chief Justice from 1900 to 1913. Was one of the arbitrators on the Alaskan boundary question. In the Court of Criminal Appeal, did much to establish the principles on which the decisions of the Court are founded. (1842-1915).

Alwar, a native state in the Rajputana Agency, India. Capital, a city of the same name. Pop. 45,000.

Alyssum, or **Madwort**, belongs to the order Cruciferae. Garden varieties are *A. maritimum*, a white, sweet-scented perennial usually grown as an annual, *A. saxatile*, a shrubby, yellow perennial, *A. atlanticum*, a prostrate species, and *A. spinosum*, which forms silver, spiny hummocks.

Amadeus, the name of a shallow salt lake in the centre of Australia, subject to an almost total drying-up at times.

Amadeus I. of Spain, 2nd son of Victor Emmanuel of Italy, elected King of Spain in 1870, but abdicated in 1873. (1845-1890).

Amadis de Gaula, a celebrated romance in prose, written partly in Spanish and partly in French by different romancers of the 15th Century; the first four books were regarded by Cervantes as a masterpiece. The hero of the book, Amadis, surnamed the Knight of the Lion, stands for a type of a constant and deferential lover, as well as a model knight-errant, of whom Don Quixote is the caricature.

Amadou, a spongy substance, consisting of slices of certain fungi beaten together, used as a styptic, and, after being steeped in saltpetre, used as tinder.

Amalekites, a warlike race of the Sinaitic peninsula, which gave much trouble to the Israelites in the wilderness; successively defeated by Joshua and Saul, and eventually practically annihilated by King David.

Amalfi, a port of Italy, on the N. of the Gulf of Salerno, 24 m. S.E. of Naples; of great importance in the Middle Ages, and governed by Doges of its own. Pop. 6,000.

Amalfian Laws, a code of maritime law compiled at Amalfi in the 12th Century.

Amalgam, an alloy of another metal with mercury. Tin amalgam was formerly used for silvering mirrors.

Amalthea, the goat that suckled Zeus, one of whose horns became the cornucopia—the horn of plenty.

Amanullah, ex-king of Afghanistan; at the age of 26 succeeded his father Habibullah by means of a *coup d'état* on the latter's assassination in 1919, and at once declared war on India, being decisively beaten. In 1928 he and his second wife Surayya came on a visit to Europe, including London, and on his return he tried to introduce Western ideas into Afghanistan, an attempt which led to strong opposition from the chiefs and priests and ended in a revolution which brought about his abdication in Jan. 1929. (1892-).

Amaranth, the English name for the several species belonging to the genus *Amaranthus* of the order Amaranaceae, found both in tropical and temperate climates. The species *A. caudatus* is a well-known British plant, popularly called "Love Lie-Bleeding."

Amoryllidaceæ, an order of monocotyledonous plants, very similar to the Liliaceæ, from which they differ in having the ovary below the flower. The order includes four sub-orders, some 90 genera and 1,050 species, which are found chiefly in tropical and subtropical districts. The daffodil and snowdrop are native to Great Britain.



CORNUCOPIA

Amaryllis, the name of a shepherdess in the pastorals of Theocritus and Vergil; any young rustic maiden. Also a genus of plants of the order Amaryllidaceae, *A. belladonna* being the Cape Belladonna Lily.

Amasia, a town in Turkey in Asia Minor, once the capital of the kings of Pontus. Pop. 26,000.

Amateur, one who takes part in an activity for its own sake rather than for any monetary gain. It is used particularly of a person interested in the fine arts or in some form of sport. An amateur taking part in any sport must not accept money as payment for his services, but definitions of the term vary according to the ruling of the societies governing the various sports.

The Amateur Rowing Association demands perhaps the strictest application of the term. Anyone who has competed with or against a professional, or who has been employed in any way in the building or care of boats, is barred from participation in amateur rowing events. In cricket and in golf the amateur may not play for money, but beyond that there is no strict ruling.

The Amateur Athletic Association forbids the teaching of athletics for money, and competition against professionals or for prize-money annuls the amateur status of those taking part.

Amati, a celebrated family of violin-makers of whom the most noted were Andrea and Nicolo, brothers, at Cremona, in the 16th and 17th Centuries. Amati violins are now highly valued.

Amatitlan, a dept. and town in Guatemala, Central America. The town, the inhabitants of which are mainly engaged in the preparation of cochineal, stands on a lake of the same name. Pop. (town) 12,000.

Amatongaland, or **Tongaland**, a region of S. Africa, which was declared a British Protectorate in 1895; an area about 1,200 sq. m. bounded on the N. by Portuguese possessions, on the W. and S. by Zululand and on the E. by the Indian Ocean. Tongaland within British influence, about 600 sq. m., was annexed to Natal.

Amaziah, eighth King of Judah, succeeded to the throne on the murder of his father, fought successfully against the Edomites, but was utterly defeated and captured by Joash, King of Israel. He was slain at Lachish (2 Chron. xxv).

Amazon, a river in S. America and the largest on the globe, its basin nearly equal in extent to the whole of Europe; traverses the continent at its greatest breadth, rises in the Andes about 50 m. from the Pacific, and after a course of 4,000 m. falls by a delta into the Atlantic, its waters increased by a great number of tributaries, 20 of which are above 1,000 m. in length, one 2,000 m., its mouth 200 m. wide; its current affects the ocean 150 m. out; is navigable 3,000 m. up, and by steamers as far as the foot of the Andes.

Amazonas, the name of three S. American territories; (1) the largest state of Brazil, in the N., and including a large part of the basin of the Amazon. It is bounded on the N. and W. by Venezuela, Colombia and Peru. It is entirely in the tropics and crossed by the Equator in the N. It is heavily forested, and produces rubber, timber, cocoa, brazil nuts, etc. Area 731,000 sq. m. Pop. 483,000. Cap. Manaus. (2) An inland dept. in the N. of Peru. Area 13,900 sq. m. Pop. 80,000. Cap. Chachapoyas. (3) A territory in the S. of Venezuela. Pop. 60,000.

Amazons, a fabulous race of female warriors, who had a queen of their own, and excluded all men from

their community; to perpetuate the race, they cohabited with men of the neighbouring nations; slew all the male children they gave birth to, or sent them to their fathers; burnt off the right breasts of the females, that they might be able to wield the bow in war.

Ambassador, the accredited representative of one country in another country. He represents the Sovereign or head of his State in the State to which he is accredited; he has the right of audience with the head of the foreign State, and powers generally are conferred on him to deal with all questions of importance between the two countries.

An ambassador's person and that of all members of his staff are immune from the ordinary laws of the country in which he is resident. Representatives at legations situated in other countries are called ministers. Papal legates take ambassadorial rank.

Amber, a fossil resin, generally yellow, and semi-transparent, derived, it is presumed, from certain extinct coniferous trees; becomes electric by friction, and gives name to electricity, the Greek word for it being *electron*; has been fished up for centuries in the Baltic, and is now used in varnishes and for tobacco pipes.

Ambergris, an ashy-coloured substance, a morbid fragment of the intestines of the spermaceti whale, being often found floating on the ocean which this cetacean frequents. It has a musky smell and is used for mixing with perfumes.

Amble, a seaport of Northumberland, England, 9 m. S. of Alnwick. From its harbour (Warkworth harbour) coal is exported. Pop. 4,000.

Ambleside, a small market-town of Westmorland, England, near the head of Lake Windermere, in the so-called Wordsworth District. Pop. 2,300.

Amblyopsis, a small translucent and colourless fish of the

Amblyopsidae family (*A. spelaeus*), with rudimentary but functionless eyes, found in the subterranean waters of the



AMBLYOPSIS

Mammoth Cave of Kentucky, U.S.A.

Amboise, a French town, on the Loire, 14 m. E. of Tours, with a castle, once the residence of the French kings. It was the scene of the Conspiracy of Condé and the Huguenots in 1560 against Francis II., Catharine de Medici, and the Guises. The Edict of Amboise (1563) conceded the free exercise of their worship to the Protestants. The Logis du Roi contains the remains of Leonardo da Vinci.

Amboyna, the most important island of the Moluccas, in the Malay Archipelago, with a chief city bearing the same name, and especially rich in spices; it belongs to the Dutch, who have diligently fostered its resources. Pop. 400,000.

Ambrose, St., Bishop of Milan, born at Tréves, one of the Fathers of the Latin Church, and a zealous opponent of the Arian heresy; as a stern puritan refused to allow Theodosius to enter his church, covered as his hands were with the blood of an infamous massacre, and only admitted him to Church privilege after a penance of eight months; he improved the Church service, wrote several hymns, which are reckoned his most valuable legacy to the Church. Festival, Dec. 7. (c. 340-397).

Ambrosia, the fragrant food of the gods of Olympus, as nectar was their drink, and fabled to preserve in them and confer on others immortal youth and beauty.

Ambrosian Library, a famous library in Milan found early in the 17th Century by Cardinal Borromeo (q.v.) in memory of St. Ambrose (q.v.), the patron saint of Milan.

Ambry, in medieval architecture a niche, a recess or cupboard in a wall where were kept the sacred vessels.

Ambulance, a conveyance for sick or injured people and also a term for a moving hospital, travelling with an army. Ambulance wagons now used are lightly-built, easily-running motor vehicles capable of conveying two or more stretchercases with attendants. Ambulances are supported by various societies, such as the British Red Cross Society and the St. John's Ambulance, and they are also attached to hospitals and police stations.

Amende Honorable, originally a mode of punishment in France which required the offender, stripped to his shirt, and led into court with a rope round his neck held by the public executioner, to beg pardon on his knees of his God, his king, and his country; now used to denote a satisfactory apology or reparation.

Amendment, a proposed alteration to a motion. It may involve adding, altering or omitting, but the subject must have a close, positive bearing on the original motion. Amendments are usually voted upon as distinct from the bill or proposal which they are intended to amend. In law, an amendment is an alteration to a pleading, and the allowance of amendments is governed by the Rules of the Supreme Court and is subject to the consent of the Court.

America, including both N. and S. and the W. Indies, 9,000 m. in length, varies from 3,400 m. to 28 m. in breadth, contains 16½ millions of sq. m., is larger than Europe and Africa together; bounded throughout by the Atlantic on the E. and the Pacific on the W., contains within it the greatest possible diversity of physical features, natural scenery and flora and fauna.

America, Central, a neck of land connecting N. and S. America and extending from Mexico on the N. to Panama on the S., is a plateau with terraces descending to the sea on each side, and rich in all kinds of tropical vegetation; consists of seven political divisions, viz., Guatemala, Salvador, British Honduras, Honduras, Nicaragua, Panama and Costa Rica.

America, North, is 4,560 m. in length, contains over 8½ millions sq. m., is less than half the size of Asia; consists of a plain in the centre throughout the length, a high range of mountains, the Rocky, on the W., and a lower range, the Appalachian, on the E. parallel with the coast, which is largely indented with gulfs, bays and seas; has a magnificent system of rivers and large lakes, the latter the largest in the world, a rich fauna and flora, and a wealth of minerals. The divisions are the Dominion of Canada, Newfoundland, the United States and Mexico.

America, South, lies in great part within the Tropics, and consists of a high mountain range on the W., and a long plain with minor ranges extending therefrom eastward; the coast is but little indented, but the Amazon and the Plate Rs. make up for the defect of seaboard; abounds in extensive plains, which go under the names of Llanos, Selvas and Pampas, while the river system is one of the vastest and most serviceable; the vegetable and mineral wealth of the continent is great, and it can match the world for the rich plumage of its birds and the number and splendour of its insect species. The territorial divisions are Colombia, Venezuela, British, French and Dutch Guiana, Ecuador, Brazil, Peru, Bolivia, Paraguay, Chile, Argentina, Uruguay.

American Indians, the aboriginal races of the New World, misnamed Indians by Columbus; they are mostly of a red or copper-coloured skin, have coarse, black, straight hair, high cheek-bones, black, deep-set eyes, and tall, erect figure, and apparently are fast dying out, but they have amalgamated with most other races; to be found still as far S. as Patagonia, the Patagonians being of the race. In the U.S.A. there are over 200 tribes, comprising some 350,000 persons, inhabiting separate tribal reservations in a large number of states, chiefly Oklahoma, Arizona and S. Dakota. They enjoy full civic rights.

America's Cup, The. In 1851 a cup was given by the Royal Yacht Squadron for a race for all yachts at Cowes, Isle of Wight. Fifteen vessels started, the victor being the schooner, *The America*, of 150 tons. Many attempts have been made, especially by Sir Thomas Lipton and Mr. T. O. M. Sopwith, to regain the cup, the race for which has since been contested in American waters.

Amerigo Vespucci. See *Vespucci*.

Amerongen, a village in the province of Utrecht, Holland. The ex-Kaiser Wilhelm II. fled there on Nov. 10, 1918, to the castle of Count Bentinck.

Amersfoort, a town in Holland, in the province of Utrecht. Pop. 45,000.

Amersham, a market town in Buckinghamshire, England, with a chair-making industry. The birthplace of Edmund Waller, the poet, is close by. Pop. 4,000.

Amery, Rt. Hon. Leopold Stennett, English politician. Entered the House of Commons as a Conservative in 1911, and in 1922 became First Lord of the Admiralty. He became Secretary for the Colonies in 1924 and in 1925 Secretary for the Dominions, posts he held till the defeat of the Baldwin Government in 1929. Presided over Imperial Conference, 1925 and 1926. (1873-).

Amesbury, a village in Wiltshire, England. John Gay wrote *The Beggar's Opera* in Amesbury Abbey, the old residence of the Dukes of Queensberry, built by Inigo Jones. Stonehenge is in the neighbourhood. Pop. 1,530. Also a town in Massachusetts, U.S.A., where the poet Whittier made his home for many years. Pop. 10,000.

Amethyst, a species of quartz gem stone, of varying violet, purple or blue colour. Found mainly in India and Ceylon, and also in Scotland.

Amhara, the central and largest division of Abyssinia. The Amharic tongue is founded on the old Semitic.

Amice, a flowing cloak formerly worn by pilgrims, also a strip of linen cloth worn over the shoulder of a priest when officiating at mass.

Amides, in organic chemistry, compounds formed by replacing the hydrogen of ammonia by an acid radical. The amides proper are obtained by heating the ammonium salt of the corresponding acid, by acting upon one of its esters, its chloride, or anhydride with ammonia.

Amiens, in France, the old capital of Picardy, on the Somme, with a cathedral begun in 1220, described by Ruskin as "Gothic clear of Roman tradition and of Arabian taint, Gothic pure, authoritative, unsurpassable, and unaccountable"; was the birthplace of Peter the Hermit, and is celebrated for a treaty of peace between France and England concluded in 1502. The population is 93,800. It was the British Army base during the Battle of the Somme in 1916.

and the scene of repeated but unsuccessful attempts by the Gorman army to capture it.

In the second Battle of the Somme, Amiens was the principal German objective, and the brunt of the attack was borne by the ill-fated British 5th Army. The attack almost succeeded, but the Gorman Army was too exhausted to continue its momentum. (On Aug. 8, 1918, Haig attacked on the Amiens front with the 3rd British Corps, the 33rd American Division and Australian and Canadian troops. The assault was followed by an attack by 200 tanks, which completed the demoralisation of the German Army.)

Amines, carbon compounds which may be regarded as derived from ammonia by the replacement of one or more hydrogen atoms of the ammonia molecule by univalent hydrocarbon radicals. The aliphatic amines are strongly basic substances, the lower members possessing ammoniacal, fishy smells; certain of them, in fact, occur in herring-brine, fish paste, etc., to which they impart the characteristic smell. Aniline, an aromatic amino, is important as the basis of the well-known aniline dyes. Certain complex amines are very poisonous (ptomaines).

Amirantes, a group of small coral islands [NE. of Madagascar, belonging to Britain; are 11 in number, are wooded, and only a few feet above sea-level. Pop. 90,000.

Amman, capital of Trans-Jordan.

Ammanford, market town of Carmarthenshire, Wales, 12 m. N. of Swansea. It has collieries and tin-works, and manufactures paint. Pop. 7,000.

Ammeter, an instrument used in strength of an electric current to measure the

strength of an electric current in amperes. The most common type consists of a movable coil connected in parallel with a low resistance formed by copper wires. Alternating current is usually measured by a magnetic needle working between the pole of a magnet which has several adjoining coils. The most practical form for measuring current at radio-frequencies, such as in the aerial of a wireless transmitting station, is one which utilises the heating effect of the current passing through a thin wire.



AMMETER

Ammon, an Egyptian deity, frequently a ram, who had a temple at Thebes and in the Libyan Desert; was much resorted to as an oracle of fate.

Ammonia, NH_3 , a colourless gas, lighter than air and very soluble in water; it possesses a pungent smell and is suffocating, though not actively poisonous. It may be prepared by heating any ammonium salt with an alkali (e.g., lime or sodium hydroxide), and is a product of the distillation of coal (as in the manufacture of coal-gas). Synthetic methods of obtaining ammonia from atmospheric nitrogen have been elaborated.

Ammonia is formed during the putrefaction of organic matter, hence its presence in water usually means that the water is unfit for drinking owing to contamination with sewage or animal excreta. In the soil, ammonia and ammonium salts are converted by bacterial action into nitrates, which form the principal nitrogenous food of green plants.

Ammonites, a Semitic race living descended from Ben-Ammi, a son of Lot, and

closely related to the Mosabites; at continual feud with the Jews, and a continual trouble to them, till subdued by Judas Maccabeus.

Ammonites, a group of extinct spiral Mesozoic times. They are particularly abundant in the Jurassic strata, and are used as zone fossils (q.v.).

Ammonius Saccas, a philosopher of Alexandria, and sometimes reckoned as founder of Neoplatonism. His fame, however, was completely dwarfed beside that of his greater pupil, Plotinus. Among his other pupils were Longinus and Origen. d. 243, at a great age.

Ammunition. Originally military provisions for attack and defence. Now the materials used in the discharge of firearms and ordnance of all kinds. Berthold Schwarz, a German monk, is supposed to have been the inventor of cannon in 1313. Stone shot, darts, etc., were first used as projectiles, propelled by gunpowder. Metal shot was substituted in the 17th Century.

Shells were also used at an early date, but they were dangerous to use owing to the absence of fuses. In 1784 Lieut.-General Henry Shrapnel invented a projectile that was primarily a bursting charge, not intended to give velocity to the discharging bullets. In the 19th Century fuses were developed and shells superseded the old case-shot.

High explosives were first adopted by the French in the form of melinite and by the British as lyddite. Gas shells were first used by the Germans in the Great War. Rifling in ordnance changed the projectile to its present elongated form.

Amnesia, either partial or complete loss of memory brought on by various causes, such as an injury to the brain or disease of the brain, insanity, and even tiredness. A very ordinary form of amnesia is when the names of people and places are forgotten.

Amnion, name given to the innermost membrane investing the foetus in the womb.

Amœba, a minute animalcule of the Amœbæ, simplest structure, being a more mass of protoplasm; absorbs its food at every point all over its body by means of processes protruded therefrom at will, with the effect that it is constantly changing its shape.

Amok, or **Amuck**, a Malay word applied to a native Malay who, through opium or other causes, enters into a state of murderous frenzy. The word has been adopted into the English language, meaning a state of blind rage, either of man or animal.

Amomum, a genus of plants, such as of paradise, belonging to the order Zingiberaceae, and remarkable for their pungency and aromatic properties.

Amontillado, the name under which one of the Spanish sherry is shipped.

Amorites, a powerful Canaanitish tribe, either "highlanders" or people of tall stature. NE. of the Jordan; subdued by Joshua at Gibeon.

Amory, Thomas, an eccentric writer of Irish descent, author of the *Life of John Bunce, Esq.*, and other productions quaintly autobiographical, rhapsodical and deistic. He was a fanatical Unitarian. (1691-1789).

Amos, a poor shepherd of Tekoa, near Bethlehem, in Judah, who in the 8th Century B.C. raised his voice in solitary protest against the iniquity of the northern kingdom of Israel, and denounced the judgment of God as Lord of Hosts upon one and all for their idolatry, which nothing could avert; one of the twelve minor prophets.

Amoy, one of the open ports of China, on a small island in the Strait of Fukien; has one of the finest harbours in the world, and a large export and import trade; the chief exports are tea, sugar, paper, gold-leaf, etc. As in Shanghai, there is an international self-governing settlement; in this case on the neighbouring small island of Kulangsa. Amoy was seized by the Japanese in May, 1938. Pop. 234,000.

Ampère, the unit of electric current, being the current which flows through a wire of resistance 1 ohm when the potential difference between its ends is 1 volt; named after the famous French physicist.

Ampère, André Marie, a French mathematician and physicist, born at Lyons; distinguished for his discoveries in electro-dynamics and magnetism, and the influence of these on electro-telegraphy and the general extension of science. (1775-1836).

Amphibia (or *Batrachia*), a division of cold-blooded vertebrates intermediate between fishes and reptiles, and called amphibia, because of their capacity to live either in water or on land. They may be distinguished from other land vertebrates by their smooth, wet skin without scales. Most, but not all, lay eggs in water which develop into tadpoles, and later into full-grown animals which hibernate on land, returning to the water to spawn. Amphibia include frogs, toads, newts (Tritons) and salamanders.



FEMALE NEWT

Amphictyonic Council, a council consisting of representatives from several confederate States of ancient Greece, 12 in number at length, two from each, that met twice a year, sitting alternately at Thermopylae and Delphi, to settle any differences that might arise between them, the decisions of which were several times enforced by arms, and gave rise to what were called *sacred wars*, of which there were three.

Amphion, a son of Zeus and Antiope, who is said to have invented the lyre, and built the walls of Thebes by the sound of it.

Amphisbænia, a genus of limbless, worm-like lizards found in America and Africa. They burrow and live underground, and differ from all other limbless lizards in their capacity to move either backwards or forwards by an undulatory motion.

Amphitheatre, a type of building, the Romans, in which gladiatorial shows were held. They consisted of tiers of seats surrounded at the top by a ring of columns or by a wall, were circular in shape and built of stone, although the first amphitheatre at Pompeii was built of wood. In the centre was a large open space, the arena for the competitors, and the surrounding seats were divided into the "podium"; the lowest tiers were for the noble spectators, and the upper tiers for the rest of the community. The whole building was open to the sky. The Colosseum, the most famous ancient amphitheatre in existence, is at Rome, and was built in A.D. 80. There is also a fine example of a Roman amphitheatre at St. Albans in England.

Amphitrite, a daughter of Oceanus or Nereus, the wife of Poseidon, and goddess of the sea.

Amphitryon, the King of Tiryns and husband of Alcmena, who became by him the mother of Iphicles, and by Zeus the mother of Hercules.

Amphora, a vessel usually of earthenware, used by the ancient Greeks and Romans for storing wine. It was two-handled, and usually tall and slender, the bottom sometimes tapering to a point which either rested in a tripod or was inserted in a socket in the ground.



AMPHORA

Amplifier, an electrical appliance which increases the intensity of the electrical currents in wireless reception. The type now in general use is the Thermionic valve, which consists of a filament, surrounded by a wire grid, above which is placed a plate called the anode, as it receives a positive charge from a high-tension battery.

Amptill, market town of Bedfordshire, England, 8 m. SW. of Bedford, with ironworks and a brewery. In its former castle Katherine of Aragon dwelt before her trial. Pop. 2,000.

Ampulla, a bottle used by the Romans in the Christian Church a vessel serving the same purpose and used at coronations.

Amritsar, a sacred city of the Sikhs, in India, in the Punjab, and a great centre of trade, 32 m. E. of Lahore; is second to Delhi in N. India; manufactures cashmere shawls. It was the scene in 1919 of serious riots, which were quelled by Sir Michael O'Dwyer. Pop. 265,000.

Amsterdam, a great trading city at the mouth of the Amsel, on the Zuider Zee, resting on 90 islands connected by 300 bridges, the houses built on piles of wood driven into the marshy ground; is largely a manufacturing place, as well as an emporium of trade, one special industry being the cutting of diamonds and jewels; birthplace of Spinoza. Pop. 780,000.

Also a city in Montgomery county, New York State, where rugs, carpets, etc., are manufactured. Pop. 34,500.

Amulree, Sir William Warrender Mackenzie, Baron, barrister, Chairman of government committees of inquiry and of war-time and other tribunals concerned with industry and wages. Secretary of State for Air, 1930-1931. Chairman, Royal Commission on Newfoundland, 1933. K.B.E. 1918. Ennobled 1929. (1860-).

Amundsen, Captain Roald, famous Norwegian explorer. Born at Borge, the son of a shipbuilder, he went early to sea, and in 1897 joined the Gerlache expedition. He was in charge of an expedition which navigated the NW. Passage in 1906, and in 1911 an expedition of his reached the S. Pole—the first to do so, a feat in which he beat Capt. Scott by a few weeks.

In 1925 he made an unsuccessful attempt to reach the N. Pole by aeroplane, but in 1928 with Ellsworth and Nobile flew over the pole in the airship *Norge*. When, in 1928, General Nobile's airship *Italia* was forced down during a N. Pole voyage, Amundsen, despite a previous quarrel with Nobile, hastened by plane to take part in a search and disappeared. (1872-1928).

Amur, a large, eastward-flowing river, partly in Siberia and partly in China, which falls into the Sea of Okhotsk. Length about 1,600 m.

Amurnath, a place of pilgrimage in Cashmere, India, on account of a cave believed to be the dwelling-place of Siva.

Amygdaloidal Rocks, igneous rocks in which the holes left by escaping bubbles of steam and gases have been filled by mineral deposits through the percolation of water from the surrounding rocks.

Amyot, Jacques, Grand Almoner of France and Bishop of Auxerre; was tutor of Charles, son of Henry II., and translator, among other works, of Plutarch into French, which remains to-day one of the finest monuments of the old literature of France. (1513-1593).

Anabaptists, a fanatical sect which arose in Saxony at the time of the Reformation, and though it spread in various parts of Germany, came at length to grief by the excesses of its adherents in Münster.

Anabasis, an account by Xenophon of the ill-fated expedition of Cyrus the Younger against his brother Artaxerxes, and of the retreat of the 10,000 Greeks under Xenophon, who accompanied him, after the Battle of Cunaxa in 401 B.C.

Anabolism, name given to changes whereby an animal or plant builds up its tissues from carbohydrates, fats, proteins and mineral salts in its food. The building-up process depends on a sufficient and balanced supply of the four groups mentioned, as well as on small quantities of vitamins (q.v.).

Anacharsis, a Scythian philosopher of the 6th Century B.C., who, in his roamings in quest of wisdom, arrived at Athens, and became the friend and disciple of Solon, but on his return home was put to death by his brother; he stands for a Scythian savant living among a civilised people, as well as for a wise man living among fools.

Anachronism, a chronological error, especially in literature or art. It is an anachronism to represent people as wearing the clothes, or moving in surroundings, which belong to a later period.

Anacoda (*Eunectes murinus*), a gigantic constricting serpent of tropical America of aquatic habits, belonging to the boa family. Some specimens are 30 ft. long.

Anacreon, a celebrated Greek lyric poet, a native of Teos, in Asia Minor; lived chiefly at Samos and Athens; his songs are in praise of love and wine; not many fragments of them are preserved. (560-478 B.C.).

Anadyomene, Aphrodite, a name meaning "emerging," given to her in allusion to her arising out of the sea; the name of a famous painting of Apelles so representing her.

Anadyr, a river in Siberia, which flows into a gulf of the same name on the Behring Sea.

Anæmia, a state of the blood in which there is a general poverty or lack of red corpuscles. Simple anæmia in which the patient lacks energy and is pale, is best treated by careful nourishing diet, plenty of fresh air and general attention to the health. Anæmia may also exist in connection with an existing illness. Pernicious anæmia is a slow, wasting disease caused by the enormous destruction of the red corpuscles in the blood, and is dangerous.

Anæsthesia, a state of complete or partial insensibility especially as brought about by the use of chemical substances known as anesthetics. General anæsthesia is commonly effected by the administration of chloroform or ether,

or a mixture of chloroform, ether and alcohol, and less frequently ethyl chloride; in dentistry a mixture of nitrous oxide and oxygen is generally preferred.

Local anæsthesia is produced by the injection of cocaine, eucaine or novocaine, or by spraying some very volatile liquid, such as ethyl chloride, upon the appropriate region; the rapid evaporation of the liquid causes intense cold, and so renders the treated area temporarily insensible. Spinal anæsthesia or analgesia is brought about by the injection of novocaine or stovaine into the spinal fluid.

Pioneers in the use of anesthetics were Sir Humphry Davy (nitrous oxide), Sir James Simpson (chloroform) and Dr. C. L. Long of the United States (ether).

Anagni, a small Italian town, 40 m. S.E. of Rome, the birthplace of several popes. The cathedral dates from the 11th Century. Pop. 10,000.

Anagram, is a very ancient form of jumbling the letters of a particular word in such a way as to form from it other words having a definite meaning and an appropriate connection.

Anahuac, a plateau in Central Mexico, 7,580 ft. of mean elevation; the Aztec name of Mexico prior to its conquest by the Spaniards.

Anakim, a race of giants that lived in sons of Anak. Their chief city was Hebron; they were overcome by Joshua and Caleb, who took possession of it.

Analyst, Public, a local government official, appointed under the various Food and Drugs Acts to analyse samples of food, drugs and agricultural products offered for sale so as to detect adulteration. Such appointment must be confirmed by the Ministry of Health (or the Ministry of Agriculture). Usually the official is a Fellow of the Institute of Chemistry.

Anamalai Mountains, a range of mountains in India in the W. Ghats in Travancore and Coimbatore. Highest point Anamudi, 8,840 ft.

Ananas, a genus of plants of the order Bromeliaceae. *A. sativus*, the pineapple, is extensively cultivated for its fruit.

Ananias, name of three people mentioned in Acts: (1) a High Priest, the "whited wall" who commanded bystanders to smite Paul; (2) the husband of Sapphira; he sold some land, and instead of giving all the proceeds to the Apostles, kept back a part; when discovered, fell dead; (3) a disciple at Damascus who was sent to Paul at the period of his blindness; by laying on of hands Paul cured him.

Anaphylaxis, the name given to highly sensitive to certain stimuli. It is found among all animals, and also in men. A common example is hay-fever, which is caused in some people by air containing even a small amount of pollen. Anaphylaxis makes foods, harmless to the majority, have an immediate and violent effect on some people, e.g., eggs or shellfish.

Anarchism, a projected social revolution, the professed aim of which is that of the emancipation of the individual from the present system of government which makes him the slave of others, and of the training of the individual so as to become a law to himself, and in possession, therefore, of the right to the control of all his vital interests. The modern movement owed its impulse to Proudhon (1809-1865); other leaders were Bakunin (1814-1876) and Prince Kropotkin.

Anastasius I., Emperor of the East, for his severities to the Christians, and the first sovereign to be so treated by the Pope; built the "Anastasian Wall" at Constantinople as protection against the Bulgars. (130-518).

Anathema, a word originally meaning a thing devoted or set aside as an offering. If a living man or animal, it had to be slain, and so the word acquired the secondary meaning of "accursed," as in St. Paul's Epistles. In the Catholic Church the word was used in excommunication.

Anatolia, the Greek name for Asia Minor.

Anatomy, literally dissection or "cutting up," is the science which deals with the structure of living organisms, and has therefore three main branches: viz., human anatomy, animal anatomy and plant anatomy. Comparative anatomy is the study of the structure of different species of animals, one of its principal objects being to discover points of similarity of genotic significance. Pathological anatomy studies the characteristic appearance of the body of its organs in disease, while artistic anatomy considers the human body from an æsthetic standpoint.

Ancachs (*Ancash*), a coastal dept. of Peru. Area 14,700 sq. m. Pop. 450,000. Cap. Huaraz.

Anccestor-Worship, the worship of ancestors that prevails in primitive nations, due to a belief in Animism (*q.v.*); it obtained in ancient Rome and is still part of the Chinese and Japanese religions.

Anchises, the father of Æneas, whom his son bore out of the flame of Troy on his shoulders to the ships; was buried in Sicily.

Anchovy (*Engraulis encrasicolus*), a small fish of the herring family abundant in the Mediterranean—captured for the flavour of its flesh and made into sauce; has a single dorsal fin, a deeply forked tail and a deeply cleft mouth.



ANCHOVY

Anchovy Pear, a W. Indian tree of the order Myrtaceae), the fruit of which has the taste of the mango.

Ancient Lights, a privilege, now regulated by law, whereby the light entering an existing window may not be interfered with. The old interpretation that windows enjoying ancient lights must have existed from time immemorial is now legalised as a period of 20 years.

Ancona, a port of Italy in the Adriatic, second to Venice; founded by Syracusans, capital of a province of the same name. Pop. 84,000.

Ancre, river in the dept. of the Somme, France, of which river it is a tributary. It was the scene of British offensives in Nov. 1916 and Jan. 1917.

Andalusia, a region in the S. of Spain quivir, comprising the provinces of Almería, Cádiz, Córdoba, Granada, Jaén, Huelva, Málaga and Seville, fertile in grains, fruits and vines, and rich in minerals. Pop. 4,000,000.

Andamans, a group of volcanic islands 204 in number, surrounded by coral reefs; since 1858 used by the Government of India as a penal settlement.

Andante, a musical direction indicating in a steady manner, neither fast nor slow.

Andermatt, a Swiss village in the canton of Uri, well known as a winter-sports centre.

Andersen, Hans Christian, a world-famous fairy-story-teller of Danish birth, son of a poor shoe maker, born at Odense; was some time before he made his mark, was honoured at length by the esteem and friendship of the royal family, and by a national festival on his seventieth birthday. (1805-1875).

Anderson, Sir Edmund, Lord Chief Justice of Common Pleas under Elizabeth, sat as judge at the trial of Mary, Queen of Scots. Anderson's Reports is still a book of authority. (1580-1605).

Anderson, Elizabeth Garrett, M.D., daughter of Newson Garrett, merchant, Aldeburgh. The Society of Apothecaries unwillingly licensed her, 1865. She opened, 1866, in Euston Road, St. Pancras, what is now called the Elizabeth Garrett Anderson Hospital. M.D. (Paris), and elected to London School Board, 1870. Married James George Skelton Anderson, shipowner, 1871. (1836-1917).

Anderson, John, a native of Rosencath, professor of natural philosophy in Glasgow University, and the founder of the Andersonian College in Glasgow. (1726-1796).

Anderson, Mary, American actress; Louisville, 1875; first visited England, 1883; was Rosalind in the performance of *As You Like It* that opened Shakespeare Memorial Theatre, Stratford-on-Avon, 1885; retired 1889, and married Antonio de Navarro, papal chamberlain, who died 1932. (1859-).

Andes, an unbroken range of high mountains, which extend, often in double and triple chains, along the W. of S. America from Cape Horn to Panama, a distance of 4,500 m. The average height of the range is estimated at 13,000 ft., the highest peaks being Aconcagua (23,000 ft.), Huascaran (22,150 ft.), Coropuna (22,900 ft.), Huandoy (21,088 ft.), Chimborazo (20,500 ft.), Cotopaxi (the world's highest active volcano, 19,613 ft.), Sorata (Illampu) (25,250 ft.), Illimani (24,633 ft.). There are over 150 active volcanoes. The Amazon has its source in the Andes.

Andorra, a small republic in the E. Pyrenees, enclosed by mountains, under the protection of France and the Bishop of Urgel, in Catalonia; cattle-rearing is the chief occupation of the inhabitants. Pop. 5,000.

Andover, an old municipal borough and market-town in Hampshire, England, centre of an agricultural district. Pop. 9,000. Also a town in Massachusetts, U.S.A., 23 m. from Boston, famous for its theological seminary, founded in 1808. Pop. 10,000.

Andrassy, Count Julius, (1) a Hungarian statesman, was exiled from 1848 to 1857, became Prime Minister in 1867, played a prominent part in diplomatic affairs on the Continent to the advantage of Austria. (1823-1890). (2) His younger son; twice Minister of Interior before Great War, during which he was negotiator with German Government. Foreign Minister at Vienna 1918; afterwards member of Hungarian National Assembly, latterly as legitimist. (1860-1929).

Andrée, Saloman August, Swedish polar explorer; in July 1897 set out from Spitzbergen with two companions in an ordinary balloon, for the N. Pole. Their bodies were found on White L. in 1930. (1854-1897).

Andrew, St., brother of St. Peter and martyrdom by crucifixion; became patron saint of Scotland; represented in art as an old man with long white hair and a beard, holding the Gospel in his right hand, and leaning on a transverse cross. St. Andrew's Day falls on Nov. 30.

Andrew, St., The Cross of, cross like an X, such having, it is said, been the form of the cross on which St. Andrew suffered.

Andrewes, Lancelot, an English prelate, a zealous High Churchman in the reigns of Elizabeth and James I.; attended the Hampton Court Conference, and was one of the translators of the Authorised Version of the Bible. (1555-1626).

Andreyev (Andreev), Leonid Nikolaevich, Russian author, whose poverty and wretchedness form the background of his novels, stories and plays. His most widely known novels are *The Abyss* and *In the Fog*; chief play *The Life of Man*. (1871-1919).

Androclus, or **Androcles**, a Roman slave condemned to the wild beasts, but saved by a lion, sent into the arena to attack him, out of whose foot he had long before sucked a painful thorn; the animal recognised him as its benefactor, and spared his life. Bernard Shaw's play *Androcles and the Lion* adapts the legend to the theme of Christian persecution.

Andromache, the wife of Hector Aetnaean, famous for her conjugal devotion; fell to Pyrrhus, Achilles' son, at the fall of Troy, but was given up by him to Hector's brother; is the subject of tragedies by Euripides and Racine.

Andromeda, a beautiful Ethiopian princess exposed to a sea monster, which Perseus slew, receiving as his reward the hand of the maiden; she had been demanded by Neptune as a sacrifice to appease the Nereids for an insult offered them by her mother, Cassiopeia.

Andronicus, the name of four Byzantine emperors: **A. I.**, **Comnenus**, killed his ward, Alexis II, usurped the throne, and was put to death, 1185; **A. II.**, lived to see the empire devastated by the Turks (1282-1328); **A. III.**, nephew of the preceding, dethroned him, fought stoutly against the Turks without staying their advances (1328-1341); **A. IV.**, dethroned his father, Soter V., and was immediately stripped of his possessions himself. (1377-1379).

Andros, the most northerly island of the Cyclades lying S.E. of Zibooa and belonging to Greece. Has fertile soil and is productive of wine and silk. Pop. 20,000. Chief town, Andros. Pop. 2,000. Also an island in the Bahamas. Pop. 7,000.

Anemometer, an instrument for measuring the velocity of the wind. The commonest type consists of four hemispherical cups mounted on the arms of a rotating post. The rate at which the cups revolve in the wind is made to register the velocity of the wind in miles per hour.

Anemone, or **Windflower**, a genus of flowers of the natural order Ranunculaceae, comprising 120 different species, most of which grow in temperate regions. Two are native to the

British Isles, viz., *A. nemorosa*, the wood anemone, and *A. pulsatilla* (pasque flowers). Other varieties grown as garden flowers include *A. coronaria* (poppy anemone), *A. hortensis fulgens* (scarlet windflower), *A. hepatica* and *A. japonica*.

Aneroid, a barometer, consisting of a small watch-shaped, air-tight, air-exhausted metallic box, with internal spring-work and an index, affected by the pressure of the air on plates exposed to its action.

Aneurin, a British (Welsh) bard at the beginning of the 7th Century, who took part in the Battle of Cattraeth, and made it the subject of an epic poem named *Gododin*.

Aneurysm, a swelling on the coat of an artery, containing blood. May be external, the result of an injury, and susceptible of surgical treatment. The most serious type occurs on the aorta, the main artery of the body, and may be caused by syphilis, alcoholism, rheumatism or other diseases.

Angara, a tributary of the Yenisei, which passes through Lake Baikal. Irkutsk stands on its banks.

Angel, a gold coin introduced into England from France by Edward IV.; last coined in the reign of Charles I. The coin had the archangel Michael piercing the dragon on the obverse of it (from which it took its name) and a ship on the reverse.

Angel-Fish (*Squalina squalina*), a hideous, voracious fish, closely related to the squaloid (shark) family,



ANGEL- OR MONK-FISH

with a flat, ray-like body, growing to a length of 5 ft., and occurring round the British coasts; known also as the Monk-fish. Also the name of certain tropical fishes, brilliantly coloured and laterally compressed, found in the waters round the Bermudas, the W. coast of tropical America, E. Indies, etc., including *Pterophyllum scalare* and *Pomacanthus semicirculatus*.

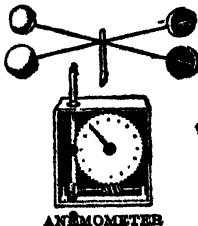
Angelica (*Angelica officinalis*), a kitchen herb of the natural order Umbelliferae, used for candying and the seed for flavouring.

Angelico, Fra, an Italian painter, born in Tuscany; became a Dominican monk at Fiesole, whence he removed to Florence, and finally to Rome, where he died; devoted his life to religious subjects, which he treated with great delicacy, beauty and finish. (1387-1455).

Angell, Sir Ralph Norman, English Lane of Holbeach. Educated in France. Rancher and journalist in Western U.S.A. In Paris: edited *Galignani's Messenger* 1899-1903; on *Eclair* 1903-1905; managed *Paris Daily Mail*, 1905-1914. Dropped name of Lane, and became famous 1909 as author of *The Great Illusion*—theme: that war is unprofitable to victors. M.P. (Labour), N. Bradford, 1929-1931. Knighted, 1931. Nobel Peace Prize, 1933. (1874-).

Angelus, a devotional service in the Catholic Church in honour of the Incarnation, held three times daily, 6 a.m., noon and 6 p.m., when the Angelus Bell is rung.

Angers, capital of the dept. of Maine-et-Loire, France, on the Maine, the ancient capital of Anjou, with a fine cathedral, a theological seminary and a medical school. Pop. 85,000.



ANEMOMETER

Anichini, Luigi, an Italian medallist of the 16th Century; executed a medal representing the interview of Alexander the Great with the High Priest of the Jews, which Michael Angelo pronounced to be the perfection of the art.

Aniline, a colourless, transparent, oily liquid, obtained chiefly by reducing nitrobenzene with iron scraps, steam and hydrochloric acid, and extensively used in the production of dyes.

Animal, an organism endowed with life. In zoology (the science of the study of the animal kingdom) the word has a more restricted meaning, animals being differentiated from plants. It is accepted, however, that animals and plants had a common origin, and most distinctions between them are arbitrary.

Animals are capable of locomotion and of assimilating organic substances, while in their organism there is an absence of chlorophyll and cellulose. There are, however, some animals which do not fulfil all these conditions, while there are some plants which do. Moreover, both animals and plants may be unicellular. In animals of a higher degree of complexity the organism includes the following systems: respiratory, circulatory, muscular, nervous, digestive, reproductive, and excretory.

Animal Worship, the deification of assimilating organic substances, certain animals that obtained in many ancient religions, of which survivals are still to be found, as in India and Polynesia.

Animism, a belief that there is a physical body of a living being, correspondent with it in attributes, and that when the connection between them is dissolved by death the former lives on in a ghostly form; in other words, a belief in a ghost-soul existing conjointly with and subsisting apart from the body, its physical counterpart.

Aniseed, the seed of the anise (*Pimpinella anisum*), an umbelliferous plant, used as a carminative and in the preparation of liqueurs.

Anjou, an ancient province in the N. of France, annexed to the crown of France under Louis XI., in 1480; the countship was held by the English crown from the time of the accession of Henry II., who was the son of Geoffrey VI. of Anjou, till wrested from King John by Philip Augustus in 1203.

Ankara (*Angora*), ancient name, Ancyra, since 1923 the seat of the Turkish Government, a city in the centre of Anatolia, in a district noted for its silky, long-haired goats, cats and dogs. Modern improvements have been effected by Kemal Atatürk, the President-Dictator. Pop. 124,000.

Ankle, the joint or articulation connecting the foot with the leg. The ankles support the weight of the body, and a sprained ankle is a common injury. The ankle, a hinged joint, is moved by three ligaments, the anterior, internal and external.

Ankober, or *Ankober*, former capital of Abyssinia (Italiou E. Africa); stands 8,200 ft. above sea-level.

Ankylosis, the medical term for the stiffness of joints which results from a shortening of the muscles or ligaments (which may allow restricted movement) or from the growing together of the bones which form the joint, in which case no movement of the joint is possible.

Ankylostomiasis, a disease of the human intestine caused by a parasite *ankylostoma*. Symptoms of the disease are similar to colic and anaemia. The disease is treated by anthelmintics (i.e., medicine for killing intestinal worms) and purgatives.

Anna, an Indian copper coin. Its value is the sixteenth of a rupee, equivalent to about one penny.

Anna Comnena, a Byzantine princess, who, having failed in a political conspiracy, retired into a convent and wrote the life of her father, Alexius I., under the title of the *Alexiad*. (1083-1148).

Anna Ivanovna, niece of Peter the Great, Empress of Russia in succession to Peter II. from 1730 to 1740; her reign was marred by the evil influence of her paramour Biren over her, which led to the perpetration of great cruelties; was famed for her big cheek, "which, as shown in her portraits," Carlyle says, "was comparable to a Westphalian ham." (1693-1740).

Annam, a kingdom of the size of Sweden, along the E. coast of French Indo-China, under a French protectorate since 1885; it has a rich, well-watered soil, which yields tropical products and is rich in minerals. Area 39,758 sq. m. Pop. 5,200,000.

Annan, a burgh in Dumfries, Scotland, on the R. Annan; birthplace of Edward Irving, and where Carlyle was a schoolboy and later mathematics master. Pop. 6,000.

Annapolis, a small seaport of Nova Scotia, Canada, on the Bay of Fundy. Also the name of the capital of Maryland, U.S.A., where is the U.S. Naval Academy. Pop. 12,000.

Ann Arbor, a city of Michigan, U.S.A., on the Huron, with an observatory and a flourishing university. Pop. 27,000.

Annates, or *First Fruits*, originally a levy made by the Pope on all ecclesiastical benefices. The rate at which they were calculated was first determined by Innocent III., and later increased by Nicholas III. In England, in the reign of Henry VIII., they were made payable to the Crown. In Queen Anne's reign they were given up to a fund for the augmentation of poor livings, known as Queen Anne's Bounty (q.v.).

Anne, ^{Queen} daughter of James II.; by the union of Scotland with England during her reign in 1707 became the first sovereign of the United Kingdom; her reign distinguished by the part England played in the War of the Spanish succession and the number of notabilities, literary and scientific, who flourished during it, though without any patronage on the part of the Queen. (1665-1714).



QUEEN ANNE

Anne Hathaway's Cottage, a farmhouse at Shottery, a hamlet near Stratford-on-Avon. It is mentioned in the will of one Richard Hathaway who died in 1581, and whose daughter Agnes was probably the same person as the wife of William Shakespeare. It is now national property.

Anne of Austria, the daughter of Philip III. of Spain, wife of Louis XIII. of France, and mother of Louis XIV., became regent on the death of her husband, with Cardinal Mazarin for minister; during the minority of her son triumphed over the Fronde; retired to a convent on the death of Mazarin. (1610-1666).

Anne of Brittany, the daughter of Francis II., Duke of Brittany; by her marriage, first to Charles VIII., then to Louis XII., the duchy was added to the French crown. (1476-1514).

Anne of Cleves, daughter of Duke of Cleves, a wife of Henry VIII., who fell in love with the portrait of her by Holbein, but, being disappointed, soon divorced her. (1515-1557).

Anne of Denmark, Queen of England and daughter of Frederick II., King of Denmark and Norway. She was married to James, then King of Scotland, in Norway at Christiania (now Oslo), and crowned consort in 1603. Only two of her children survived: Charles I. (of England) and Elizabeth, Queen of Bohemia. (1574-1619).

Annealing, a process whereby a metal is heated to a desired temperature, and after a required period at the level of that temperature, is cooled at a certain rate. The purposes of this process are either to soften or refine the substance, give greater stability to its composition and power to withstand stress, or, in an alloy, to bring about a better mixture of the constituents of the alloy. To retain a brightness of surface and prevent oxidation, the furnace atmosphere can be controlled in a process known as *bright annealing*.

Annelid, from the Latin meaning "little ring," is the class of invertebrates which includes certain types of worms, closely related to the Arthropods and Molluscs. They are to be found in the sea, fresh water and the earth. Their bodies consist of numerous segments or ring-like divisions. Reproduction may be bisexual, unisexual or by budding.



ANNELIDS—LEECH (ON LEFT) AND LUGWORM

Annuities, ordinarily a regular money payment at fixed monthly or quarterly or yearly intervals. Annuities are made by the Government and Assurance Companies; by the former to reduce the National Debt. They are paid in many forms. A life annuity is paid to the nominee for a life-time. Joint annuities are those payable to all the nominees, until one dies. A contingent annuity is one of an uncertain period. Deferred or reversionary annuities depend on some outside factor before being payable, such as a death or lapse of years. The British Government make annuities through the National Debt Commissioners. They were first paid in 1808. In 1813 an Act was passed for the registering of all annuities.

Annunciation Day, a festival on commemoration of the salutation of the angel to the Virgin Mary on the Incarnation of Christ.

Anode, name given in electrolysis to the current enters the liquid, and to the positive electrode of a vacuum tube, such as a thermionic valve or X-ray tube.

Anointing with oil or ointment as a fold purpose: to ward off the malignancy of evil spirits and diseases, and to communicate a sense of divine power by purifying the anointed of earthly taint. When they are crowned, the King and Queen are anointed by the Archbishop.

Anopheles, a genus of gnats or mosquitoes, most species being disease-carriers, including species responsible for carrying malaria, yellow-fever, etc.

Ansbach, a manufacturing town in SW. of Nürnberg, the capital of the old margraviate of the name, the margraves of which were Hohenzollerns (q.v.). Pop. 19,000.

Anselm, St., Archbishop of Canterbury, a native of Aosta, in Piedmont, monk and abbot; visited England frequently, gained the favour of King Rufus, who appointed him to succeed Lanfranc; quarrelled with Rufus and left the country, but returned at the request of Henry I., a quarrel with whom about investiture ended in a compromise; an able, high-principled, God-fearing man, and a calmly resolute upholder of the authority of the Church. (1033-1109).

Anson, Lord, a celebrated British naval commander, sailed round the world, during war with Spain, on a voyage of adventure with a fleet of three ships, and after three years and nine months returned to England, his fleet reduced to one vessel, but with £500,000 of Spanish treasure on board. Anson's *Voyage Round the World* contains an interesting account of this. (1697-1762).

Anstey, F. See Guthrie, T. A.

Anstruther, Easter and Wester, two on the Fife coast, Scotland, the former the birth-place of Tennant the poet, Thomas Chalmers, and John Goodsir the anatomist. Pop. 1,600.

Ant, a social insect belonging to the family Formicidae of the order Hymenoptera. They live in nests under the ground and in trunks of trees. These nests are hollowed into numerous galleries. They feed on many things, including any type of dead flesh, and are particularly fond of sweet juices, and will catch, keep and milk certain aphides for the sweet liquid found in their abdomen.

Three types of adult ants will be found in an ants' nest: winged males and females with sexual organs, and the sexless workers. The young pass through three stages as egg, larva and nymph. The male and female ants possess wings until fertilisation takes place, when the males die and females return to their nest. Ant communities are very highly organised, and will engage in battle, carrying away larvae to be brought up as slaves.

Antæus, a mythical giant, a *terro filius* or son of the earth, who was strong only when his foot was on the earth; lifted in air, he became weak as water, a weakness which Hercules discovered to his discomfiture when wrestling with him.

Antananarivo, or **Tananarivo**, cap. of the centre of the island, on an inaccessible rocky height 5,000 ft. above sea-level. Pop. 99,000.

Antarctica, a circumpolar southern continent. Divisions have been named Graham I., Coats Land, Enderly Land, Kaiser Wilhelm II. Land, Queen Mary Land, Knox Land, King George V. Land, Wilkes Land, Adelle Land, Oates Land, Balleny Is., S. Victoria Land, Edward VII. Land, Kemp Land and Mary Byrd Land. The area is estimated at about 5½ million sq. m. The average elevation is about 6,000 ft. and the highest peak over 15,000 ft.

Antarctic Exploration. The first important voyage was made by Capt. Cook during 1772-1775, when he crossed the Antarctic circle for the first time. In 1819 William Smith discovered a group of islands, which he named the S. Shetlands, while at about the same time an expedition under the Russian Capt. Bellingshausen explored the Sandwich group and named Alexander the First Land and Peter the First Land.

In 1823 Weddell reached Lat. 74° 15' S. Biscoe in 1836-1837 discovered what is now called Graham Land. In 1840 Captain Ross and Captain Hooker traced Victoria Land from Cape North to Cape Crozier, and named the two mountains Erebus and Terror after their two ships. The first winter endured by man in the Antarctic was in 1898, by Gerlache of Belgium.

Edward VII. Land was discovered by the British National Antarctic Expedition ship the *Discovery*. From 1901 to 1903 a German expedition in the *Gauss* discovered Wilhelm II. Land, and named an extinct volcano they discovered Gannsborg, while in 1902-1904 a Scottish expedition in the *Scotia* discovered a large barrier of ice at the SE. end of the Weddell Sea, forming part of the Antarctic continent.

In 1904 an expedition under Charcot found that the Biscoe Is. were more numerous than they had formerly been estimated to be. In his ship *Discovery* Captain Scott in 1901-1904 penetrated into this *terra incognita*, and Shackleton four years later succeeded in his *Nimrod* expedition in pushing across the ice to within 111 m. of the Pole.

On Dec. 14, 1911, Amundsen reached the Pole. Capt. Scott and his small party arriving there on Jan. 18, the next year, after great hardship, found Amundsen's tent planted on the spot, and perished in a blizzard on the way back to their base. In 1922 Shackleton died at sea on board the *Quest* while on another Antarctic voyage.

Aeroplanes have played an important part in modern Antarctic exploration. Wilkins, who had already done good work in the Arctic, discovered that Graham Land was composed of islands and was not a peninsula, and Admiral Byrd carried out an air-survey in wireless contact with New York. He flew from the Bay of Whales round the S. Pole and back in 19 hours. The *Norregia* under Riisen-Larsen discovered Queen Maud Land in 1931, and completely circumnavigated Antarctica. In 1936 Lincoln Ellsworth of U.S.A. explored Ross Sea and completed an air survey; but, his aeroplane breaking down, he was rescued by the British Royal Research Ship, *Discovery II*.

Antarctic Ocean, name given to the Atlantic, Pacific and Indian Oceans which together encircle Antarctica. It includes the waters of the Ross, Weddell and Bellingshausen Seas, and is shallow—averaging about 2,000 fathoms. Despite its temperature, which is never over 40° F., it abounds in fish; there are also many whales. In winter it is frozen, and even in summer pack-ice remains around most of the coast. There are few islands, the chief being the Antarctic Archipelago S. of S. America.

Ant-Eaters, a family of edentate mammals. They have

a tubular mouth with a small aperture, and a long tongue covered with a viscid secretion, which they thrust into the ant-hills, and then withdraw covered with ants.



GREAT ANT-EATER

They are native to tropical America, and include the Great Ant-eater (*Myrmecophaga tridactyla*), the Tamandua (*Tamandua tridactyla*) and the Two-toed Ant-eater (*Cyclothurus didactylus*).

Antelope, hollow-horned ruminants closely allied to the sheep and the goat; very like the latter in appearance, with a light and elegant figure, slender, graceful limbs, small, cloven hoofs, and, generally, a very short tail; found in every continent except Australia, where there are no representatives; include gnu, bushbucks, kudus, elands, the bongo, sable and roan antelopes, gemsbok, gazelles, nilgai, etc.

Antennæ, is the name given to jointed horns or feelers found attached to the heads of certain kinds of insects and crustaceans. In butterflies the extreme end of their antennæ is club-shaped.

while in moths the antennæ are often feathered. Insects possess only two antennæ, but crabs may have four or more.

Antequera, a town in Andalusia, Spain, 22 m. N. of Malaga, a stronghold of the Moors from 712 to 1410. Pop. 30,000.

Anthelia, luminous rings witnessed in Alpine and Polar regions, seen round the shadow of one's head in a fog or cloud opposite the sun.

Anthelmintics, drugs given to kill, or rid the body of, intestinal worms.

Anthology, is the name given to a collection of lyric poems by different authors or of extracts from longer works in prose or poetry, either by the same or different authors. Meleager, a Greek poet, compiled an anthology, entitled the *Garland* (c. 50 B.C.), and this is the basis of the present Greek Anthology, containing over 4,000 poems and inscriptions by over 300 writers. English literature is rich in anthologies.

Anthracene, a crystalline solid, one of the products obtained in the distillation of coal-tar and used for the manufacture of alizarin and other dyes.

Anthracite, a form of hard, black coal composed almost entirely of carbon. It burns with little ash or smoke, and is therefore suited for naval purposes. Particularly abundant in S. Wales and NE. Pennsylvania coalfields.

Anthrax, a disease especially in cattle, due to the invasion of a living organism, which, under certain conditions, breeds rapidly; two forms are recognised in man, external and internal; the former marked by pustules and fever, the latter due generally to infected water or meat, by intestinal disorders; both may lead to collapse. Many cases occur among wool-sorters and rag-pickers, and others may be due to infected camel's hair.

Anthropoid Apes, a class of apes, including the gorilla, chimpanzee, orang-outang, and gibbon, without tails, with semi-erect figures and long arms; classified in zoology in the sub-order of mammals, Anthropoidea, which includes man.

Anthropology, the science of man as he exists or has existed under different physical and social conditions.

Anthropometry, the science of the measurement of man, considered as a branch of anthropology. Extensive study of human characteristics has resulted in a number of scientific generalisations, especially with reference to measurements of the head, forehead, nose, stature, proportions of the body. Colouring is also important, jaw projection, etc. Anthropometry involves the measurement of man in relation to these characteristics. The anthropometric system of identifying criminals was evolved by Bertillon, but has long been replaced by the finger-print system introduced by Sir E. Henry from India.

Anthropomorphism, the ascription of human attributes to God.

Antibes, a seaport and place of ancient date on a peninsula in the S. of France, near Cannes and opposite Nice, much frequented by fashionable people. Pop. 12,000.

Antichrist, a name given in the New Testament to various incarnations of opposition to Christ in usurpation of His authority, but by St. John defined to involve that form of opposition which denies the doctrine of the Incarnation, or that Christ has come in the flesh. The name is used in the Bible by St. John only.

Anti-Corn Law League, formed by the free-traders, Richard Cobden and John Bright, at Manchester in 1838 to oppose the duties on foreign corn then in force. They were finally repealed in 1846, as a result of the potato famine in Ireland.

Anticosti, a barren rocky island, 140 m. long, in the estuary of the St. Lawrence, Canada, frequented by fishermen, and with few inhabitants.

Anticyclone, an outward flow of air from the centre of an atmospheric area of high pressure. This is caused by air which in descending is heated and dried, thus transmitting radiation unobstructed. Weather affected by anticyclone is clear, frosty in winter and hot in summer.

Antigone, the daughter of Œdipus, King of Thebes, and Jocasta, led about her father when he was blind and in exile; returned to Thebes on his death; was condemned to be buried alive for covering her brother's exposed body with earth in defiance of the prohibition of Creon, who had usurped the throne; she hanged herself in the cave where she had been buried, and Creon's son, out of love for her, killed himself. She has been immortalised in one of the grandest tragedies of Sophocles.

Antigonus, surnamed the Cyclops or One-eyed, one of the generals of Alexander the Great, made himself master of all Asia Minor, excited the jealousy of his rivals; was defeated and slain at Ipsus, in Phrygia, 301 B.C.

Antigua, one of the Leeward Is., in the W. Indies, belonging to Britain. About 51 m. in circumference. Area 108 sq. m. The islands of Barbuda and Redonda are dependencies of Antigua. Chief products: sugar and molasses. The chief town is St. John. Pop. 32,500.

Antilles, an archipelago curving round from N. America to S. America, and embracing the Caribbean Sea; the **Greater A.**, on the N. of the sea, being Cuba, Haiti, Jamaica and Porto Rico; and the **Lesser A.**, on the E., forming the Leeward Is., the Windward Is., and the Venezuelan Is., the Leeward as far as Dominica, the Windward as far as Trinidad, and the Venezuelan along the coast of S. America.

Antimony, a chemical element intermediate in character between a metal and a non-metal, but more closely resembling the former; it is sometimes known as a metalloid. Symbol Sb (from the Latin name *sibium*), atomic number 51, atomic weight 120.2. It occurs chiefly as the sulphide, stibnite, from which it is extracted by roasting the ore in air to convert it into the oxide, and heating the latter with charcoal.

The ordinary form of antimony has a silvery, metallic appearance and a specific gravity of 6.7; it is hard and brittle, and when solidifying after fusion expands, so that it may be successfully cast in moulds. It is an ingredient of many useful alloys—e.g., pewter and Britannia metal (alloys of tin, antimony and copper), type-metal (lead, antimony and tin), and anti-friction bearing metal (lead, antimony and tin). A tartrate of antimony and potassium is used as an emetic in medicine ("tartar emetic"), and also as a mordant in the dye industry.

Antinomianism (Greek *anti*, against, and *nomos*, law), originated in 1493 with Johannes Agricola, who with Luther was one of the pioneers of the Reformation. It signifies a rejection of the law of Moses in favour of a belief in the inner spirit. The doctrine was disputed by Luther and Melancthon, and Agricola eventually retracted.

Antinomy, in the transcendental philosophy of Kant the contradiction which arises when we carry the categories of the understanding above experience and apply them to the sphere of that which transcends it.

Antinous, a Bithynian youth of extraordinary beauty, a slave of the Emperor Hadrian; became a great favourite of his, and accompanied him on all his journeys. He was drowned in the Nile, and the grief of the emperor knew no bounds; he enrolled him among the gods, erected a temple and founded a city in his honour.

Antioch (now **Antakiah**), ancient cap. of Syria, on the Orontes, called the Queen of the East, on the high road between the E. and the W., and accordingly a busy centre of trade; once a city of great splendour and extent, and famous in the early history of the Church as the seat of several ecclesiastical councils and the birthplace of Chrysostom. There was an Antioch in Pisidia, afterwards called **Cæsarea**. Pop. 28,000.

Antiochus, name of a number of the Seleucidæ: **A. I.**, **Soter**—i.e., Saviour—son of one of Alexander's generals, fell heir to all Syria; king from 281 to 261 B.C. **A. II.**, **Theos**—i.e., God—being such to the Milesians in slaying the tyrant Timarchus; king, 261 to 246 B.C. **A. III.**, the **Great**, extended and consolidated the empire, gave harbour to Hannibal, declared war against Rome, was defeated at Thermopylae and by Scipio at Magnesia, killed in attempting to pillage the temple at Elymais; king, 223 to 187 B.C. **A. IV.**, **Epiphanes**—i.e., Illustrious—waged a series of campaigns against Egypt, overrunning the country until ordered out by Rome, tyrannised over the Jews, provoked the Maccabean revolt, and died insane; king, 175 to 164 B.C. **A. V.**, **Eupator**, king from 164 to 162 B.C.

Antiparos, an island in the Ægean Sea, one of the Cyclades, W. of Paros, with a stalactite cavern.

Antipater, a Macedonian general, great ability during the absence of Alexander, defeated the confederate Greek states at Cranon, reigned supreme on the death of Perdiccas (397–319 B.C.).

Antipatris, a town in Palestine built by Herod the Great, and named after Antipater, his father.

Antiphilus, a Greek painter, contemporary and rival of Apelles.

Antiphlogistic, any medicine which abating fevers—e.g., aconite, mercury, etc.

Antiphon, an Athenian orator and politician, preceptor of Thucydides, and the first to formulate rules of oratory. (480–411 B.C.).

Antipodes (from the Greek, *anti*, opposite, and *pous*, a foot). Two places on the earth are the antipodes of each other if an imaginary straight line drawn from one to the other may be said to pass through the centre of the earth. The direct antipodes of England lies in the S. Pacific Ocean, the nearest point of land being Antipodes I., about 500 m. SW. of New Zealand.

Antipope, a pope elected by a civil power in opposition to one elected by the cardinals, or one self-elected and usurping; there were some 28 of such, though authorities do not agree on the precise number.

Antipyretics, medicines to reduce the temperature in fever.

Antipyrine, a febrifuge prepared from a coal-tar, and used as a substitute for quinine.

Antirrhinum, or **Snapdragon**, a genus of plants of the order Scrophulariaceae. *A. magus* is sometimes described as a native of England, though it is more probably a naturalised escape. Although perennials, they are usually treated as half-hardy annuals in cultivation, and may be propagated from seed or by cuttings. Intermediate and dwarf varieties may be grown and of all colours except blue.



ANTIRRHINUM

Antisana, a volcano of the N. Andes, in Ecuador, 19,200 ft. high; also a village on its flanks, 13,000 ft. high, one of the highest villages in the world.

Antiscorbutics, elements necessary to prevent or cure scorbutus (scurvy). Lack or insufficiency of certain vitamins is the cause of scurvy, and the preventative or curative treatment is the administration of them in the form of orange or lemon juice, fresh vegetables and milk.

Anti-Semitism is the name given to a strong antipathy towards the Jewish race. The name originated in the 19th Century, but the antipathy goes back much earlier—to the Middle Ages and later when the Jews were barred from any form of trade or commerce, except usury. At this time the dislike was religious in origin, but in its modern manifestations it is far more an enraged attitude towards Jewish business ability and capacity to accumulate wealth.

Towards the end of the 19th Century pogroms or murderous riots against the Jews took place in Russia, Austria, Hungary, Rumania and Algeria. Anti-Semitism was also present as a social sign in England, Germany, France and the U.S.A. Feeling rose high in France in 1894, when Captain Dreyfus, a Jew, was falsely accused of espionage and condemned. After continued agitation for 10 years he was re-tried and finally released.

When the Nazi party, under Hitler, came to power in Germany in 1933, anti-Semitism assumed the form of a political movement. The Jews were declared the enemy of the German people and suffered severe persecution. A great number of Jews have been compelled to flee the country. Similar persecution accompanied the German annexation of Austria in 1938. See also Aryan paragraph under **Aryan**.

Antiseptics, substances used, particularly in surgery, to prevent or arrest putrefaction by killing bacteria; first used in surgery by Lord Lister, carbolic acid being for some time the chief.

Antisthenes, a Greek philosopher, a disciple of Socrates, the master of Diogenes, and founder of the Cynic school; affected to disdain the pride and pomp of the world, and was the first to carry staff and wallet as the badge of philosophy, but so ostentatiously as to draw from Socrates a rebuke (444-365 B.C.).

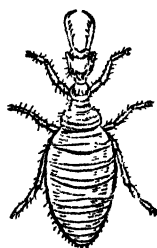
Anti-Taurus. See **Taurus**, Mount.

Antitoxins, substances produced in the body as an antidote against certain poisons, but only produced in the presence of those poisons. If the dead germs of diphtheria are injected into the blood of a horse, the antitoxin is produced and can be used as a cure for cases of the disease. A similar treatment can be used against venom in cases of snake-bite.

Antium (Mod. **Porto d'Anzio**), a town of Latium on a promontory jutting into the sea, long antagonistic to Rome, subdued in 333 B.C.; the beaks of its ships,

captured in a naval engagement, were taken to form a rostrum in the Forum at Rome; it was the birthplace of Caligula and Nero.

Ant-Lion, a four-winged insect of the family Myrmeleonidae, of the order Neuroptera, sub-order Planipennia; found in S. Europe. In its larval stage it is carnivorous, and is found in loose sand, where it digs a pit in which to trap and overcome ants and other small insects.



LARVA OF ANT-LION

Antofagasta, a port in Chile and capital of the province of Antofagasta. It was taken from Bolivia after the war of 1879, and much of Bolivia's trade passes through it. Exports silver ores, nitrate of soda, lead, copper, salt; the products of the province. Pop. (town) 53,600; (prov.) 178,700.

Antonines, The Age of the, a period of Roman history from A.D. 138 to A.D. 180 when Rome was under the rule of Antoninus Pius and Marcus Aurelius. The age was remarkable for prosperity and tranquillity.

Antoninus, Itinerary of, a valuable to be of date 41 B.C., consisting of a register of the roads, stations and distances in the Roman Empire.

Antoninus, Marcus Aurelius. See **Marcus Aurelius**.

Antoninus Pius, of Stoic principles, who reigned with justice and moderation, from 138 to 161, during which time the Empire enjoyed unbroken peace; built the Wall of Antoninus in Britain (q.v.).

Antoninus, Wall of, an earthen ramp, about 36 m. in length, from the Firth to the Clyde, in Scotland, as a barrier against invasion from the N., erected in the year 140 A.D.

Antonius, Marcus, a famous Roman orator and consul, slain in the civil war between Marius and Sulla, having sided with the latter (143-87 B.C.).

Antonius, Marcus (Mark Antony), grandson of the preceding, and warm partisan of Caesar; after the murder of the latter defeated Brutus and Cassius at Philippi, formed a triumvirate with Octavius and Lepidus, fell in love with the famous Cleopatra, was defeated by Octavius in the naval battle of Actium, and afterwards killed himself. (83-30 B.C.).

Antony, St., a famous anchorite of the Thebaid; relinquishing his fortune, he spent 20 years of his life in a lonely ruin by himself, resisting devils without number; left his retreat for a while to institute monasteries, and so became the founder of monachism, but returned to die; festival, Jan. 17. (251-351).

Antrim, a maritime county and town in Ireland; the NE. of Ulster, in Northern Ireland; soil two-thirds arable, linen the chief manufacture, exports butter; inhabitants mostly Protestant. Pop. 191,000 (excl. Belfast). The town of Antrim has a pop. of 2,000.

Antung, a port of Manchukuo (Manchuria), near the mouth of the Yalu R. It is a junction of the railway from Mukden and the Korean railway. Pop. 91,000.

Antwerp, a large, fortified, trading city in Belgium on the R. Scheldt, 50 m. from the sea, with a beautiful Gothic cathedral, the spire 402 ft. high. It is the chief seaport of Belgium. The chief

manufactures are sugar and textiles. Other industries include diamond-cutting, ship-building and petroleum-refining. It has a big air service.

The city is rich in architecture, and art treasures. In its cathedral are the "Descent from the Cross" and "Elevation of the Cross" of Rubens. The museum contains masterpieces by Steen, Rembrandt, Hals, Van Eyck. In the 16th Century it was the most prosperous city of Northern Europe. It was captured by the French in 1794, and Napoleon spent £2,000,000 on extending the docks for use in his campaign against England. It was occupied by the Germans during the Great War. Pop. 278,000.

Anu, the chief of a trinity of Babylonian gods, whose cult was associated mainly with Erech, a city of Southern Babylonia, where the worship of his daughter, the heaven goddess, Innini Ishtar, was closely connected with his.

Anubis, an Egyptian deity with the body of a jackal, whose office, like that of Hermes, it was to see to the disposal of the souls of the dead in the nether world.

Anzac, the name given during the Great War to the Australian and New Zealand Army Corps, formed from the initials of the same.

Anzac Cove, the bay in the Dardanelles where British and Anzac troops landed on April 25, 1915, under General Sir Ian Hamilton.

Aomori, a seaport of Japan. It has a fine harbour, and is situated in the Mutsu Bay at the N. of Honshu.

Aorist, Greek tense of indefinite past, corresponding to English past, e.g., "ran," "went," and used in narrative.

Aorta, is the main blood-vessel of the body, and receives blood from the heart through the left ventricle. The whole of the body except the lungs is supplied with blood through this large artery of the body. It begins near the front of the chest at the left ventricle, and after arching it runs behind the heart downwards through the diaphragm and the abdomen to below the level of the navel, where it ends and divides into the two common iliac arteries.

Aosta, a town of Italy, N. of Turin, in a fertile Alpine level valley, but where gout and cretinism prevail to a great extent; birthplace of Anselm. Pop. 20,000.

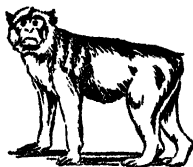
Apaches, a fierce tribe of American Indians on the S. and W. of the U.S.A.; long a source of trouble to the republic. The same name is applied to men of the Paris underworld.

Apatite, a phosphate of calcium, found in veins in igneous rocks, and the ore from which are obtained the various phosphorus compounds required in agriculture and chemistry.

Ape, a name once used for any species of monkey, but now restricted to the anthropoids (q.v.) and the short-tailed or tailless monkeys, such as the Barbary Ape.

Apeldoorn, a town of the Netherlands, in Gelderland, principally occupied in paper-making. Near is Hot Loo, the royal summer residence. Pop. 60,000.

Apelles, the most celebrated painter of antiquity; bred, if not born, at Ephesus; lived at the court of Alexander the Great; his great work "Aphrodite



BARBARY APE

Anadyomene"; a man conscious, like Dürer, of mastery in his art, as comes out in his advice to the criticising shoemaker to "stick to his last."

Apennines, a range of the Alps at right angles, nearly through the whole length of Italy, forming about the middle of the peninsula a double chain, Gran Sasso d'Italia, which supports the tableland of Abruzzi. The highest point of this parallel chain is Mte. Corno, 9,580 ft.

Aphasia, the inability to use or understand language. May be partial or complete, and is caused by a disease of the brain centre. In one form the patient knows what he wants to say, but has lost the power of speech, while in the other form there is loss of memory, the meaning of words being forgotten.

Aphelion, the point in the orbit of a planet when it is farthest from the sun.

Aphides (Aphidae), a family of insects, also known as Plant-lice and Green-fly, belonging to the sub-order Homoptera. They are very destructive to plants by feeding on them in countless numbers. They secrete a sweet substance of which ants are very fond, and to obtain which some species of ants keep them in a domesticated state. In most species males and fertilised females are produced only in the late autumn. Eggs laid by the fertilised females hatch out in spring into unfertilised females, which reproduce by parthenogenesis (q.v.). Birds, spiders and ladybirds (especially) keep the numbers down.

Aphonia, the loss, either partial or complete, of the use of the voice. It is caused by some defect, disease or injury to the organs used in speech. A very common cause of Aphonia is laryngitis.

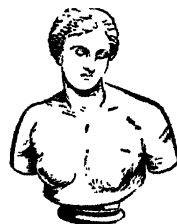
Aphorism, a concise and epigrammatic expression of a thought, giving an aspect or a summary of the truth on any particular subject as it appears to the writer.

Aphrodite, the Greek goddess of love and beauty, wife of Hephaestus and mother of Cupid; sprang from sea-foam; as queen of beauty had the golden apple awarded her by Paris, and possessed the power of conferring beauty on others by means of her magic girdle, the cestus.

Apia, seaport of Upolu I., Samoa Is. The chief exports are copra, cocoa and bananas. Robert Louis Stevenson lived at Vailima near by, where he died in 1894. It was the capital of German Samoa until 1914, and was assigned to New Zealand under mandate by Treaty of Versailles, 1919.

Apis, the sacred live bull of the Egyptians, the incarnation of Osiris; must be black all over the body, have a white triangular spot on the forehead, the figure of an eagle on the back, and under the tongue the image of a scarabæus; was at the end of 25 years drowned in a sacred fountain, had his body embalmed, and his mummy regarded as an object of worship.

Apocalyptic Writings, writings among the Jews in the 2nd Century B.C., and ascribed to one and another of the early prophets of Israel, forecasting the judgments ordained of God to overtake the nation, and predicting its final deliverance at the hands of the Messiah.



APHRODITE

Apocrypha, The, a literature of sixteen books composed by Jews, after the close of the Hebrew canon, which, though without the sanction of the prophetic books of the canon, are instinct, for most part, with the wisdom which rests on the fear of God and loyalty to His law. The word Apocrypha means hidden writing, and it was given to it by the Jews to distinguish it from the books which they accepted as canonical.

Apogee, the point in the orbit of the moon when it is farthest from the earth.

Apolda, a town in Thuringia, Germany, with extensive hosiery manufactures; has mineral springs. Pop. 26,000.

Apollinaris, Bishop of Laodicea, denied the proper humanity of Christ by affirming that the Logos in Him took the place of the human soul, as well as by maintaining that His body was not composed of ordinary flesh and blood; d. 390.

Apollo, one of the principal gods in the Greek pantheon, identified with the sun and all that we owe to it in the shape of inspiration, art, poetry and medicine; son of Zeus and Leto; twin brother of Artemis; born in the island of Delos (q.v.), whither Leto had fled from the jealous Hera; his favourite oracle was at Delphi.

Apollonius of Perga, a famous mathematician born at Perga in Pamphylia c. 242 B.C., who with Archimedes and Euclid is accounted one of the founders of mathematics. He wrote on Conic Sections.

Apollonius of Tyana, a Pythagorean philosopher, who, having become acquainted with some sort of Brahminism, professed to have a divine mission, and, it is said, a power to work miracles; was worshipped after his death, and has been compared with Christ; d. 97.

Apollo, a Jew of Alexandria, who, became an eloquent preacher of Christ, contemporary of St. Paul (Acts xviii and 1. Cor. iii).

Apollyon, the destroying angel, Greek name for the Hebrew Abaddon (q.v.).

Apologetics, a defence of the Christian religion in opposition to the rationalist and mythical theories.

Apologue, a fable or story in which the characters, often animals, are represented in some action, illustrating some moral wisdom. It differs from a parable in that the wisdom is of a more practical nature than a spiritual.

Apoplexy, is a disease of the nervous system. An apoplectic fit or stroke affects one side of the brain, which results in the paralysis of one side of the body. The most usual cause of apoplexy is a burst blood-vessel inside the brain and the destruction of surrounding tissue by hemorrhage. Apoplexy may seize elderly people after a heavy meal, or after some excitement or exertion, or it may be the result of alcoholism, syphilis or gout. It may even affect a child.

Apostacy, the act of renouncing Christianity. The epithet apostate is applied to the Emperor Julian, on his having abjured the Christian religion established by Constantine, in favour of paganism.

Apostle, means messenger, and comes from the Greek meaning "to send." It is usually applied to the twelve apostles chosen by Christ from among His disciples or followers to be His messengers. The names of the twelve Apostles were not called Peter, Andrew, James the son of Zebedee and John, his brother, Philip and Bartholomew, Matthew and Thomas, James

the son of Alphaeus, Simon Zelotes, Judas, brother of James, and Judas Iscariot (see Luke vi). Later, in place of Judas Iscariot, who betrayed Christ, the rest of the Apostles chose Matthias (see Acts i). In the New Testament the word Apostle is also used for other followers of Christ, Paul and Barnabas being among them.

Apostle's Creed summarises the Christian faith. Its authorship is imputed to the Apostles, but there is no record of it in its present form before the 3rd Century. It was introduced into the English Church at the time of the Reformation.

Apostle Spoons are small silver spoons, the handles of which are terminated in the form of an apostle. Nowadays apostle spoons are often used as teaspoons, but in the past were given as christening spoons, each of the set of twelve being in the form of one of the apostles.



Apostolic Fathers,

Fathers of the Church who lived at the same time as the Apostles. They were Clement, Barnabas, Polycarp and Ignatius.

Apostolic Succession,

the derivation of episcopal power in an unbroken line from the Apostles, a qualification believed by High Churchmen to be essential to the discharge of episcopal functions and the transmission of promised divine grace.

Apothecaries' Fluid Measure.

60 minims = 1 fluid drachm; 8 drachms = 1 fluid ounce; 20 ounces = 1 pint (pt. or fl.). 8 pints = 1 gallon (gal., C., or Cong.). For rough approximation, one half wine glassful = 2 table spoonful = 4 dessert spoonful = 8 teaspoonful = 8 fluid drachms = 1 fluid ounce.

Apothecaries' Weight.

20 grains or minims = 1 scruple; 3 scruples = 1 drachm; 8 drachms = 1 ounce; 12 ounces = 1 pound. From this table 1 ounce = 480 grains. In 1885 the ounce of 480 grains was abandoned and in its place the ounce (avoirdupois) was substituted; thus 437½ grains = 1 ounce; 16 ounces = 1 pound.

Apothecary. The origin of the word is Greek, but its meaning has changed considerably in the course of time. In Rome the *apothecarius* was the man who looked after the place where the healing herbs were kept. By a natural transition it was applied to people who prepared the herbs and drugs.

Apotheosis, the deification of a human being, and consisting of the recognition of extraordinary qualities in a man, and of placing him in the ranks of the gods and according him the worship due to a god; a tendency common to all polytheistic religions, and particularly noticeable in ancient Greece and Rome. As a rule a man was not deified until after his death.

Appalachians, a mountainous system stretches N.E. from the tablelands of Alabama to the St. Lawrence, and includes the Alleghenies and the Blue Mountains; their utmost height under 7,000 ft.; do not reach the snow-line; abound in coal and iron.

Appeal, Court of. The constitution and jurisdiction of the Court of Appeal are laid down in the Judicature Acts, 1873-1875 and subsequent Acts. Appeals lie to the Court from all divisions of the High Court, and it is only inferior to the House of Lords, which is the supreme Court of Appeal.

It consists of certain ex-officio judges, and five ordinary judges who are called Lord Justices of Appeal. The ex-officio members are the Lord Chancellor, all ex-Lord Chancellors, any Lord of Appeal in ordinary, the Lord Chief Justice, the Master of the Rolls and the President of the Probate Division. Any barrister of 15 years' standing or any judge of the High Court is qualified for appointment. The Lord Chancellor may request any judge of the High Court to sit in the Appeal Court.

The Court has two divisions. The Master of the Rolls presides in one, and a senior Lord Justice in the second. If possible, King's Bench cases are heard by two common law and one equity justice, and in Chancery cases the proportions are reversed. The Court must hear motions for a new trial or to set aside verdicts given by a jury.

In interlocutory matters appeal must be made within fourteen days, in final cases within six weeks, of judgment. New evidence is not as a rule allowed, nor points which were not made in the lower Court. Appeals from recorders' and magistrates' courts are heard in the first instance by the High Court, and any further appeal from that Court would go to the Court of Appeal, and thence to the House of Lords.

Appeals in Ecclesiastical cases, however, go to the judicial committee of the Privy Council, which court of committee also hears appeals from the overseas Dominions, including India, and from the Colonies. Appeals from County Courts are only allowed where an important legal principle is involved. Appeals from criminal cases are heard by the Court of Criminal Appeal, which was instituted in 1908.

Appendicitis, inflammation of the gut in the abdomen with thick walls but narrow opening. It may be caused by compressed indigestible food entering the appendix, which it is unable to expel, or by a crick in the organ, or by the entrance of some foreign body, such as a pip or seed, or by intestinal worms.

Appenzell, Switzerland, enclosed by St. Gall, divided into (1) Outer Rhoden, which is manufacturing and Protestant. Pop. 49,000, cap. Trogen. (2) Inner Rhoden, which is agricultural and Catholic. Pop. 14,000. Also the name of the capital. Pop. 2,700.

Apperley, **Charles James**, writer on sport, under name of Nimrod; educated at Rugby; cornet of Dragoons; ruined by farming experiments; contributed to *Sporting Magazine* and *Sporting Review*; wrote *Life of John Milton*. (1779-1843).

Appian Way, a magnificent highway begun by Appian Claudius, 312 B.C., and finished by Augustus, and extending from Rome to Brundisium.

Appin, a district on the shores of Loch Linnhe, Argyllshire, Scotland, noted for its rugged, beautiful scenery.

Apple (*Pyrus Malus*), a tree of the order Rosaceae, in its wild state known as the crab-apple. In cultivation it is valued for its fruit, which is the most important of all hardy fruits. The apple, the fruit, is the round, fleshy fruit of the swollen calyx-tube, enclosing the seeds. Apples are rarely grown from seeds or cuttings, but are budded in summer or grafted in spring on to various types of Paradise Stock, a tree useless for fruit, but, because of its large mass of fibrous roots, an ideal stock or parent plant.

Apple of Discord, a golden apple the words, "To the most Beautiful," thrown in among the gods of Olympus on a particular occasion, contended for by Hera, Athena and Aphrodite, and awarded by Paris of Troy, as

referee, to Aphrodite, on promise that he should have the most beautiful woman in the world for wife.

Appleby, the county town of Westmorland, England, on the Eden; is a health resort. Pop. 1,600.

Appleton, a city of Wisconsin, U.S.A., on the Fox R.; county town of Outagamie Co., seat of Lawrence College. Pop. 25,000.

Appoggiatura, in music a short grace-note prefixed to another note. It has no time-value of its own, but subtracts from the time value of the note to which it is attached.

Appointment, Power of, a power, generally made exercisable by deed, or will, or both, enabling the donee of that power to appoint whom he will as owner of a particular fund or other property. Where the donee of the power is restricted in his appointment to some or all of a specified class of persons—usually the children to be provided for in a marriage settlement—the power is styled a "special," as opposed to a "general" power of appointment. Any person, excepting a lunatic or infant, may be appointed a donee of a power of appointment. Powers affect only the equitable, as opposed to the legal, interest or estate in property.

Appomattox Courthouse, a village in Virginia, U.S.A., where Gen. Lee and the Confederate army surrendered to Gen. Grant at the end of the Civil War in 1865.

Apponyi, Count **Albert Georg**, Hungarian statesman, began and ended as a Conservative, moderate Liberal 1899-1903. Led the Kosuth party. President of Chamber of Deputies 1901. Minister of Education 1906. Strong supporter of Central Powers in Great War. In 1919 a non-party member of National Assembly and chairman of peace-delegation. Hungarian representative at League of Nations. (1846-1933).

Apprentice, a person, usually a minor, who in order to learn a trade is lawfully bound in service to someone from whom in return he receives maintenance and instruction. In England it was compulsory up to 1814 for any one wishing to practise a skilled trade to be an apprentice for seven years. If the apprentice is a minor, the contract is signed for him by a parent or guardian. In recent times the number of apprenticeships has seriously declined, largely in consequence of trade-union restrictions, the greater subdivision of labour processes, and the difficulty experienced by parents in paying the premiums.

Approved School, a school approved by the Home Secretary and intended for the educational training of children or young persons sent there under the Children and Young Persons Act, 1933. These schools have superseded the reformatories and industrial schools. Juvenile Courts have power to send offenders to approved schools as an alternative to committing them to the care of some fit person who may be willing to undertake the care of the young offender.

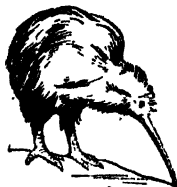
Approved Society, in its most meaning to-day, is a friendly society approved by law for the purpose of the National Health Insurance Acts. It also means a society registered under the Industrial and Provident Societies Acts (1893-1923) or the Friendly Societies Acts (1890-1924), one of whose objects is the provision of allotments, and which by its constitution is restricted by Treasury regulations in respect of the rate of interest on share and loan capital and the

distribution of profits amongst its members. The term also includes a registered company which does not trade for profit or one whose constitution forbids the issue of any share or loan capital with interest or dividend exceeding the rate proscribed by the Treasury.

Apricot (*Prunus Armeniaca*), a tree of the order Rosaceae, bearing a stone fruit (drupe). Apricots are wall-trained fruit, and because they blossom early, require protection from frost. The tree is native to Armenia, Manchuria and N. China, but is widely cultivated in Europe, and is said to have been introduced into England by a gardener of Henry VIII.

Apse, is a recess which terminates a choir, or the ends of the transepts or another part of a church. It is polygonal or semi-circular in shape, and frequently found in Byzantine architecture.

Apteryx, a curious New Zealand bird with rudimentary wings, plumage like hair, and no tail; allied to the extinct moa, known popularly as the kiwi. It is the only living genus of the order Apterygiformes, and the smallest of the sub-class of flightless birds (Ostrich tribe) known as *Ratitae*. There are four or five species.



APTERYX

Apulia, a dept. of Italy, and including the provinces of Bari, Foggia and Lecce; extends from Monte Gargano in the N. to the heel of Italy. It was the scene of the last stages in the second Punic War.

Apure, a river in Venezuela, chief tributary of the Orinoco, into which it falls by six branches.

Apurimac, an inland dept. of Peru, and a tributary of the Ucayali, 600 m. long, which forms part of the boundary. The dept. yields tropical products. Cap. Abancay. Pop. 280,000.

Aquarium, is a tank in which aquatic plants and animals are kept and cultivated. The water in aquariums may be fresh or salt. Large aquariums are to be found in zoological gardens, and are stocked with many kinds of native and tropical fish and aquatic forms of life.

Aquarius, the Water-bearer, 11th sign sun enters Jan. 21.

Aqua Tofana, Tofana's poison, some prepared by a Sicilian woman called Tofana, in 17th Century, and employed to poison many thousands of people.

Aqueducts, pipes for carrying water, such as were used to some extent by the Greeks, and more extensively by the Romans. Several Roman aqueducts are still standing, notably the Aqua Julia and the Aqua Felice.

Aquila, capital of the province of Aquila, degli Abruzzi, Italy, on the Aderno, founded by Barbarossa; lace-making is the chief industry. Pop. 24,000.

Aquila, a Judaized Greek of Sinope, in Pontus, executed a literal translation of the Old Testament into Greek in the interest of Judaism versus Christianity in the first half of the 2nd Century A.D.

Aquila and Priscilla, a Jew of Pontus and his wife, who had settled in Rome, but left when the Jews were expelled by Claudius (A.D. 49). They were in Corinth when Paul arrived and, being of a like trade, Paul joined with them. They accompanied Paul to Ephesus, where they took up their abode.

U.E.

Aquilegia, a genus of plants belonging to the order of Crowfoots (Ranunculaceae); *A. vulgaris*, or common columbine, has petals which terminate in a horn-like spur. The plants are indigenous to temperate climates.

Aquileia, an Italian village, 22 m. W. of Trieste, once a place of great importance, where several councils of the Church were held. Pop. 2,500.

Aquinas, Thomas, the Angelic Doctor, or Doctor of the Schools, an Italian of noble birth, studied at Naples, became a Dominican monk despite the opposition of his parents, sat at the feet of Albertus Magnus, and went with him to Paris; was known among his pupils as the "Dumb Ox." from his stubborn silence at study; protected at his Alma Mater and elsewhere with distinguished success and while on his way to the Council at Lyons fell sick and died. His *Summa Theologica*, the greatest of his many works, is a masterly production, and to this day a standard authority in the Roman Catholic Church. His writings fill 17 folio vols., and with those of Duns Scotus, his rival, constitute the high-water mark of scholastic philosophy and the watershed of its divergence into the philosophico-speculative thought on the one hand, and the ethico-practical or realism of modern times on the other; he was canonized in 1323. (1226-1274).

Aquitaine, a division of ancient Gaul between the Garonne and the Pyrenees; was from the time of Henry II. till 1453 an appanage of the English crown.

Arabesque, an ornamentation introduced by the Moors, consisting of imagin-



ARABESQUE

ary, often fantastic, mathematical or vegetable forms, but exclusive of the forms of men and animals.

Arabi Pasha, Ahmed, Egyptian popular leader; at first a labourer; conscripted into Egyptian army; rose to colonelcy. Rebellious against Khedive Tewfik from 1878; obtained removal of Nubar Pasha 1881; Minister of War 1882. repudiated French and British control. Defeated by British at Tel-el-Kebir 1882; banished to Ceylon; allowed to return to Egypt 1901. (c. 1841-1911).

Arabia, the most westerly peninsula of Asia and the largest in the world, being one-third the size of the whole of Europe, consisting of (a) a central plateau with pastures for cattle and fertile valleys; (b) a ring of deserts, the Nejd in the N., stony; the Great Arabian, a perfect Sahara, in the S., sandy, said sometimes to be 600 ft. deep, and (c) stretches of coastland, generally fertile on the W. and S.; has no lakes or rivers, only wadis, often dry; the climate being hot and arid, has no forests, and therefore few wild animals; a trading country with few roads or railways, yet the birthland of a race that threatened at one time to sweep the globe, and of a religion that has been a life-guidance to wide-scattered millions of human beings for over twelve centuries.

Politically it is divided into the kingdom of Saudi Arabia (the king is styled "King of the Hejaz and of Nejd and its Dependencies" — since 1933 these have formally included the previously independent state of Asir), the Principality of Kuwait, the Sultanate of Oman, the Imamate of Yemen, the British Colony of Aden, the Protectorate of Aden, including the Hadramaut, the Principality of Bahrain and the independent Sheikhdoms of the Oman coast in treaty relationship with Great Britain.

The people of Arabia are nomadic, but

from early times attained a high culture, which influenced the West. The country was united by Mahomet, and the power of Arabia continued to spread after his death until the 16th Century. Then followed a period of weakness under the influence of outside peoples, principally the Turks, until the Wahabi dynasty was founded in the 18th Century.

The Turks remained the dominant power until the Great War, when nationalist feeling in Arabia allied the Arabians with the Allies. The Wahabi tribes were united under Ibn Saud, Sultan of Nejd. His ambitious designs brought him into conflict with Hussein, King of the Hejaz, who in the Arab War of 1919 was defeated. Ibn Saud extended his possessions, but Great Britain wished to maintain Hussein. Consequently in 1921 his two sons, Amir Abdulla and the Amir Feisal, were recognised as the rulers of Trans-Jordan and Iraq respectively.

Hussein, however, by becoming Caliph in 1924, again excited the jealousy of Ibn Saud. The Hejaz was invaded, Hussein abdicated, and Mecca and Medina were captured by the Wahabis. Ibn Saud was thus practically the ruler of the whole of the Arabian peninsula, a position which he demonstrated in 1934 by defeating the Imam Yahia of Yemen. He, however, respected the independence of Iraq, and has maintained amicable relations with Great Britain, which for many years was the Mandatory for Iraq.

The present population of Arabia is said to be in the region of ten millions. Important journeys of discovery have been made in recent years across Arabia by Bertram Thomas (1930-1931) and H. St. John Philby (1932).

Arabian Nights, or *One Thousand and One Nights*, a collection of tales of various origin and date, traceable in their present form to the middle of the 15th Century and first translated into French by Galland in 1704. The thread on which they are strung is this: A Persian monarch having made a vow that he would marry a fresh bride every night and sacrifice her in the morning, the vizier's daughter obtained permission to be the first bride, and began a story which broke off at an interesting part evening after evening for a thousand and one nights, at the end of which term the king, it is said, released her and spared her life. The authoritative English translation is that by Sir R. F. Burton.

Arabis, or *Rock-crests*, a genus of plants of the order Cruciferae; bloom from February to May; have pure white single and double flowers borne in spikes above tufty grey-green foliage. There are five British species.

Arachne, in Grecian mythology, a Lydian maiden, who excelled in weaving. She had such skill that she ventured to challenge Athena, but so offended and enraged her by the perfection of her work that Athena destroyed it. Arachne hanged herself and was changed into a spider by Athena.

Arachnida, a class of articulated animals including spiders, mites, ticks and scorpions; mostly carnivorous. They have eight legs, and may be distinguished from other insects by having a cephalothorax (i.e., a fused head and thorax) and by an absence of antennae, in place of which are either pincers or daggers and sting.

Arad, a fortified town in Rumania, seat of a bishop, on the right bank of the Maros; manufactures tobacco, trades in cattle and corn. Pop. 63,000.



GARDEN SPIDER
(FEMALE)

Arafura Sea, a part of the Pacific Ocean lying between Dutch New Guinea and Northern Australia.

Aragon, a territory in the N.E. of Spain, traversed by the Ebro, and divided southward into the provinces of Huesca, Saragossa and Teruel; mountainous in the N., with beautiful fertile valleys, rather barren in the S.

Araguaya R., an affluent of the Tocantins, in Brazil, which it joins after a course of 1,000 m.

Arakan, a strip of land in British Burma, on the E. of the Bay of Bengal, 400 m. long and from 15 to 90 m. broad, a low, marshy country; produces and exports large quantities of rice, as well as sugar and hemp. The natives belong to the Burman stock, and are of the Buddhist faith, though there is a sprinkling of Mohammedans among them.

Aral, The Sea of, a lake in Asiatic Russia, 265 m. long and 145 broad, larger than the Black Sea, 150 m. E. of the Caspian; has no outlet, is shallow, and is said to be drying up.

Aram, Eugene, an English school-usher of scholarly attainments, convicted of murder years after the act and executed 1759, to whose fate a novel of Bulwer Lytton and a poem by Hood have lent a romantic and somewhat fictitious interest.

Aramæa, of Palestine, the inhabitants of which spoke a Semitic dialect called Aramaic, and, improperly, Chaldee.

Aramæans, a generic name given to dwell in the N.E. of Palestine, also to those that dwell at the mouths of the Euphrates and the Tigris.

Aran Is., three islands with antique relics. They stretch across the mouth of Galway Bay, W. coast of Ireland (Eire), to which they form a break-water.

Aranjuez, Spain, long the spring resort of the Spanish Court. Pop. 12,000.

Arapahoes, a tribe of N. American Indians in Colorado, U.S.A., with long, black hair and large noses.

Ararat, a mountain in Armenia on which Noah's ark is said to have rested; 17,000 ft. high, it is a volcanic peak also known as Mt. Massis. Ararat is an old name of Armenia. Also the name of a town of Victoria, Australia, a centre of trade in wheat and wool. It has vineyards and gold is mined. Pop. 5,000.

Aras, a river of Asia Minor, 800 m. long, rising near Erzerum in Turkey and joining the R. Kur, which debouches into the Caspian Sea. For part of its length it forms the boundary between Russia (Armenia and Azerbaijan) and Persia (Iran). Also known as the Araxes.

Araucania, the country of the Araucos, and N. of Valdivia, the Araucos being an Indian race long resistant, but now subject to Chilean authority, and interesting as the only one that has proved itself able to govern itself and hold its own in the presence of the white man.

Araucaria, a genus of tall trees of the Pinaceae (Pine) family of conifers, natives of and confined to the southern hemisphere. There are 15 species altogether, which include *A. imbricata*, the Chile Pine or Monkey-puzzle tree.

Aravalli Hills, in Rajputana and India. Mt. Abu (5,650 ft.) is the highest point.

Arbela (modern *Arbil*), a town near Mosul, in Mesopotamia (Iraq), where Alexander the Great finally defeated Darius 331 B.C. One of the chief towns of ancient Assyria.

Arbitration, a method of settling disputes by an agreement between the contending parties to accept the judgment of a third party. Arbitration in Great Britain is defined by the Arbitration Act of 1930. The choice of an arbitrator, or referee as he is sometimes called, is unrestricted, and his award is upheld by law. He should be qualified by legal training and special knowledge of the matter involved in the dispute.

Examples of civil law cases where arbitration is often employed are breaches of agreement or contract, trespass disputes, insurance liability, slander actions and property questions. Disputes between nations have been settled by international arbitration, and a permanent Court was established at the Hague in 1900, and such questions as postal rights, territorial boundaries, money as caused by a wrongful action by another state and the rights of nationals in foreign countries, have been successfully dealt with.

Arbitration is often applied to industrial disputes. It is voluntary in Great Britain, but compulsory in some of the Dominions and in Italy. To ensure no stoppage of work at munitions centres during the Great War, arbitration was made compulsory for a time by the Munitions Acts of 1915-1917, but compulsion was abolished in 1919 by the Industrial Courts Act.

Arbitration Boards, which consider industrial disputes, are usually composed of the employers and the employed, with an independent chairman sometimes appointed by the Government. They are sometimes referred to as Conciliation Boards. Industries which are not well organised have the assistance of Trade Boards (*q.v.*) in seeking arbitration. The Minister of Labour has power to order an inquiry into the circumstances causing an industrial dispute before arbitration.

Arbor Vitae, or **Thuja**, a genus of evergreen trees belonging to the Cypress tribe of the order Coniferales, often used for hedges; propagated by seeds and cuttings. There are two chief species: *T. occidentalis* the American arbor vitae, and *T. orientalis*, the Chinese arbor vitae.

Arbroath, or **Aberbrothock**, a thriving seaport and manufacturing town of Scotland, on the Forthshire coast, 7 m. N. of Dundee, with the picturesque ruins of an extensive old abbey, of which Cardinal Beaton was the last abbot. It is the "Fairport" of Scott's *Antiquary*. Pop. 3,000.

Arbuthnot, **John**, a physician and one of Queen Anne and her two successors, born in Kincardineshire, friend of Swift and Pope, joint-author with Swift, it is thought, of the *Memoirs of Martinus Scribnerus* and the *History of John Bull*. (1667-1735).

Arbutus, or **Strawberry Tree**, a genus of evergreen shrubs of the order Ericaceae, bearing

white flowers in September, followed by red, strawberry-like berries; hardy in sheltered positions and will grow to between 25 and 30 ft. high. There are 20 species native to the Mediterranean districts, Central and Northern Africa. *A. unedo* is native to S. Ireland (Blarney district), and is a curved line of berries forming the

arc of a circle; also part of circle made



ARBUTUS

by the sun or other heavenly body in its journey; and the electric discharge between two carbon terminals of different potentials.

Arcachon, a popular watering-place, with a fine beach and a mild climate, favourable for invalids suffering from pulmonary complaints, 34 m. S.W. of Bordeaux. Pop. 10,000.

Arcade, a series of arches on the same plane, generally supported by pillars. When these arches stand out in relief against a wall, with the wall as background, they are called blind arches.

Arcadia, a mountain-girt, pastoral table-land in the heart of the Morea, Greece, 50 m. long by 40 broad, conceived by the poets as a land of shepherds and shepherdesses and rustic simplicity and bliss; it was the seat of the worship of Artemis and Pan.

Arcesilaus, a Greek philosopher, a member of the Platonic School and founder of the New or Middle Academy, who held, in opposition to the Stoics, that perception was not knowledge, denied that we had any accurate criterion of truth, and denounced all dogmatism in opinion. (316-241 B.C.).

Arch, a structure of stone or brick, the component wedge-shaped parts of which follow a curved line; the blocks or masonry are supported by their mutual pressure, and are able to support additional weight. The sides on which an arch rests are called haunches or flanks, and the masonry of the arch itself vousoirs, the centre and highest stone in the arch being the keystone. Triumphal arches were erected by the Romans to celebrate the triumphal return of their generals.

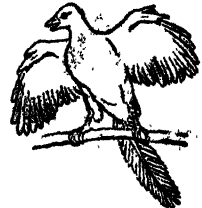
Arch, **Joseph**, English Labour leader; born at Barford, Warwickshire; worked on farms from age of 9; Primitive Methodist lay-preacher; foremost in founding Warwickshire Agricultural Labourers' Union 1872, and same year became organising secretary of new National Agricultural Labourers' Union. Liberal M.P. for NW. Norfolk, 1885-1886 and 1892-1900. (1826-1919).

Archæan Rocks, those igneous rocks underlying the Cambrian in which no certain traces of life have been found. These rocks form much of the highlands of Scotland.

Archæology, the study of the science of antiquity, of the monuments of antiquity, as distinct from palæontology, which has to do with extinct organisms or fossil remains.

Archæopteryx, the earliest species of bird, remains

of which have been found in the Upper Jurassic beds of Bavaria. It preserved many reptilian characteristics, including true teeth in both jaws, three clawed fingers on the wings and an elongated lizard-like tail. They belong to the order Saurimae ("reptile-tails").



ARCHÆOPTERYX

Archangel, the oldest seaport of Russia, on the Dvina, near its mouth, on the White Sea; is accessible to navigation from May to October, is connected with the interior by river and canal, and has a large trade in flax, timber, tallow and tar. Its development was materially aided in the Great War by the fact that, Baltic and Black Sea ports being closed,

it was the sole Russian port left that was served by railway communication. In 1919 the British N. Russian Relief Force, under Gen. Lord Rawlinson, evacuated from Archangel and Murmansk the British forces which had been co-operating with the White Russians to resist the Bolshevik forces. Pop. 195,000. Also a province of the U.S.S.R., of which Archangel is the administrative centre.

Archangels, in Christian tradition, one of the orders of angels, being placed by the Pseudo-Dionysius (5th Century) and by Dante (in the *Divina Commedia*) in the third circle with Principalities and angels, and representing the division of the angelic office into parts and the assignment of the various parts to individual angels. Michael alone is described in the Bible as an archangel, his office being the leadership of the hosts of angels who fight Satan (Rev. xii. 7). In the Christian tradition Gabriel, the ministering angel, Raphael, and Uriel, "the fire of God," are usually also described as archangels. Other traditions add Chamuel, Jophiel and Zadkiel. They are all mentioned in the Apocrypha.

Archbishop, the head of an ecclesiastical province. The title came into use in the 4th Century. In the Roman Catholic Church the powers of an archbishop are not so extensive as formerly. In the Church of England the Archbishop of Canterbury is the Primate of all England, the Archbishop of York the Primate of England. The former has the right to crown the King and Queen of England. The archbishop has supreme power under the king in ecclesiastical judicature.

Archdeacon, the bishop's vicar or representative of the bishop, attached to the cathedral, and having jurisdiction over the clergy and authority to manage the affairs of the diocese. He presides over a court where ecclesiastical causes are heard. In the 13th Century the powers of an archdeacon were considerable, but have since been curtailed. In the Roman Catholic Church especially, by the Council of Trent (1564).

Archelaus, King of Macedonia, and with whom Euripides found refuge in his exile, d. 399 B.C.; also a general of Mithridates, conquered by Sulla twice; also the Ethnarch of Judaea, son of Herod, deposed by Augustus, died at Vienna.

Archer, Frederick James, English jockey. Rode his first winner when 13, and before the end of his career rode 2,748 winners out of 8,084 mounts, being the leading jockey from 1873 to 1885, including five Derby and six St. Leger winners. Taken ill with typhoid fever in 1886, he shot himself. (1857-1886).

Archer, William, dramatic critic and translator of Ibsen; born at Perth; M.A. Edinburgh 1876. On London *Figaro* 1879-1881 and *World* 1884-1905. Introduced Ibsen to English public. Wrote: studies of Macready and Irving, an account of Francisco Ferrer, many works on the theatre, and five plays—three of them published posthumously. (1856-1924).

Archer-Fish (*Toxotes*), the name given to certain fish found on the coasts and rivers from India to the Pacific, from their method of securing insects, which is to eject a drop of water from the mouth, thus causing the insect to fall. Accuracy of aim is said to extend to 3 ft.

Archery, the art of using the bow and arrow. Archery for purposes of warfare and of hunting was practised by all the peoples of Asia in early times, while in Europe the Greeks and Romans became skilled bowmen. It survives at the present time as a form of sport. Archery societies,

such as the Royal Toxophilite Society (1781) and the Woodmen of Arden (1785), were founded in the 18th Century. The sport is governed to-day by the Grand National Archery Society, and tournaments are held in various parts of the country. The bow is about 6 ft. in length, and generally made of yew. The arrows, of red deal, are 2 ft. long, and feathered with turkey or peacock feathers.

Arches, Court of, an ecclesiastical court of appeal connected with the archbishopric of Canterbury, the judge of which is called the dean.

Archidamus, the name of five kings of ancient Sparta. A. II. was king 469-427 B.C. After an earthquake had devastated Sparta he was forced into a four years' war before he again reduced the Helots. A. III., his grandson, was the victor of the so-called "tearless battle" in 397, in which he defeated the Arcadians and Argives without the loss of a single man to himself. Reigned 361-338 B.C.

Archil, lichens, a purple dye obtained from

Archilochus, a celebrated lyric poet of Greece; of a satiric and often bitter vein, the inventor of iambic verse. (714-676 B.C.).

Archimandrite, the superior of a monastery or monasteries in the Greek Church.

Archimedes of Syracuse, the greatest mathematician of antiquity, a man of superlative inventive power, well skilled in all the mechanical arts and sciences of the day. When Syracuse was taken by the Romans, he was unconscious of the fact and slain, while busy on some problem, by a Roman soldier, notwithstanding the order of the Roman general that his life should be spared. He is credited with the boast "Give me a fulcrum, and I will move the world." He discovered how to determine the specific gravity of bodies while he was taking a bath. Discovered the relationship between the volume and surface of a sphere and cylinder. Invented instruments of war, including a burning mirror which is said to have prolonged the resistance of Syracuse for three years. Invented also of the Archimedes' screw, consisting of a revolving spiral in a cylindrical case for raising water. See illustration on right, which shows an Archimedes' screw with part of the exterior cut away to demonstrate the working principle. (287-212 B.C.).



Archipelago, originally the Aegean Sea, now the name of any similar sea interspersed with islands, or the group of islands included in it.

Architects, Royal Institute of British, the leading British architectural body; founded in 1834 and incorporated in 1837; reincorporated fifty years later; in 1925 the Incorporated Society of Architects was merged in it. It holds examinations and confers the diplomas of Associate (A.R.I.B.A.) and fellow (F.R.I.B.A.), besides annually awarding a gold medal.

Architecture, means generally the art of building and construction, and is divided into three groups: *Ecclesiastical*, *c.*, churches, etc., *Civil*, houses and public buildings, and *Naval and Military*, *i.e.*, ships and fortifications, etc. The history of architecture begins with primitive human dwellings and prehistoric monuments such as

the circle of stone at Avebury, Wiltshire, and is traced through the temples and pyramids of Ancient Egypt; the temples of Assyria and Babylonia; the palaces of Persia, where stone began to replace brick; the beautiful temples of Greece, with the Temple of Athena at Corinth and the famous Parthenon, on the Acropolis, in which architecture as an art reached its highest level for many centuries.

In Roman architecture concrete and the arch were used for the first time, and during this period civil architecture extended to the forum, the public bath, the triumphal arch, courts of justice and theatres. Byzantine architecture is notable for the celebrated church of St. Sophia at Istanbul (Constantinople) and its great dome of 107 ft. diameter. Romanesque or Western European architecture, which includes Anglo-Saxon churches, from Augustine until Edward the Confessor, characterised by a semi-circular Norman arch, of which Lincoln Cathedral is a fine example, carried the tradition on until the advent of the pointed arch of the 13th Century.

Gothic architecture represented a change from horizontal to a perpendicular style, and includes such variations as Early English, Decorated and Perpendicular, of which Salisbury Cathedral, York Minster and Henry VIII. Chapel, Westminster, are examples respectively. Renaissance architecture, dating from the destruction of the monasteries by Henry VIII., brought an increased interest in secular architecture, resulting in the Elizabethan country houses and Jesus College, Cambridge, and Wadham College, Oxford.

Gothic features disappeared in favour of the Jacobean style, of which Inigo Jones and Sir Christopher Wren were the foremost leaders, of whose art the Banqueting Hall, Whitehall, and St. Paul's Cathedral are respective examples. Classical architecture, which is noticeable during the next two hundred years, was developed under the influence of such craftsmen as Sir William Chambers (Somerset House), Sir John Soane (the old Bank of England) and the famous brothers Adam (Adelphi).

The French Revolution marks a period in the natural development of architecture, and various styles were adopted for some time, though there was a partial revival of Gothic architecture in English churches, while dwelling-houses continued to be erected in the Georgian style, and public buildings remained classic in style.

Modern architecture shows a violent break away from traditions of the past, except in so far as there is a noticeable return to the early horizontal character. There is a tendency to preserve the character of the material used, while the designs are geometrical in outline with clean lines, hard edges and "sanitary" smoothness. Steel, stone and glass are widely used, especially in industrial buildings, and on these lines an architectural revolution is taking place, especially in Germany, America and Holland. The modern dwelling-house is cubist in design, with a flat roof, suntraps and extreme simplicity of outline, and the efficiency of the house receives as much attention as the exterior design.

Architrave, the lowest part of an entablature, resting immediately on the columns.

Archives, originally a place where public and private records were kept, now refers to the records themselves. In England up to the 14th Century public archives were stored as part of the king's treasury. It was not until 1838 that the Public Record Office was established, there having till then been no central depository for public official records in this country.

Archon, a chief magistrate of Athens, of whom there were nine at a time, each over a separate department; the tenure of office was first for life, then for ten years, and finally for one.

Archytas, of Tarentum, an ancient Greek famous as a statesman, a soldier, a geometrician, a philosopher, and a man; a Pythagorean in philosophy, and influential in that capacity over the minds of Plato, his contemporary, and Aristotle; was drowned in the Adriatic Sea, 4th Century B.C.

Arcis-sur-Aube, a town of Troyes, in France, birthplace of Danton; scene of a defeat of Napoleon, Mar. 1814. Pop. 3,000.

Arc Lamps have carbon electrodes kept a short distance apart, the current being carried across the space by the carbon vapour, the high temperature produced—3,000° C.—raising the carbon to white heat. A similar arc is used for the electric furnace and electric welding.

Arcot, the name of two districts, N. and India; also the name of chief town in the district, 65 m. S.W. of Madras; captured by Clive in 1751; once the capital of the Carnatic. Pop. 4,380,000.

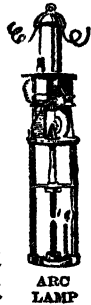
Arctic Exploration has its origin in early times, though the first properly organised voyages in search of the NW. and NE. Passages were made in the 16th Century. Among these early explorers were Henry Hudson, Sir Hugh Willoughby, Baffin, Frobisher, Davis and Chancellor. In the early part of the 19th Century Ross, Franklin, M'Clintock and Parry took part in expeditions, Franklin losing his life in that of 1845, which led to search-parties and fresh discoveries. Nansen and Johansen in 1895 got 200 m. nearer the Pole than had previously been reached; Peary made further progress in 1902, and in 1906 was only 201 m. from the Pole. In 1909 Peary planted the American flag at the Pole, not long after Dr. Cook had announced he had reached there, a claim which was disproved.

In 1925 Amundsen tried unsuccessfully to reach the Pole by aeroplane, but in 1928 the airship *Norge*, under General Noble, succeeded in flying over it, though subsequently forced down. An attempted rescue by Amundsen by aeroplane led to his death when he crashed. Large areas of Greenland have been explored by the Cambridge University Expeditions of 1923, 1926 and 1929. Capt. Sir Hubert Wilkins, who had already explored Alaska, flew from Alaska to Spitzbergen. Watkins of Cambridge attempted to organise an air route from London to Canada via Iceland and Greenland. He was awarded the gold medal of the Royal Geographical Society in 1932, but lost his life while hunting from a kayak.

In 1937 Russian aeroplanes twice flew over the N. Pole in an attempt (successful on the second occasion) on the then non-stop record. On May 21, 1937, a Russian scientific expedition landed at the Pole in aeroplanes to spend a year on the drift ice studying meteorological and other conditions, communicating with the outside world by wireless.

Arctic Ocean, a circular ocean round the N. Pole, its diameter 40°, with low, flat shores, covered with ice-fields, including numerous islands; the Gulf Stream penetrates it, and a current flows out of it into the Atlantic. ☉

Arcturus, star of first magnitude in direct line with the tail of the Great Bear.



Ardashir. See *Artaxerxes*.

Ardèche, a mountainous dept. of France, on the right bank of the Rhône. Produces silk, wine, olives, etc. Pop. 283,000. Cap. Privas. Also a tributary of the Rhône of the same name.

Arden, a large forest at one time in England, E. of the Severn. Now only a well-wooded area in Warwickshire. Familiar to Shakespeare, and inspiration of forest scenes in *As You Like It*.

Ardennes, a forest, a tract of rugged woodland on the confines of France and Belgium, the scene of desperate battles in the Great War in 1914. Also the name of a dept. of France, on the borders of Belgium. Pop. 300,000.

Ardnamurchan, a district of Argyllshire, Scotland. It has deer forests, and the coast is rocky, with good salmon-fishing. A light-house stands on Ardnamurchan Point, the most westerly point on the mainland of Scotland.

Ardoch, a place in Perthshire, Scotland, 7 m. from Crieff, with the remains of a Roman camp, the most complete in Britain. Pop. 1,000.

Ardrishaig, a port of Scotland at the entrance to the Crinan Canal in Argyllshire. Pop. 1,200.

Ardrossan, a burgh and seaport of Argyllshire, Scotland. It has a fishing industry, collieries and ironworks. The 12th Earl of Eglinton commenced building the harbour in 1806, and the development of Ardrossan has resulted. Pop. 6,900.

Ardley, urban district of Yorkshire, England, in the W. Riding, 3½ m. NE. of Wakefield, formed of the villages of E. and W. Ardsley. There are coalmines and ironworks, and wool is woven. Pop. 9,000.

Areca, a genus of plants of the Palm order; the more notable species are the betelnut palm (*q.v.*) (*A. catechu*), a handsome tree cultivated in the hotter countries of Asia; and the cabbage-palm (*A. oleracea*), a very tall species which grows in the W. Indies.

Arena, a word derived from the Latin *harena*, meaning sand, and used to denote the central part of the amphitheatre where gladiatorial and other combats took place.

Arenga, a genus of plants of the Palm order found in Malaya. *A. saccharifera* is cultivated for the sugar obtained after evaporation of the sap and for a kind of sago made from the pith.

Areopagitica, a prose work of Milton, being a speech for the liberty of unlicensed printing, published 1644.

Areopagus, the hill of Ares in Athens, the celebrated council held there, a tribunal of 31 members, charged with judgment in criminal offences, whose sentences were uniformly the awards of strictest justice.

Arequipa, a city in Peru, founded by Pizarro in 1539, in a fruitful valley of the Andes, 8,000 ft. above the sea, 30 m. inland; is much subject to earthquakes, and was almost destroyed by one in 1868. It has a university. Pop. 46,000. Also a coastal dept. of S. Peru, mountainous, rich in minerals, and with fertile valleys.

Ares, the Greek god of war in its sanguinary aspects; was the son of Zeus and Hera; identified by the Romans with Mars; was fond of war for its own sake; said to have had an intrigue with Aphrodite and been exposed to the ridicule of the gods.

Arethusa, a celebrated fountain in the island of Ortygia, near Syracuse, transformed from a Nereid pursued thither from Ellis, in Greece, by the river-god Alpheus, so that the waters of the river henceforth mingled with those of the fountain.

Aretino, Pietro, called the "Scourge of Princes," a licentious satirical writer, born at Arezzo, in Tuscany; settled in Venice, where his witty verses and plays enjoyed wide popularity. (1492-1556).

Arezzo, capital of a province in Tuscany, Italy, of the same name, an ancient Etruscan town subject to Rome and in the Middle Ages subject to Florence; the birthplace of Mæcenæ, Michael Angelo, Petrarch, Guido and Vasari. Pop. (town) 57,000; (prov.) 306,000.

Argali, a number of species of great wild Siberia, as large as a moderately sized ox, with enormous, grooved, curving horns; strong-limbed, sure-footed and swift. The more important are the Siberian Argali (*Ovis ammon*), Marco Polo's Sheep (*O. a. poli*) and the Tibetan argali (*O. a. hodgsoni*).



Argand, Aimé, a Swiss physician and chemist, born at Geneva; inventor of the argand lamp, with a circular wick. (1755-1803).

Argelander, Friedrich Wilhelm, a distinguished astronomer, born at Memel, professor at Bonn; he fixed the position of many thousands of stars, and recorded observations to prove that the solar system moved through space. (1799-1875).

Argenteuil, a town of France in the dept. of Seine-et-Oise on the outskirts of Paris. Pop. 59,000.

Argenteus Codex, meaning "silver book," an ancient manuscript of the four gospels written in Mæso-Gothic, found in an Abbey in Westphalia, and now kept in Sweden, in the library at Upsala.

Argentine Republic, formerly the United Provinces of La Plata, a federal republic of S. America, the extreme length of which is 2,390 m. and the average breadth 500 m., the total area being 1,153,119 sq. m. It consists of 14 provinces, 10 territories and one federal district. It is bounded on the N. by Bolivia; on the E. by Paraguay, Brazil, Uruguay and the Atlantic; on the S. by the Antarctic Ocean, and on the W. by the Andes.

It comprises four great natural divisions: (1) the Andean region, containing the provinces of Mendoza, San Juan, Rioja, Catamarca, Tucuman, Salta and Jujuy; (2) the Pampas, containing Santiago, Santa Fé, Cordoba, San Luis and Buenos Aires, with the territories Formosa, Pampa and Chaco; (3) the district between the rivers Parana and Uruguay containing the provinces of Entre Rios and Corrientes and the territory Misiones; (4) Patagonia, including the E. half of Tierra del Fuego.

The great water-course of the country is the Parana, with a length of 2,000 m. It is formed by the union of the Upper Parana and Paraguay. European grains and fruits, including the vine, are successfully raised, and large areas produce wheat, maize, flax, etc., while countless herds of cattle, horses and sheep find pasture on the great grasslands. Gold, silver, nickel, copper, tin, lead and iron are found in the NW. mountainous districts.

The external commerce is important, the chief exports being beef and mutton, wheat, maize and linseed, wool, skins and hides, tallow. Imports are chiefly manufactured goods. The trade is largely with Britain and France. The chief denomination of money is the dollar or peso, value in gold 4 shillings. Buenos Aires is the capital. Other towns are Rosario, Cordoba, La Plata, Tucuman, Mendoza and Santa Fé. Pop. 10,646,814.

Argentite, or silver sulphide, grey in colour and when it occurs in large quantities, as in Mexico and Nevada, a rich ore of silver.

Argive, a native of Argos; hence, a Greek in general. Homer was the first to use the word.

Argol, a pink deposit left at the bottom of the vat or cask, forming a hard crust when wine is fermented. Tartaric acid may be prepared from it, or it may be used to form bitartrate of potassium, or cream of tartar.

Argolis, the N.E. peninsula of the Morea of Greece, and one of the 13 provinces of Greece, is 12 m. long by 5 m. broad. Pop. (with Corinth) 166,000.

Argon, a chemical element belonging to the family of inert or noble gases; symbol A, atomic number 18, atomic weight 39.944. It is a colourless gas completely devoid of chemical properties, and occurs in the atmosphere to the extent of nearly 1 per cent. by volume. It is used in filling gas-filled electric lamps, being obtained for this purpose by means of the fractional distillation of liquid air. It was discovered in 1894 by Lord Rayleigh and Sir William Ramsay, though its existence had previously been suspected by Henry Cavendish in 1785.

Argonauts, the Greek heroes, sailors the command of Jason, sailed for Colchis in quest of the golden fleece, which was guarded by a dragon that never slept; a perilous venture, but it proved successful with the assistance of Medea, the daughter of the king, whom, with the fleece, Jason in the end brought away with him to be his wife.

Argonne, in the N.E. of France, a dept. of Ardennes, Marne and Meuse. Here it was that the Duke of Brunswick was outwitted by Dumouriez in 1792. In the Great War the Germans held strongly fortified positions in the hills and forests of Argonne during 1915 to 1918. They were only driven out by a large-scale attack of combined American and French armies from Sept. to Nov. 1918. The advance was only ended at Sedan by the Armistice.

Argos, the capital of Argolis, played for long a prominent part in the history of Greece, but paled before the power of Sparta. Has been the scene of many conflicts since.

Argosy (*Argosie*), a large vessel designed for carrying merchandise. Some derive the word from Jason's ship the *Argo*; others from Ragusa, which appears in 16th-Century English as *Aragosa*.

Argus, surnamed the "All-seeing," a fabulous creature with a hundred eyes, of which one half were always awake, appointed by Hera to watch over Io, but Hermes killed him after lulling him to sleep by the sound of his flute, whereupon Hera transferred his eyes to the tail of the peacock, her favourite bird. Also the name of the dog of Ulysses, immortalised by Homer.

Argus Pheasant, a beautiful Oriental game-

bird (generic name *Argusianus*), so called from the eye-like markings on its plumage, found in the Indo-Malay country; described as having "the most perfect type of pheasant-wing, where the first flight feather is the shortest and the tenth the longest." Two types viz., the true Argus of



ARGUS PHEASANT

Malay (*A. argus*) and Borneo (*A. graye*) and Rheinhardt's crested Argus (*Rhinoceros ocellatus*) of Malay and Tonkin.

Argyll, a large county in the W. of Scotland, land, consisting of deeply indented mainland and islands, and abounding in mountains, moorlands and lochs. Pop. 71,000.

Argyll, a noble family or clan of the name of Campbell, the members of which have held successively the titles of Earl, Marquis and Duke, their first patent of nobility dating from 1445, and their earldom from 1457.

Argyll, Archibald Campbell, 1st Marquis of, sided with the Covenanters, fought against Montrose; disgusted with the execution of Charles I., crowned Charles II. at Scone; after the Restoration committed to the Tower, was tried and condemned and met death nobly. (1598-1661).

Argyll, Archibald Campbell, 9th Earl of, son of the preceding, fought for Charles II., was taken prisoner, released at the Restoration and restored to his estates, proved rebellious at last, and was condemned to death; escaped to Holland, made a descent on Scotland, was captured and executed in 1685. (1629-1685).

Aria, in music, a melody as distinct from a composition (an air) for a single voice or a single musical instrument written with an accompaniment.

Ariadne, daughter of Minos, King of Crete, gave to Theseus a clue by which to escape out of the labyrinth after he had slain the Minotaur, for which Theseus promised to marry her; took her with him to Naxos and left her there, where, according to one tradition, Artemis killed her, and according to another, Dionysos found her and married her.

Arianism, the heresy of Arius (q.v.).

Arica, a seaport connected with Tacna, S. Peru, the chief outlet for the produce of Bolivia; suffers frequently from earthquakes, and was almost destroyed in 1868. In 1929, as the solution of the protracted Tacna-Arica dispute with Chile, Arica was assigned to Chile and Tacna province to Peru. The population has declined through earthquakes, and is now only 8,000.

Ariège, dept. of France, at the foot of the Pyrenees; has extensive forests and is rich in minerals. Pop. 161,000.

Ariel, a name given to Jerusalem by the Prophet Isaiah in Isaiah xxix. 1. It is taken to signify "lion of God." The word also occurs in Ezekiel xlii. 15, 16, where it signifies "hearth of God," and is used as a synonym for an altar.

Aries, the Ram, the first sign of the zodiac, which the sun enters on March 21. The constellation of that name is now in the sign Pisces, owing to the precession of the equinoxes.

Arion, a lyrist of Lesbos, lived chiefly at the court of Periander, Corinth; returning in a ship from a musical contest in Sicily laden with prizes, the sailors plotted to kill him, when he begged permission to play his lute; on this being conceded, dolphins crowded round the ship, whereupon he leapt over the bulwarks, was received on the back of one of them and carried to Corinth.

Ariosto, Ludovico, an illustrious Italian poet, born at Reggio, in Lombardy; spent his life chiefly in Ferrara, mostly in poverty; his great work, *Orlando Furioso*, was published in 40 cantos, in 1516. (1474-1533).

Ariovistus, a German chief, invaded Gaul and threatened to overrun it, but was forced back over the Rhine by Caesar.

Aristæus, in Greek mythology, son of Apollo, the guardian divinity of the vine and olive, of hunters and herdsmen; first taught the management of bees.

Aristarchus of Samos, a Greek astronomer, who first conceived the idea of the rotundity of the earth and its revolution both on its own axis and round the sun, in promulgating which idea he was accused of impiously disturbing the serenity of the gods. (lived c. 270 B.C.).

Aristarchus of Samothrace, a celebrated Greek grammarian and critic, who devoted his life to the elucidation and correct transmission of the text of the Greek poets, and especially Homer. (220-143 B.C.).

Aristides, an Athenian general and statesman, surnamed *The Just*; covered himself with glory at the Battle of Marathon; was made archon next year, in the discharge of the duties of which office he received his surname; was banished by ostracism at the instance of his rival, Themistocles; three years after the invasion of Xerxes, was reconciled to Themistocles, fought bravely at Salamis, and distinguished himself at Plataea. (530-468 B.C.).

Aristippus of Cyrene, founder of the Cyrenaic school of philosophy, a disciple of Socrates; in his teaching laid too much emphasis on one principle of Socrates, apart from the rest, in insisting too exclusively upon pleasure as the supreme good and ultimate aim of life.

Aristocracy, the rule of the best, theory by Plato. In historical development, however, it has come to mean the rule of an hereditary upper class. The supreme example in history is the Roman Republic. A ruling aristocracy should not properly be dependent on a monarchy, although in history this has often been so.

Aristophanes, the great comic dramatist of Athens, lived in the 5th Century B.C.; directed the shafts of his wit against all, of whatever rank, who sought in any way to amend the religious, philosophical, social, political or literary creed and practice of the country, and held up to ridicule such men as Socrates and Euripides, as well as Cleon the tanner; wrote 54 plays, of which 11 have come down to us; of these the *Clouds* aims at Socrates, the *Acharnians* and the *Frogs* at Euripides, and the *Knights* at Cleon; d. 384 B.C.

Aristotle, a native of Stagira, in Thrace, and hence named the *Stagirite*; deprived of his parents while yet a youth; came in his 18th year to Athens, remained in Plato's society there for 20 years; after the death of Plato, at the request of Philip, King of Macedon, who held him in high honour, became the preceptor of Alexander the Great, then only 13 years old; on Alexander's expedition into Asia returned to Athens and began to teach in the Lyceum, where it was his habit to walk up and down as he taught, from which circumstance his school got the name of *Peripatetic*; after 13 years he left the city and went to Chalcis, in Euboea, where he died. He was the oracle of the scholastic philosophers and theologians in the Middle Ages; is the author of a great number of writings which covered a vast field of speculation, of



ARISTOTLE

which the progress of modern science goes to establish the value; is often referred to as the incarnation of the philosophic spirit. His chief writings were *The Politics* and *The Poetics*, the latter the first written treatise on the principle of criticism. (384-322 B.C.).

Arithmetic, the science of calculation by numbers. The system of numeration by local value which forms the basis of present-day notation came from the Hindu or Arabic method about the 11th Century, and since the introduction of logarithms by Napier 400 years later there has been no significant advance in arithmetical rules.

As taught in European countries, arithmetic consists of the four elementary operations of addition, subtraction, multiplication and division, which are then applied to the tables of weight, length, money, etc. In other operations, numbers are divided into fractions involving the processes of least common denomination and greatest common factor. Fractions are vulgar and decimal, the latter based on tenths. Following is the method of proportion, once called the rule of three, leading to ratio.

Arius, a presbyter of Alexandria in the 4th Century, and founder of Arianism, which denied the consubstantiality of the Son with the Father in the Trinity, a doctrine which hovered for a time between acceptance and rejection throughout the Catholic Church; was condemned first by a local synod which met at Alexandria in 321, and then by a General Council at Nice in 325, which the Emperor Constantine attended in person; the author was banished to Illyricum, his writings burned, and the possession of them voted to be a crime; after three years he was recalled by Constantine, who ordered him to be restored; was about to be readmitted into the Church when he died suddenly. (280-336).

Arizona, one of the southern states of the U.S.A., N. of Mexico, nearly four times as large as Scotland, rich in mines of gold, silver and copper, fertile in the lowlands; much of the surface a barren plateau 11,000 ft. high, through which the cañon of the Colorado passes. Was under Spanish sway until it acquired its independence in 1821. Pop. 436,000—including over 43,000 American Indians.

Ark, the name given to the enclosed wooden vessel built by Noah and his family to save themselves and two of every species of bird and beast during the Deluge. (Gen. vi-viii).

Ark of the Covenant, a chest of wood overlaid with gold, 2½ cubits long and 1½ in breadth; contained the two tables of stone inscribed with the Ten Commandments, the gold pot with the manna, and Aaron's rod; the lid supported the mercy-seat, with a cherub at each end, and the shekinah radiance between. It was eventually enshrined in the Temple of King Solomon at Jerusalem.

Arkansas, one of the Southern States of U.S.A., N. of Louisiana and W. of the Mississippi, a little larger than England; rich in minerals, including coal and petroleum; lumbering an important industry; cotton, corn, rice and fruit grown. Pop. 1,854,000, one-third being negro.

Arkansas River, a tributary of the Mississippi, 2,000 m. long.

Arklow, a seaport of Co. Wicklow, Ireland (Eire), at the mouth of the R. Avoca, and has oyster-beds and other sea-fishing. Arklow was dismantled by Cromwell in 1649, and in 1798 there was conflict here between the United Irishmen and the Government. Pop. 5,000.

Arkwright, Sir Richard, born at Preston, Lancashire; bred to the trade of a barber; took interest in the machinery of cotton-spinning; with the help of a clockmaker, invented the spinning-frame; was mobbed for threatening thereby to shorten labour and curtail wages, and had to flee; fell in with Mr. Strutt of Derby, who entered into partnership with him; prospered in business, was knighted in 1786, and died worth half a million. (1732-1792).

Arlberg, a mountain mass between Vorarlberg and Tyrol, pierced by a railway tunnel, one of the three that penetrate the Alps, now electrified.

Arlen, Michael, an English novelist of note, born in Bulgaria of Armenian parentage, naturalised English in 1922. He established his reputation with *The Green Hat* in 1924. Subsequent novels include *Young Men in Love*, etc. (1895-).

Arles, a city, one of the oldest in France, on the Rhône, in the dept. of Bouches-du-Rhône, where Constantine built a palace; has ruins of an amphitheatre and other Roman works. Pop. 16,000.

Arlington, Henry Bennet, Earl of, served under Charles I., and accompanied Charles II. in his exile; a prominent member of the famous Cabal; being impeached when in office, lost favour and retired into private life. (1618-1685).

Arliss, George, English actor; first appearance Elephant and Castle Theatre, London, 1887; first notable success in *Mr. and Mrs. Davenport*, Royalty Theatre, 1900. With Mrs. Patrick Campbell to America, 1901; acted in historical plays. After 22 years' absence from England, played the Rajah in *The Green Goddess* by William Archer, St. James's, 1923. Autobiography, *Up the Years from Bloomsbury*, 1927. Has also achieved considerable success as a film actor. (1868-).

Arlon, a prosperous town in Belgium, capital of the province of Luxembourg. Pop. 11,000.

Arm, is an upper limb of the human body, the upper arm, the lower arm and the hand, which is again subdivided. The bone of the upper arm is the humerus, the fore-arm is formed of two bones, the ulna and the radius, and the wrist is an arrangement of eight bones known as the carpels, and joined to these bones are the five metacarpals, which reach to the roots of the thumb and fingers. Each finger has three bones, called phalanges, and the thumb two. The chief muscles which move the arm are the deltoid, the latissimus dorsi and the coraco-brachialis, the pectoralis major, biceps and triceps, the flexors and extensors. The arteries of the arm are the axillary, brachial, radial and ulnar arteries.

Armada, Spanish, named the Invincible, an armament fitted out in 1588 by Philip II. of Spain against England, consisting of 130 war-vessels, mounted with 2,430 cannon, and manned by 20,000 soldiers; was defeated in the Channel on July 20 by Admiral Howard, seconded by Drake, Hawkins and Frobisher; completely dispersed and shattered in retreat by a storm on the coasts of Scotland and Ireland, the English losing only one ship; of the whole fleet only 33 ships found their way back to Spain.

Armado, (*Dasypodidae*), a genus of the Edentate order of mammals. They are ground animals characterised by the thick, bony plates which cover their bodies like a shield; found chiefly in Central and S. America.

Armageddon, a name given in the Apocalypse to the final battlefield between the powers of good and evil, or Christ and Antichrist.

Armagh, a county in Ulster, Northern Ireland, 32 m. long by 20 m. broad; and a town in it, 33 m. SW. of Belfast, anciently the capital of Ireland; the seat of Catholic and Protestant archbishoprics, and has two cathedrals. Apples and flax are the principal crops of the county and the chief manufacture, linen-weaving. Pop. (county) 110,000; (town) 7,400.

Armagnac, a district, part of Gascony, in France, now in dept. of Gers, celebrated for its wine and brandy.

Armagnacs, a faction in France in time of Charles VI., headed by the Counts of Armagnac, at mortal feud with the Bourguignons, a strife which did not end until the Treaty of Arras, 1435.

Armatoules, warlike marauding tribes in the mountainous districts of Northern Greece, played a prominent part in the War of Independence in 1820.

Armature, the coil of wire in a dynamo or electric motor which breaks the magnetic field. It can be either stationary or rotating. Also the "keeper" of a horse-shoe magnet.

Armenia S.S.R., a Soviet Socialist Republic in Western Asia, W. of the Caspian Sea and N. of Kurdistan Mts., anciently independent, now a republic included in the Transcaucasian Federation under Soviet Russia, occupying a plateau interspersed with fertile valleys, which culminates in Mt. Ararat, in which the Euphrates and Tigris have their sources. The country is rich in copper and manufactures carpets. Area 11,945 sq. m. Pop. 1,110,000.

Armenians, a people of the Aryan race occupying Armenia, early converted to Christianity of the Euty-chian type; from early times have emigrated into adjoining, and even remote, countries, and are, like the Jews, mainly engaged in commercial pursuits, the wealthier of them especially in banking. Have been subject to the most brutal massacres in modern times by the Turks (1894-1896); over a million of them were massacred during the Great War, and the race was all but exterminated.

Armentières, a manufacturing and trading town in France, 12 m. N. of Lille in the dept. of Nord. During the Great War it was the scene of much fighting in Picardy. Pop. 18,000.

Armida, town of New South Wales, Australia. Gold, antimony and wolfram are worked, and sheep reared in the district. Pop. 7,000.

Armillary Sphere, a model of the celestial globe in which the horizon, ecliptic, meridian and tropics were represented by metal circles; formerly used by astronomers in their calculations, but since displaced by the terrestrial globe.

Arminius, or Hermann, the deliverer of Germany from the Romans by the defeat of Varus, the Roman general, in A.D. 9, near Detmold (where a colossal statue has been erected to his memory); killed in some family quarrel in his 37th year.

Arminius, Jacobus, a learned Dutch theologian and founder of Arminianism, an assertion of the free-will of man in the matter of salvation against the necessitarianism of Calvin. (1560-1609).

Armistice, a pact to end fighting effected, the most famous being that signed at 5 a.m. on Nov. 11, 1918, under which Germany and the Allies agreed that all troops should cease fire at 11 a.m. that day.

Armorica, a district of Gaul in pre-Roman times, extending from the Loire to the Seine, now known as Brittany.

Armour, is a covering or partial covering used to protect the body in time of war, and therefore is made of some material impervious to attacking weapons. Metal has been the material most used for armour. The Greeks used bronze. The Roman shields were made of wood encased with hide overlaid with metal. Ancient German tribes used wooden shields covered with leather, while many native tribes of to-day, such as the Zulus, use a light shield covered with skin. The shield and the helmet or head-covering are the oldest forms of armour.

At the time of the crusades a more complete type of armour—this was plate armour and chain armour—was in use. The man and even the horse were almost completely covered by plate-armour. The use of gunpowder stopped the development of plate armour in Europe which in the 15th Century had reached its perfection and was often elaborately decorated by goldsmiths and silversmiths, the coat of arms, both as a distinguishing mark and for decoration, being intricately engraved on the shield.

In modern warfare armour is used on machines rather than persons, and tanks and armoured cars give some protection to their crews. The trench helmet or "tin hat" is a modern helmet used for protection against shrapnel.



THE CORNU-COPIA ARMOUR OF HENRY V

Armoured Car, a metal-plated car which carries a mounted machine-gun encased in a small revolving turret. They differ from tractor-mounted guns and tanks, as they are built on lines resembling the chassis of an ordinary motor-car. They were used by the British army in France towards the end of the Great War and a great deal in the East. Armoured-car companies now form part of the Tank Corps in the British Army. Shortly after the Great War several British Cavalry regiments were converted into armoured-car units, and, under the scheme of reorganisation, announced in 1936, many other famous cavalry regiments will become either armoured-car regiments or light-tank regiments.

Arms, or armorial bearings, are heraldic compositions, the devices of which coats of arms are formed. A coat of arms should properly be hereditary, and was originally connected with armour; the former name for heraldry was armory. At the present day there is a tax in England on the use of heraldic arms.

Arms (weapons of offence), used in warfare, originated far back in prehistoric times. The earliest were of stone, and consisted of spear-heads and arrow-heads. These were followed by those made of bronze, and a little later by iron weapons. The Greeks used swords, spears, lances and javelins. The Romans used a short, double-edged, pointed sword. Further N. the battle-axe was used by various tribes.

From the time of the Normans the bow-and-arrow seems to have been used in England; first a short bow, and then the long bow 6 ft. long, and later the cross-bow, a metal bow with a trigger release.

The first firearms were cannons firing stones, and were introduced as early as the 14th Century, while catapults sling stones were a much earlier invention. The forerunner of the rifle was the arquebus, a hand-gun invented in the 16th Century, so heavy that it needed to be fired from a rest. The arquebus was followed by the matchlock

and the flintlock. The first percussion gun was invented in 1807, a muzzle-loaded gun, and was replaced later by the breech-loaded gun.

Modern weapons are rifles, bayonets, revolvers, grenades, machine-guns, heavy guns and howitzers, anti-aircraft guns, bombs, torpedoes, flame-throwers and poison gas.

Armstrong, Warwick, famous Australian all-round cricketer, who captained the Australian team in Australia in 1920 and in England in 1921 without losing a Test match. (1879-).

Armstrong, William George, Lord, born at Newcastle, produced the hydraulic accumulator and the hydraulic crane, established the Elswick engine works in the suburbs of his native city, and invented the Armstrong gun. (1810-1900).

Army, a military organisation, consisting of armed men. In primitive times the entire male population formed the available armed force in time of peril. An organised army existed in Egypt 2,000 years B.C., and later in Assyria, Babylonia and Persia. In Greece, and in Rome under the kings, the army was a gathering of citizens and peasants.

The conquests of Alexander the Great, however, had necessitated an efficient and permanent military organisation, and later in Rome a standing army was maintained for the protection of the Republic. The Roman emperors formed a large professional army, but after the break-up of the empire the growth of feudalism favoured small bands of armed men owing allegiance to their lord.

From towards the end of the Middle Ages to the 18th Century rulers were maintained, and war mostly fought, by mercenary armies of professional soldiery. The idea of "a nation in arms" found its first modern example in the "national" armies which fought under Lafayette to defend the new French Republic. From Napoleon developed the idea of a standing professional army to form the nucleus of the conscripted forces. While to-day compulsory military service prevails in all European countries except the United Kingdom, and in Japan, the doctrine that national defence is the concern of the entire nation has led to the formation of large standing armies.

In England, the army as a career owes much to Lord Cardwell, who in 1871 altered the conditions of service to six years with the colours and six with the reserve. He also introduced the linked-battalion system, i.e., one battalion abroad and the other at home. Lord Haldane created the territorial force in place of the Yeomanry and Volunteers. His reforms made possible the despatch of the expeditionary force to France on the outbreak of the Great War.

Since the War, and as one result of it, cavalry and artillery in the British Army have been mechanised. All transport is also mechanised. The Household Cavalry and a few Indian regiments alone retain horses. Several rifle regiments are being converted into machine-gun units, equipped also with anti-tank weapons, while the remaining rifle battalions will also carry light machine-guns.

Considerable progress has been made recently in reorganising the Army. Half the infantry battalions are to be armed with machine and anti-tank guns, and the first steps have been taken towards making promotion a reward for ability rather than seniority. The reorganisation of the Staff College, Camberley, during 1938, by doubling the output of staff officers, will also accelerate promotion for ability. The private's equipment has been still further lightened and the British standing army promises to become as mobile and hard-hitting force as any in the world.

Arnould, Antoine, the "great Arnould," a French theologian, doctor of the Sorbonne, an inveterate enemy of the Jesuits, defended Jansenism against the Bull of the Pope, became religious director of the nuns of Port Royal des Champs, associated here with a circle of kindred spirits, among others Pascal; expelled from the Sorbonne and banished the country; died at Brussels. (1612-1684).

Arndt, Ernst Moritz, a German poet and patriot, one of the first to rouse his countrymen to shake off the tyranny of Napoleon; his songs and eloquent appeals contributed powerfully to its liberation; his *Geist der Zeit* resulted in his having to flee the country after the Battle of Jena; his *Was ist des Deutschen Vaterland?* strikes a chord in the breast of every German. (1768-1860).

Arne, Thomas Augustine, a musical composer of versatile genius, born in London, produced, during over 40 years, a succession of pieces in every style from songs to sonatas and oratorios, among others the chorus—*Hail Britannia*. (1710-1778).

Arnhem, the capital of the province of Guelderland, Holland, is situated on the right bank of the Rhine, and has a large transit trade. Pop. 84,000.

Arnhem Land, a thinly-populated district in the N. of Northern Territory, Australia.

Arnica, a genus of hardy perennial plants of the order Compositae. Contains some 50 species. *A. montana*, or Mountain Tobacco, the most important member, grows on high ground in N. and temperate Europe, and yields a bitter resin and a volatile essential oil. Tincture of arnica is prepared from it.



Arnica montana

Arnim, Bettina von, sister of Clemens Brentano, wife of Ludwig von Arnim, a native of Frankfurt; at 22 conceived a passionate love for Goethe, then in his 60th year, visited him at Weimar, and corresponded with him afterwards, part of which correspondence appeared subsequently under the title of *Goethe's Correspondence with a Child*. (1785-1859).

Arnim, Friedrich Sixt von, a German general in command of one of the armies on the Lys during the Great War. In one of the final German attacks he achieved some success, but at such a cost that it could not be followed up. (1851-1930).

Arnim, Count, ambassador of Germany, first at Rome and then at Paris; accused in the latter capacity of purloining State documents, and sentenced to imprisonment; d. in exile at Nice. (1824-1881).

Arno, a river of Italy, rises in the Apennines, flows westward past Florence and Pisa into the Mediterranean; subject to destructive inundations.

Arnold, an urban district and market town of Nottinghamshire, England, 4 m. NE. of Nottingham. It has an ancient church, and lace and hosiery are made. Pop. 14,500.

Arnold, Benedict, an American soldier, entered the ranks of the insurgent colonists under Washington during the War of Independence, distinguished himself in several engagements; promoted to the rank of general, negotiated with the English general Clinton to surrender an important post entrusted to him, escaped to the English ranks on the discovery of the plot, and served in them against his country; d. in England in 1801.

Arnold, Sir Edwin, poet and journalist, learned in Indian literature; author of the *Light of Asia*, *Light of the World*, and works in prose and verse. (1832-1904).

Arnold, Matthew, poet and critic, eldest son of Thomas Arnold of Rugby; professor of Poetry in Oxford from 1857 to 1867; inspector of schools for 35 years from 1851; commissioned twice over to visit France, Germany, and Holland, to inquire into educational matters there; wrote two separate reports thereon of great value; author of *Poems*, *Essays in Criticism*, *Culture and Anarchy*, *St. Paul and Protestantism*, *Literature and Dogma*. (1822-1888).

Arnold, Thomas, headmaster of Rugby, and professor of Modern History at Oxford; by his moral character and governing faculty effected immense reforms in Rugby School; was liberal in his principles and of a philanthropic spirit; he wrote a *History of Rome* based on Niebuhr, and edited Thucydides; his *Life and Correspondence* was edited by Dean Stanley; is the headmaster of *Tom Brown's School-days*. (1795-1842).

Arnold of Brescia, an Italian monk, and disciple of Abelard; declaimed against the temporal power of the Pope, the corruptions of the Church, and the avarice of the clergy; headed an insurrection against the Pope in Rome, which collapsed under the Pope's interdict; at last was burned alive in 1155, and his ashes thrown into the Tiber.

Arnold of Winkelried, the Deus of Switzerland, a peasant of the canton of Unterwald, who, by the voluntary sacrifice of his life, broke the lines of the Austrians at Sempach in 1386 and decided the outcome of the battle.

Aromatic Compounds are substances derived theoretically, and often practically, from the parent substance benzene. The principal source is coal-tar, which contains benzene itself, toluene or methylbenzene, three isomeric xylenes or dimethylbenzenes, hydroxybenzene or phenol ("carbolic acid"), and many other aromatic compounds.

Various aromatic substances also occur in some kinds of natural petroleum, in gums and resins, and in many odoriferous plant and animal products. With nitric acid, aromatic compounds usually yield yellow nitro-compounds, some of which are important as explosives—e.g., trinitrophenol or "lyddite" (picric acid) and trinitrotoluene or T.N.T.

Aniline or aminobenzene is a colourless oil made by reducing nitrobenzene; it is the starting-point in the manufacture of many dyes ("aniline dyes"). Benzaldehyde is used as a flavouring essence ("oil of bitter almonds"), while salicylic acid is the source of aspirin. Phenol, and the related compounds, creols, are used as disinfectants.

Arpad, the national hero of Hungary; established for the Magyars a firm footing in the country; was founder of the Arpad dynasty, which became extinct in 1301; d. 907.

Arpeggio, in music, a series of notes played in quick succession instead of simultaneously as in a chord.

Arquebus, sometimes spelt Harquebus, is an ancient type of hand-gun, which preceded the modern rifle.

It was fired from a hand-rest with a match from a touch-hole. A ball weighing about 2 oz. was discharged.

13TH CENT. FLINT-LOCK
ARQUEBUS

Arrack, a spirituous liquor, especially that distilled from the juice of the coconut tree and from fermented rice.

Arrah, a town in Bengal, India, 36 m. from Patna; famous for its defence by a handful of English and Sikhs against thousands during the Mutiny, till relieved by Major (Sir) Vincent Eyre. Pop. 50,000.

Arraignment, the legal process called to the bar of the court by name, the indictment read over to him, and his plea of guilty or not guilty entered. If the prisoner refuses to answer, the court may complete the arraignment by ordering a plea of "not guilty" to be entered.

Arran, largest island in the Firth of Clyde, in Buteshire, Scotland; a mountainous island, highest summit Goatfell, 2,866 ft., with a margin of lowland round the coast; nearly all the property of the Duke of Hamilton, whose seat is Brodick Castle. Pop. 46,000.

Arras, a French town in the dept. of Pas-de-Calais, long celebrated for its tapestry; the birthplace of Damiens and Robespierre. It was the scene of severe fighting during the Great War and was almost completely destroyed, the Cathedral and Gothic town-hall included. Pop. 25,000.

Arras, Battle of, one of the biggest during the Great War, fought in early 1917, the intention being that the British forces should attack in the neighbourhood of Arras, draw off the German reserves and pave the way for a French attack on the Aisne, and between the two offences to break the Hindenburg line. The British attack, which lacked the element of surprise, was only partially successful, though some advances were made and thousands of prisoners and hundreds of guns captured. The French attack failed completely. The British losses were very heavy.

Arrest, the taking of a person into custody, either to prevent him committing a crime or to ensure that a suspected or guilty person should be present to answer a charge against him. Arrest in civil cases can only be effected for debt in certain circumstances or for contempt of court. Arrest is usually by means of a warrant or writ. A person committing a felony or assault or about to do so may be arrested summarily—even by another private person if the felony or assault is committed in his presence.

Arrhenius, Svante August, professor of physics at Stockholm, 1895-1905, and afterwards director of the department of physical chemistry at the Nobel Institute. He originated the theory of electrolytic disassociation, which laid the foundations of modern physical chemistry. Awarded Nobel Prize in 1903. (1859-1927).

Arria, a Roman matron, who, to encourage her husband Caecina Paetus in meeting death, to which he had been sentenced, thrust a poniard into her own breast, and then handed it to him, saying "It is not painful," whereupon he followed her example.

Arrian, Flavius, a Bithynian, a friend of Epictetus the Stoic, edited his *Enchiridion*; wrote a history of Alexander the Great in the *Anabasis of Alexander*, and *Periplus*, an account of voyages round the Euxine and round the Red Sea; b. 100, and died at an advanced age.

Arrondissement, a subdivision for purposes of a dept. in France. Each arrondissement has its own council for local purposes and is under the control of a sub-prefect. There are also five maritime arrondissements or maritime defence districts, each under the control of a prefect, who must be a vice-admiral of the navy.

Arrowhead, the popular name of a water plant (*S. sagittifolia*) of the genus *Sagittaria*, order Alismaceae, common in England. The submerged leaves are ribbon-shaped, the floating leaves ovate, whilst those above the water (the majority) are arrow-shaped, whence the name.

Arrowroot, a starchy substance obtained from the roots of various W. Indian plants, including the *Maranta arundinacea*. The name originated from an antidote to the poison of arrows, made by the S. American Indians out of roots of a plant confused with the maranta.

Arru (Aru) Islands, a group of 80 coralline islands, belonging to Holland, W. of New Guinea; export mother-of-pearl, pearls, tortoise-shell, etc. Pop. 22,000.

Arsaces I., the founder of the Parthian dynasty of the Arsacidae, by a revolt which proved successful against the Seleucidae, 250 B.C.

Arsenal, the place where weapons and arms are stored and usually manufactured. In England much ammunition is manufactured by private firms. An Arsenal is government property, and among those in England are Woolwich Arsenal, Chatham, Portsmouth and Plymouth, while there are British Arsenals at Malta, Gibraltar and Calcutta.

Arsenal Football Club, founded by employees of the Royal Arsenal, Woolwich. Reached the final of the English Cup in 1926-1927, being defeated by Cardiff City, but victorious against Huddersfield in 1929-1930 and Sheffield United in 1935-1936. The present ground is at Highbury.

Arsenic, a chemical element related to of much less pronounced metallic character than even the former; in many respects it more closely resembles a non-metal, particularly phosphorus. Symbol As, atomic number 33, atomic weight 74.96. It occurs in nature chiefly as the sulphides orpiment and realgar, but also as a double sulphide with iron (arsenical pyrites or mispickel); from the last substance it is extracted by strong heating in the absence of air. Arsenic and its compounds are violently poisonous, but in small doses the oxide and other arsenical derivatives are used in medicine.

Arson, the act of setting fire unlawfully, and maliciously to a church, house, building, outhouse, barn, granary, etc., or to grass, crops, etc. The offence is punishable with penal servitude in English law under the Malicious Damage Act. It was a capital crime until 1827.

Art, History of, goes back to times when cave-dwellers portrayed animals on cave walls during their leisure, and fashioned rude images of "gods." In early civilisation pictorial and sculptural art had reached an advanced stage. The beautifully decorated personal ornaments of Egypt in the 4th Century B.C., the bas-reliefs of Assyria and the palace of Minos in Crete are eloquent examples that made their culmination in the frieze of the Parthenon at Athens. In ancient Greece common articles of domestic use were a subject from the show beauty and grace, Roman art.

was mostly architectural, richly coloured mosaics decorated the building. The Byzantine period followed with carvings, embroideries and superb enamels. Meanwhile Roman sculpture became free from the conventions that are



USE A SUBJECT FROM THE
show beauty and
grace, Roman art.
PARTHENON FRIEZE

noticed in earlier work, and naturalistic art began.

With the Renaissance and its impulsion to artistic vigour came Leonardo da Vinci with his wonderful painting of the ceiling in the Sistine Chapel, Michelangelo and Raphael. In Venice, the centre of art in that day, work by Bellini, Titian and Giorgione appeared. In Flanders Van Eyck, Matsys and Memling brought realism to painting. In the 16th Century Germany produced such masters as Holbein and Dürer, while Spanish Art is represented by the work of Ribera, Zurbaran, Velazquez, El Greco (Theotocopuli) and Murillo. In Holland, there was a lessening of purely religious art, portrait-painting and landscapes are characteristic. Rembrandt, Hals, De Hooch, Hobbema, Rubens, and Van Dyck are among the great Dutch artists.

In England, during the reign of Charles II., Lely became prominent, but the pioneer of English technical art was the satirical Hogarth. Claude and Poussin in France stand out amid the florid and flamboyant age of Louis XIV., while Watteau and Fragonard continued until the classic period of David and Prudhon. England's greatest period began at the end of the 18th Century with portraits by Reynolds, Gainsborough, Hoppner, Romney, Raeburn and the landscapes of Wilson, Gainsborough, Crowe, Turner, and Constable. They were followed by the "Pre-Raphaelite" school of Burne-Jones, Rossetti, and Ford Madox Brown and Holman Hunt of the Victorian Age.

Art in the 20th Century broke away from tradition. In Great Britain, Augustus John, Walter Sickert, William Orpen, and Frank Brangwyn are examples of the impressionist school, just as the internationally famous work of the French sculptor Rodin broke new ground in stone. Contemporary art carries the revolt farther. Cézanne and Van Gogh in Europe forsook form for ideas. Cézanne translated nature in terms of polyhedral shapes, while Van Gogh sacrificed form to colour. Pointillisme led by Seurat approaches the painting of light by the use of primary colours in combination. Picasso is the best-known exponent of abstract painting, while the newest phase—Surrealism, or the interpretation of the sub-conscious—has Salvador Dali and Max Ernst as its chief apostles.

Arta, Gulf of, an inlet of the Ionian Sea, on the W. coast of Greece, an abundant fishing-ground; scene of the battle of Actium, 31 B.C. The R. Arta flows into it, and a town of the same name stands on its shores.

Artaxerxes, the name of four ancient Persians, Persian monarchs: **A. I.**, called the "Long-handed," from his right hand being longer than his left; son of Xerxes I.; concluded a peace with Greece after a war of 52 years; entertained Themistocles at his Court; king from 465 to 424 B.C. **A. II.**, Mnemon, vanquished and killed his brother Cyrus at Cunaxa in 401, who had revolted against him; imposed in 387 on the Spartans the shameful Treaty of Antalcidas; was king from 405 to 359 B.C. **A. III.**, Ochus, son of the preceding, slew all his kindred on ascending the throne; in Egypt slew the sacred bull Apis and gave the flesh to his soldiers, for which his eunuch Bagoas poisoned him; king from 359 to 338 B.C. **A. IV.** (Ardashir I.), grandson of Sassan, founder of the dynasty Sassanidae; restored the old religion of the Magi, amended the laws, and promoted education; king from c. A.D. 211 to 241.

Artemis, in the Greek mythology the daughter of Zeus and Leto, twin sister of Apollo, born in the Isle of Delos, and one of the great divinities of the

Greeks; a virgin goddess, represented as a huntress armed with bow and arrows; presided over the birth of animals; was guardian of flocks.

Artemisia, Queen of Halicarnassus, joined Xerxes in his invasion of Greece, and fought with valour at Salamis, 480 B.C. **A. II.**, also queen, raised a tomb over the grave of her husband Mausolus, regarded as one of the seven wonders of the world, 355 B.C.

Artemisia, a genus of plants of the order Compositae, comprising 280 species and members of which are found in S. Africa, America, Europe, Asia (Steppes). There are four British species, including *A. vulgaris* and *A. campestris*. The flavouring matter of absinthie is derived from *A. absinthium* (wormwood).

Artemisium, a promontory N. of Euboea, near which Xerxes lost part of his fleet in battle with the Greeks, 480 B.C.

Artemus Ward. See C. F. Browne.

Arterio-sclerosis, a disease of the arteries, resulting in hypertrophy of the left ventricle of the heart, and causing an increase of blood pressure, which involves degeneration of the blood vessels. Cerebral hemorrhage may occur owing to the formation of small aneurisms or small tumours in the arteries.

Artery, a cylindrical vessel or tube forming part of the system which conveys the blood from the heart to all parts of the body by ramifications which, as they proceed, diminish in size and increase in number and terminate in minute capillaries, uniting the ends of the arteries with the beginnings of the veins. They are membranous, elastic and pulsatile. There are two principal arteries or arterial trunks: the aorta, which rises from the left ventricle of the heart and ramifies through the whole body, sending off great branches to the head, neck and upper limbs, etc., and the pulmonary artery, which conveys venous blood from the right ventricle to the lungs, to be purified in the process of respiration.

Artesian Wells, wells made by at a point below the source of supply; so called from Artois (Artoisium) in France, where the first was sunk. They are practicable only where the crust of the earth forms a basin (e.g., the London basin) and the strata of which the basin is formed include one of permeable material (e.g., sand or gravel) between two strata of impermeable material (e.g., clay).



ARTESIAN WELL SHOWING
SUPERFICIAL SOIL (A),
IMPERVIOUS STRATA (B, B),
AND POROUS STRATA (C)

basin) and the strata of which the basin is formed include one of permeable material (e.g., sand or gravel) between two strata of impermeable material (e.g., clay).

Artevelde, Jacob van, a wealthy chief in a revolt against Count Louis of Flanders, expelled him, made a treaty with Edward III. as lord-superior of Flanders, and was killed in a popular tumult at Ghent. (1285-1345).

Artevelde, Philip van, son of the preceding, defeated Louis II. and became regent; but with the help of French Charles VI. Louis retaliated, defeated the Flemings and slew him. (1340-1382).

Arthritis, a disease of the joints, sometimes called rheumatic gout, which sets up inflammation and produces pronounced deformity. The actual

cause is still uncertain, but is considered microbic. The disease is chronic, and though regarded as incurable, is not necessarily dangerous. The onset begins usually in the hands, goes to the feet, arms and legs, sometimes resulting in complete helplessness.

Arthropoda, a big division of the animal kingdom, comprising certain groups of animals having affinities with the annelids (segmented worms). They also have segmented and articulated bodies, but differ in having hollow, articulated limbs (cf. the crab), an outer skin hardened to form a sort of skeletal crust, and two or more appendages near the mouth used as jaws. The group is subdivided into 11 classes, which include the crustacea, arachnida (spiders, king crabs, scorpions, mites and ticks), diplopoda (millipedes), chilopoda (centipedes), and hexapoda (insects).

Arthur, a British prince of widespread fame, who is supposed to have lived at the time of the Saxon invasion in the 6th Century, whose exploits and those of his court have given birth to the tradition of the Round Table, to the rendering of which Tennyson devoted so much of his genius. Arthurian Romance owes much to the writings of Geoffrey of Monmouth (12th Cent.), Walter Map (12th Cent.), and Sir Thomas Malory (15th Cent.).

Arthur, Prince, Duke of Brittany, heir to the throne of England by the death of his uncle Richard I.; supplanted by King John and presumed to have been killed by him. (1187-1203).

Arthur's Seat, a lion-shaped hill 822 ft., close to Edinburgh on the E., from the top of which the prospect is unrivalled.

Artichoke, a plant belonging to the order Compositae; resembles a thistle. The true artichoke (*Cynara scolymus*) grows in S. Europe, and has an edible flower. The Jerusalem artichoke (*Helianthus tuberosus*) is a tuber common in Europe and America and, when cooked, is edible.

Articles, The Thirty-Nine, originally in 1562, to which every clergyman of the Church of England is bound by law to subscribe at his ordination, as the accepted faith of the Church. The number of articles was reduced later to 39, and took the form now used finally in 1604.

Artificer, a term used in the navy denoting ranks in the engine-room. Artificer Engineers hold warrant rank and are promoted from Engine-Room Artificers (E.R.A.'s) who hold petty officer rank. A fifth class of E.R.A. includes boys in training over 15 years of age.

Artificial Respiration, the restoration of the action of breathing by mechanical means to persons overcome by poisoning, suffocation and drowning. The method recommended and practised by the Royal Life Saving Society and the St. John Ambulance Association is known as the "prone-pressure" or Schafer method. It is described in the Royal Life Saving Societies handbook as follows:

"The apparently drowned person must be placed at once, face downwards, on the nearest flat surface. Place yourself on one side of the patient facing the head, in a full kneeling position, with knees and hips bent. Put your hands on the small of the patient's back, the wrists nearly touching, the thumbs as near each other as possible without strain and the fingers passing over the loins on either side, but not spread out. Then bending the body from the knees and somewhat straightening the hip joints swing slowly forward, keeping the arms quite straight and rigid, so that the weight of your body is conveyed to your hands.

No exertion is required: the necessary pressure is imparted by the weight of your body. In this way the patient's abdomen is pressed against the ground; the abdominal organs are forced against the diaphragm; the diaphragm rises and air is driven out of the lungs together with any water or mucus which may be present in the air-passages and mouth, thus producing expiration.

"Next, swing the body slowly backwards to its first position, thus removing its weight from the hands (which are kept in position) and relaxing the pressure on the abdomen. The organs now resume their former position, the diaphragm descends, the thorax is enlarged and air passes into the lungs, inspiration being produced. Repeat the movements regularly about 12 times a minute, swinging the body alternately forwards and backwards from the knees."

Artificial Silk or Rayon, a synthetic material in imitation of silk and produced at a smaller cost than real silk. A chemically prepared fluid is subjected to mechanical reproduction of the silk-worm's movements. The basis of all artificial silk is cellulose, either wood-pulp (prepared from spruce) or cotton-cellulose. The cellulose is specially treated and then dissolved into a viscous fluid, which hardens on contact with air or some chemical. The four main processes are the nitro-cellulose in Belgium, the viscose process in England used by Courtauld's (the actual process is secret), the cupra-ammonium, first used in Germany and the acetate process, also secret, employed by British Celanese, Ltd. There are extensive artificial silk factories at Brantree, Essex.

Artillery, all ordnance such as guns to small arms and machine-guns. The term is also used for the troops who serve these arms. Generally speaking, artillery is divided into field, heavy and siege artillery.

All field artillery, by which is meant guns and howitzers which accompany mobile troops, are designed on the quick-firing principle, by which the inevitable recoil is absorbed by an arrangement known as the recoil carriage. With the quick-firing gun, propellant and projectile are combined in one cartridge similar to that used with small arms; with the howitzer they are separate.

A field battery consists of six guns or howitzers and 12 ammunition-wagons. Both guns and wagons are of the limber-type—i.e., in two detachable parts. Actually the function of artillery is to assist the other arms, especially in preparing the way for, and assisting, the infantry.

Artiodactyla, a sub-order of mammals also called Even-toed Ungulates, having an even number (either two or four) of toes on the foot, the second and third (or the two if there are only two), being of equal length; includes the Pecora (oxen, sheep, goats, antelopes, gazelles, giraffes, duikers, gnus, okapi, deer); Tylopoda (padd-footed camels, llamas); Tragulina (chevrotains); Suina (pigs, peccaries, hippopotamuses).

Artois, an ancient province of the N. of France, united to the crown in 1659.

Artz, David Adolf Constant, Dutch genre-painter; much influenced in his early years by Jozef Israels. His homely subjects include "With Grandmother," "The Old Fisherman," and "The Return of the Flock." (1839-1890).

Arum, a genus of plants of the order Araceae of which there are 12 species, all found in Europe and the Mediterranean countries. British representative (*A. maculatum*) is the plant popularly known as lords and ladies, cuckoo-pint and wake-robin. It is a tuberous, monocotyledonous

plant, the flower of which grows in a spike out of a rolled-up leaf (spathe), leaving afterwards a spike of red berries, common in hedgerows. Berries and leaves are highly poisonous.

Water-arum (*C. palustris*) belongs to the genus *Calla* of the same order. The Arumilly, native to S. Africa is *Z. ethiopica* of the genus *Zantedeschia*.

Arundel, a town in Sussex, England, on the genus *Calla* of the same order. The Arumilly, native to S. Africa is *Z. ethiopica* of the genus *Zantedeschia*.

Arundel, **Earle of**, the earldom of Arundel is chiefly associated with the families of Fitzalan and Howard, but there were several earls of the Albini family: William de Albini (d. 1176), who was confirmed in the earldom by Henry II.; William de Albini (d. 1221), grandson of the preceding, also styled Earl of Sussex, and son of William, the second earl, whom he succeeded in 1196. He was a favourite of King John, and was his justiciar. Richard Fitzalan (1267-1302) became earl about 1290, and fought for Edward I. against the Scots. His son, Edmund Fitzalan (1285-1326), aided Edward II. and the Despencers (his son married, a daughter of the Despencer family), against the partisans of Isabella, and he was eventually executed to satisfy the rancour of Mortimer. Richard (1307-1376), son of the preceding, fought at Crécy and became Earl of Surrey and regent of England. Henry, 12th Earl (1517-1580), was chiefly notable for his opposition to Warwick. He was implicated in Somerset's plot against Northumberland and proclaimed Mary as Queen. He was Lord Chamberlain under Edward VI., Lord High Steward under Mary and, under Elizabeth, a member of the Commission which treated with the Scots. In 1627 the title was formally bestowed on the Howard family, and since 1660 has been held by the Dukes of Norfolk.

Arundel Marbles, ancient Grecian marbles collected at Smyrna and elsewhere by the Earl of Arundel in 1824, now in the possession of the University of Oxford, the most important of which is one from Paros inscribed with a chronology of events in Grecian history from 1582 to 264 B.C.; the date of the marbles themselves is 263 B.C.

Arvales, **Frates**, a college of twelve priests in ancient Rome, whose duty it was to make annual offerings to the Lares for the increase of the fruits of the field.

Aryan, Indo-European or Indo-Germanic, a term invented by philologists to describe the race presumed to have existed in prehistoric times and to have spoken a language (now commonly termed Indo-Germanic) from which the majority of European and some Indian languages are derived.

The place of origin of the race has been variously sought in Europe and Asia, and it is presumed to have branched off at different periods northward and westward into Europe and southward into Persia and the valley of the Ganges, giving rise to the great branches of the language, Greek, Latin, Celtic, Germanic, Slav on the one hand, and Persian and Hindu on the other, a community of origin that is attested by the comparative study of them.

The "Aryan" paragraph of Hitler's anti-Semitic policy in Germany involves a conception of the purity of Germanic or "Nordic" peoples of Europe which is not supported by philological or anthropological evidence.

Arya Samaj, a Hindu reforming sect. Dr. Dyanand, founded by Swami Dyanand in 1827-1852, who denounced the idol-worshipping and the Hindu theories of purity and pollution. The sect seeks

inspiration in the Vedas, and commands considerable support, especially among educated Hindus.

As, a unit of weight (the libra or pound) and of measure in ancient Rome; also a Roman coin in use for several centuries, though the value varied.

Asa, the third King of Judah, who strenuously opposed idolatry and heathenism, even deposing his mother Maachal from being queen on this account; defeated Zerah the Ethiopian and pursued him to Gerar. He bought the help of Benhadad King of Syria against Baasha, King of Israel, and defeated the Israelites. Died 916 B.C., aged 41.

Asaph, musician of the temple at Jerusalem in the time of David and Solomon. A number of the Psalms are attributed to him.

Asbestos, a fibrous, non-inflammable rock of Devonian age in Canada and elsewhere. It is largely used for making fireproof materials, owing to its bad thermal conductivity, and for motor-car brakes and clutches.

Asbjornsen, **Peter Christen**, Norwegian writer on folklore and zoology; engaged upon scientific investigations along coast, 1846-1852, and later was appointed Inspector of Forests to the Government. Travelled the length of Norway to make a first-hand study of Norwegian folklore and published a number of collections of Norwegian fairy tales and folk legends. (1812-1885).

Ascalon, one of the five cities of the ancient Philistines, much contested during the Crusades; birthplace of Herod the Great.

Ascanius, the son of Aeneas, who trotted *non passibus regis* ("with unequal steps") by the side of his father as he escaped from burning Troy; was founder of Alba Longa.

Ascension, a bare volcanic island in the Atlantic, rising to nearly 3,000 ft., belonging to Britain, 700 m. NW. of St. Helena, to which colony it is annexed. The island is noted for sea-turtles and tern.

Ascension, the rising of Jesus Christ into Heaven on the fortieth day after the resurrection, and celebrated in the Christian churches on Holy Thursday, the fortieth day after Easter. It ranks with the major Christian festivals of Christmas, Pentecost and Easter.

Asceticism, the practice of rigid self-denial, originally by athletes in training in Greece and later by religious zealots. Famous ascetics were Anthony the Hermit, Paul of Thebes and Simeon Stylites. Various schools of asceticism include Stoics, Cynics and Neoplatonists, while in modern times a mild asceticism survives in Quakerism and Sabbatarianism.

Aschaffenburg, an ancient town of 20 m. from Frankfurt, with an old castle and cathedral. Pop. 36,000.

Ascham, **Roger**, a Yorkshire Fellow of, and particularly Greek, scholar; wrote a book on archery, deemed a classic, entitled *Toxophilus*, for which Henry VIII. settled a pension on him; was tutor and Latin secretary to Elizabeth; his chief work, *The Scholemaster*, a treatise on education. (1515-1568).

Asche, **Oscar**, actor, of Norwegian descent; born at Geelong, Australia. First appearance in London 1883. Toured with Benson. Married Lily Brayton. Long with Tree. Took many Shakespearean parts. Toured Australia and S. Africa. Ran his own play *Chu Chin Chow*, at His Majesty's 1916-1921—longest run on record. (1871-1936).

Aschersleben, a manufacturing town in the Magdeburg district of Prussia. Pop. 29,000.

Ascoli Piceno, a province of Central Italy in the dept. of Marche. Also the capital of the province, a cathedral town. Pop. 32,000.

Ascot, a race-course in Berks, 6 m. SW. of Windsor, the races at which, instituted by Queen Anne, take place a fortnight after the Derby.

Asgard, the garden of heaven of the Æsir or gods in the Norse mythology, in which each had a separate dwelling, and approach to which was by the bridge Bifröst. Here also was Valhalla, to which went heroes killed in battle.

Ash, a genus of plants of the olive family (Oleaceae) found in temperate regions of the northern hemisphere. *F. excelsior* is the common English ash tree, and supplies hard, tough wood. Flowers in racemes before the tree is in leaf. The fruit (called "keys") is a nut, dry and winged for wind-distribution.



ASH-LEAF AND "KEYS"

Ashanti, **Ast** antee, a negro inland kingdom in the Upper Soudan, N. of Gold Coast territory, wooded, well watered, and well cultivated; natives intelligent, warlike and skilful; twice provoked a war with Great Britain, and finally the despatch of a military expedition under Sir Garnet (afterwards Lord) Wolseley, which led to the submission of the king and the appointment of a British Resident; annexed by Great Britain 1901. Its tribal confederation was resuscitated in 1935, when the Golden Stool, symbol of the soul of the Ashanti people, was restored to them by the Government. Pop. 578,000. (Europeans, 650).

Ashbourne, a market town of Derbyshire, England, on the R. Dove. Its 13th-Century cruciform church has a fine spire 211 ft. high, known locally as the "Pride of the Peak." Pop. 4,507.

Ashburton, urban district and market town of Devon, England, near Dartmoor. Pop. 2,500. Also a town in S. Island, New Zealand, on a river of the same name. Pop. 5,300; and a river of Western Australia, 400 m. long, falling into Exmouth Gulf.

Ashburton, **Alexander Baring**, Lord, second son of Sir Francis Baring, a Liberal politician, turned Conservative, member of Peel's administration in 1834-1835, sent as special ambassador to the United States in 1842; concluded the boundary treaty of Washington, known as the Ashburton Treaty. (1774-1848).

Ashby-de-la-Zouch, a small town 17 m. W. of Leicester, England; has the ruins of a castle. Pop. 3,000.

Ashdod, a maritime Philistine city 20 m. S. of Jaffa, seat of the Dagon worship.

Ashdown Forest, a district of Sussex between Crowborough and E. Grinstead. It is the remaining portion of the Saxon forest of Andredswald.

Ashdown Park, Berkshire seat of the Earl of Craven. Here Alfred and Ethelred are said to have defeated the Danes in 871.

Asher, the name of the eighth son of Jacob, the founder of an Israelitish tribe of the name.

Ashera, an image of Astarte (q.v.), and that Phœnician goddess.

Ashes, **The**, the mythical trophy for which England and Australia compete in Test matches at cricket. In 1882 Australia beat England at the Oval, and a sporting paper published a mock Memorandum notice "in loving memory of English cricket, which died at the Oval on Aug. 29, 1882. The remains will be cremated and the ashes taken to Australia." Since then every team going to or coming from Australia has been said to be fighting for "the Ashes."

Asheville, a town of N. Carolina, U.S.A., county town of Buncombe Co. It has considerable manufactures of textiles, leather, etc., and is a health resort. Pop. 50,000.

Ashfield, **Albert Henry Stanley**, first Baron, son of Henry Stanley of Detroit, U.S.A. Born at Derby; managed Electric railways in America; general manager, Metropolitan District Railway and Tube Railways, London, 1907; managing director, Underground Group, 1910-1933. Knighted 1914. M.P. (Coalition), Ashton-under-Lyne, 1910-1920; Privy Councillor 1916. President Board of Trade 1916-1919; ennobled 1920. (1874-).

Ashford, a market town of Kent, England; has a fine old church; industries include brickmaking, tanning, brewing and manufacturing agricultural machinery. There are large railway workshops here. Pop. 15,218.

Ashington, a town of Northumberland, England, the centre of a coal-mining district. Pop. 29,418.

Ashland, U.S.A.: (1) in Kentucky; a manufacturing town. Pop. 29,000; (2) in Wisconsin, a port on Lake Superior. Pop. 10,000; (3) in Pennsylvania; a coal-mining town. Pop. 7,000; (4) a health resort in Oregon. Pop. 4,000; (5) seat of the Randolph-Macon College in Virginia. Pop. 13,00.

Ashmole, **Elias**, a celebrated antiquary, presented to the University of Oxford a collection of rarities bequeathed to him, which laid the foundation of the Ashmolean Museum there. (1617-1692).

Ashstead, a town in Surrey, England; the chief industry brick- and tile-making. Near by is Ashstead Common, where Roman remains have been excavated. Pop. 4,783.

Ashtabula, a city of Ohio, U.S.A., the name, with an excellent harbour and considerable manufactures; on Lake Erie. Pop. 23,000.

Ashtaroth. See Astarte.

Ashton-in-Makerfield, an urban district and town of Lancashire, England, iron-manufacturing and colliery centre. Pop. 20,511.

Ashton-under-Lyne, a cotton-manufacturing town near Manchester, England. Pop. 52,000.

Ash Wednesday, **Lent**, the connection with "ash" or "ashes" being that, according to the injunction of Gregory the Great, in the 6th Century, ashes, which had first been blessed, were sprinkled on the heads of worshippers, or the form of the Cross was traced with ashes upon their foreheads.

• **Ashwell**, **Lena** (Lady Simson), O.B.E., actress, brought up in Canada; daughter of Captain Pocock, R.N. First appearance 1891 in *The Pharisee*. Toured America. Had Kingsway Theatre, 1907-1909. During War conducted entertainments at

front. Married in 1908 the late Sir Henry Simson, obstetric surgeon, who died in 1932. (1872-)

Asia, the largest of the four quarters of the globe; bounded on the N. by the Arctic Ocean, on the W. by the natural boundary formed by the Ural Mts., Mediterranean, Black Sea, Red Sea and Caspian Sea, on the E. by the Pacific Ocean and on the S. by a chain of islands through the Molucca and Sunda Is. The S. coastline is broken by the peninsulas of Arabia, India and Cambodia.

It may be divided into four great divisions: (1) N. Lowlands, which consist of Siberia, the Kirghiz Republic, Mongolia, Manchukuo and N. and Central China; (2) the Central Mountain System, including the vast Himalaya system, the Iranian Plateau, the Pamir Plateau, Tibet; (3) the Eastern Margin, comprising E. China and Japan and Annam, and (4) SW. Tablelands of Arabia, the Deccan and Iraq. There are also the large island groups in the SE., including Sumatra, Java, Timor, Borneo, Celebes and the Philippine Is.

The principal rivers of Asia are the Ob, Yenesei, Lena, Amur (of Siberia); Hwang-ho, Yang-tse-kiang, and Si-kiang (of China); the Mekong and Salween (in the SE.); the Irrawaddy (of Burma); the Brahmaputra, Ganges, Godavari, Kistna, Nerbada, and Indus (of India); and the Euphrates and Tigris (of Iraq). The chief mountain ranges are the Himalayas (including Hindu Kush, Karakorum and Pamirs), Kwen Lun, Tien Shan, Altai, Sayan, Yablonoi and Stanovoi mountains.

Climate.—Asia stretches through 76° of latitude, and many types of climate are found. In the interior extremes of heat and cold are experienced. The dry areas (Iran and Arabia) have a very high temperature. The lower temperature of the coastlands is due to the influence of the Pacific and Indian Oceans. In July the greater part of Asia receives inflowing winds, since the land being heated, a low-pressure area is created and the cooler, heavier air moves in to take its place. In January the process is reversed, and cold winds outflow. Most rain falls in summer; much is deposited on the mountains. A heavy summer rainfall is found S. of a line from the mouth of the Indus to Korea. Lands bordering the E. Mediterranean have dry summers and wet winters. Ceylon, the Malay Peninsula, the China coastlands and E. India have rain at all seasons.

Productions.—Agriculture is the leading industry, and in China, Japan and India the soil is very fertile. Some agricultural products are: wheat, one-eighth of world's crop (India and Siberia); cotton, a quarter of world's crop (India and China); tobacco, a third of the world's crop (Mediterranean, monsoon and tropical parts); cane sugar, half world's crop (wet tropical areas); rice (S. and SE. flood plains); tea (Ceylon, China, India, Java and Japan); coffee (Arabia, India and E. Indies); dates (deserts); fruit (Mediterranean area); fibres, hemp, jute, silk, coir, plantation rubber, pepper, taploca, camphor and drugs in monsoon and tropical areas. Asia has rich mineral deposits and produces half the world's tin from Malaya. Other important minerals are gold (S. India); iron (Siberia, India, China); petroleum (Caucasia, E. Indies, Burma); silver, copper, plumbago, lead, zinc and precious stones.

Asia Minor, peninsula extension westward of the Armenian and Kurdistan highlands in Asia, bounded on the N. by the Black Sea, on the W. by the Archipelago, and on the S. by the Levant. Indented all round, mainland as well as adjoining islands, with bays and harbours, all more or less busy centres of trade; is as large as France, and consists of a plateau with slopes all round to the coasts.

Asiago Plateau, in the province of the Great War heavy fighting took place here between the Austro-German troops and the Italians, aided by British and French. The Austro-German forces took Gen. Cadorna's headquarters at Udine in Oct. 1917, and made direct assaults on the Plateau. These assaults were withstood, but in December the Italian forces gave ground, which they regained in Jan. 1918.

Askari, a race of people inhabiting the N. Africa, on the borders of Abyssinia. They are of Hamitic extraction, and have strains of Arab blood as well as Negroid. Their domestic life is simple, almost primitive. Of poor physique, they are capable of great endurance, and formed part of the Italian Eritrean forces in the Libyan war of 1913 and the Abyssinia campaign of 1935-1936.

Aske, Robert, leader of the Pilgrimage of Grace in Yorkshire arising from the ecclesiastical reforms of Henry VIII.; was executed 1537.

Askew, Anne, a lady of good birth, a victim of persecution in the time of Henry VIII. for denying transubstantiation, tortured on the rack and burnt at the stake, 1546.

Askwith, Lord (George Ranken), Chief of Industrial Commissioner, before and during the Great War; counsel on the Venezuelan Arbitration; rendered distinguished service at the Board of Trade in railway questions and labour disputes. Comptroller-General of the Commercial, Labour and Statistical Departments 1909-1911, and chairman Fair Wages Advisory Committee 1910-1919; was chairman of Government Arbitration Committee under the Munitions Acts. Raised to the peerage 1919. (1861-)

Asmara, the seat of government of the Italian Colony of Eritrea (now incorporated in Italian East Africa). It stands 7,800 ft. above sea-level. Pop. 18,800.

Asmodeus, a mischievous demon or goblin of the Jewish demonology, who gloats on the vices and follies of mankind, and figures in Le Sage's *Le Diable Boiteux*, as lifting off the roofs of the houses of Madrid and exposing their inmost interiors and the secret doings of the inhabitants.

Asnières, a French town in the dept. of Paris. Pop. 71,000.

Asoka, an emperor in India who, after his accession in 264 B.C., became an ardent disciple of Buddha; organised Buddhism, as Constantine did Christianity, into a State religion. Evidence of his influence is still extant in pillars and rocks inscribed with his edicts in wide districts of Northern India. (272-232 B.C.).

Asp, a popular name given to two poisonous, viz., the *Vipera aspis* of Southern Europe and *Cerastes cornutus*, a dull-coloured desert snake of Egypt, from the bite of which Cleopatra is commonly supposed to have died.

Asparagus, a genus of plants of the Liliaceae order; 120 species, found mostly in sandy and coastal districts. The most important member of the group is *A. officinalis*, native of N. Europe and naturalised in N. America, the young shoots of which are a popular vegetable and are forced in Great Britain and France.



ASP—*Cerastes cornutus*

Aspasia, a Greek courtesan remarkable for her wit, beauty and culture, a native of Miletus, being attracted to Athens, came and settled in it; became the mistress of Pericles, and made her home the rendezvous of all the intellectual and wise people of the city, Socrates included.

Aspatria, a town in Cumberland, England, 20 m. from Carlisle. Pop. 3,239.

Aspen, or Trembling Poplar (*Populus tremula*), a tree of the order Salicaceae, found in moist woods in Great Britain and N. Europe; of little value as timber, but at one time used in the making of arrows.

Asperges, the Roman Catholic cere-sprinkles the people with holy water before High Mass. The name is the first word of *Asperge me, Domini, hyssopo*.

Aspern, a village in Austria, on the Danube, 4 m. N.E. of Vienna, the scene of a fierce battle in which the Austrians under the Archduke Charles defeated the French under Napoleon, May 21, 1809.

Asphalt, a naturally-occurring bitumen colour, consisting of hydrocarbons, and being the residue left by the evaporation of deposits of petroleum; also a limestone impregnated with bitumen. It can be melted, and has a variety of uses, including paving, damp-courses, an ingredient of enamels, etc. The most famous natural deposit is the pitch lake (Brea) in Trinidad. It can also be manufactured artificially.

Asphodel (*Asphodelus*), a genus of the Liliaceae family of plants; 12 species, mostly native to the Mediterranean district; appraised by the Greeks for its almost perennial flowering, and with which they, in their imagination, covered the Elysian fields.

Asphyxia, a suspension or loss of the power of respiration, characterised by convulsive struggling for breath, the lips and face turning black, and loss of consciousness, causing death in from two to five minutes. It is brought about by breathing carbonic acid gas, etc., strangulation, choking, pressure on the chest or over the breathing organs and drowning.

Aspidistra, a genus of the Liliaceae (lily) family, and a native of India, China and Japanese highlands. Certain species are very popular as indoor plants, having large dark green (sometimes striped) leaves rising from an underground stem.

Aspinwall. See Colon.

Aspirin, a commercial name for acetyl 15 grains relieves but does not cure headache and neuralgia. It is of great value in rheumatic fever, causing the temperature to drop and pain and swelling to decrease.

Aspromonte, a mountain close by Reggio, in the department of Calabria, Italy, overlooking the Strait of Messina, near which Garibaldi was defeated and captured in 1862.

Asquith, Rt. Hon. H. H. See Oxford and Asquith.

Ass, a domestic animal of the horse family. Smaller than the horse, it has a tufted tail, and the wild variety is striped. It has hardihood, docility and endurance, and is a valuable beast of burden, especially in the East, in Arabia, Egypt and Assyria. Shagreen is made from its skin.

Assab Bay, a coaling-station belonging to Italy, on the W. coast of the Red Sea.

Assam, a province E. of Bengal, ceded to Britain after the Burmese War in 1826; is an alluvial plain, with ranges of

hills along the Brahmaputra 450 m. long and 50 m. broad; the lowlands extremely fertile and productive, and the hills covered with tea-plantations. Under the Government of India Act, 1935, it has a bi-cameral legislature, and the franchise has now been extended to women. Pop. 4,404,000.

Assassins, a fanatical Moslem sect organised in the 11th Century, at the time of the Crusades, under a chief called the Old Man of the Mountain, whose stronghold was a rock fortress at Alamut, in Persia, whose creed involved the secret assassination of all enemies of their faith, and so called because the "devoted ones" who carried out the assassinations, and who were not initiates of the rites of the sect, were prepared for their deeds of blood by draughts of an intoxicating liquor distilled from hashish (the hemp-plant). A Tartar force burst upon the horde in their stronghold in 1256, and put them wholesale to the sword.

Assault, "an attempt or offer with force hurt to another." If there is injury the term battery is added. An assaulted person may retaliate in self-defence with the object of ending the attack. A common assault incurs a fine not exceeding £5 or two months imprisonment. An aggravated assault is punishable with long terms of imprisonment, and includes criminal assault on women and children and intending to cause or causing grievous bodily harm.

Assaye, a small town in Hyderabad, S. India, 46 m. N.E. of Aurungabad, where Sir Arthur Wellesley gained a victory over the Maharrattas in 1803.

Assaying, the determination of the purity of a precious metal, or the estimation of a metal in an alloy or ore; the word assay is used also to describe the specimen to be assayed. Methods of assaying gold and silver were elaborated in ancient times, and reached a high standard of precision, but the accurate estimation of other metals became possible only with the development of chemistry. There are two chief methods: (1) dry assaying, in which the ore is reduced with whatever solid reagent is necessary and the pure metal obtained; (2) wet assaying, in which chemical solvents are used and salts of the metal obtained.

Assegai, a spear or javelin of wood certain S. African tribes with deadly effect in war; of two varieties, the longthrowing-spear and the short stabbing-spear.



ASSEGAIS

Assembly,

Church, was set up under the Enabling Act of 1919; it governs the Church of England subject to the approval of Parliament, and consists of three houses, bishops, clergy, and laity, the last two elected from the diocesan conferences. It may discuss any proposal touching the Church of England, but if legislation is necessary before any proposal can become effective power must be sought under the Enabling Act of 1919.

Assembly, General, the chief court of a representative body, half clergymen and half laymen, which sits in Edinburgh for about ten days in May, disposes of the general business of the Church, and determines appeals.

Assembly, National, the Commons section of the States-General of France which met on May 5, 1789, constituted itself until 1791 into a legislative assembly, and gave a new constitution to the country.

Assent, Royal, the approbation given by the sovereign in Parliament to a Bill which has passed both Houses, after which it becomes law. It may either be done in person, when the sovereign comes to the House of Lords and the assent is declared by the Clerk of Parliament, or it may be done by letters-patent, under the Great Seal, signed by the sovereign.

Asser, John, monk of St. David's, in Wales, and Bishop of Sherborne, tutor, friend, and biographer of Alfred the Great; is said to have suggested the founding of Oxford University; d. 910.

Assessment, a demand or call made upon stock-holders for a specified sum of money per share in addition to that already subscribed. Assessments are usually made as a result of reorganisation of companies or corporations. Financial difficulties are a frequent cause, and sometimes bond-holders are called upon in addition to the share- or stock-holders. The term is also used in connection with taxation and rate determination; in this case assessment is the taxable or rateable value of the house or income.

Assessor, one who acts as technical advisor to a judge, usually in maritime and ecclesiastical court cases. In maritime cases assessors are generally officials of Trinity House, while a bishop conducting an inquiry usually has as assessors a barrister and his chancellor. In civil courts their places have been taken by expert witnesses. Municipal Corporations hold an annual election for two assessors to assist the mayor in preparing burgess lists, while the official authorised to assess property for taxation is called an assessor.

Assets, real and personal property composing an estate. Assets of a deceased person are either personal (goods, chattels, debts) or real (landed property), and devolve (in the first instance) on the executor or administrator, in whose hands it is chargeable with the payment of the deceased's debts and the legacies under his will (assuming he has made one). The term is also widely used in business in contradistinction to debts and liabilities. In balance sheets issued by banks, insurance companies and financial associations, liabilities are placed on one side and assets on the other. In bankruptcy the term denotes the whole of the property available for the payment of creditors. It is not a technical term in Scotland, but is freely used both in legal business and in commercial affairs in the same sense as in England.

Assiento, a treaty with Spain to supply negroes for her colonies, concluded in succession with the Flemings, the Genoese, a French company, the English, and finally the South Sea Company, who relinquished their rights in 1750 on compensation by Spain.

Assignats, bills or notes, to the value of 45 thousand million francs, issued as currency by the revolutionary government of France in 1790, and based on the security of Church and other lands appropriated by it, and which in course of time became almost valueless, to the ruin of millions.

Assignment, a transfer by deed or other instrument of any property, or right, title or interest in property, real or personal. Assignments are usually given for leases, mortgages and funded property. Pensions and government salaries are not assignable. No particular form is required for an Assignment in Equity (e.g.) of a chose in action (rights under a contract or to money payable otherwise than under a contract), debts of record, shares and stock, etc., etc.). Transfers of insurance policies, shares in companies, debentures, etc., both as to the rights and duties thereunder,

are dealt with by Acts of Parliament and Articles of Association.

Assiniboia, a prairie region in Canada, included in the province of Saskatchewan since 1906.

Assiniboine, a river in Canada, rising in Saskatchewan and joining the Red R. near Winnipeg; it gives its name to an Indian tribe of the Sioux stock.

Assiout. See *Asyût*.

Assisi, a town in Central Italy, 12 m. SE. of Perugia, the birthplace and burial-place of St. Francis, and the birthplace of Metastasio; it was a celebrated place of resort of pilgrims, who sometimes came in great numbers. Pop. 18,000.

Assizes, denote the sessions of the judges of the Supreme Court, held periodically in each county. Assizes originated in Magna Carta. The districts visited by the judges are called circuits, and number seven. London and Middlesex are administered judicially at the Old Bailey, and do not come under the assize system. The Judicature Act of 1875 consolidated the superior courts and gave uniform jurisdiction to the judges, and provided for a more rapid despatch of business. An assize judge must stay at the town where the assize is held until all cases entered for trial are completed. In Scotland the jury, in criminal cases, are still technically called the assize.

Association Cup, a trophy in the form of a silver vase awarded at the close of a competition between football clubs of the Football Association (F.A.), professional and amateur. Amateur clubs rarely survive the preliminary contest, though the Corinthians have reached the fourth round. The Cup was first presented in 1871. The original cup was stolen from a shop window in Birmingham in 1895, when Aston Villa were the holders. Aston Villa and Blackburn Rovers have each won the cup six times, Wolverhampton Wanderers five, Sheffield United four and Bolton Wanderers three. The Cup final is played at Wembley Stadium, and enormous crowds flock to see it, the numbers in 1923, when Bolton Wanderers met West Ham United, totalling over 120,000.

Association of Ideas, a term in philosophy and psychology to denote the leading of one thought to another. According to Hume, the association is influenced by contiguity in time or place, resemblance and cause and effect. Those philosophers who explain most mental processes by association of ideas are referred to as the associationist school, and include Hobbes, Mill, Herbert Spencer, though they differ as to whether contiguity or resemblance is the more important cause. Association of ideas is classified as *simple*, e.g., action, sensation, feeling; *compound*, e.g., odour and taste leading to recollection, and *constructive*, e.g., imagination leading to invention.

Assouan (*Aswan*), the ancient Syene, capital of a province of the same name, most southerly in Egypt, on the right bank of the Nile, near the last cataract. A dam 1 m. in length, capable of storing 2,420,000,000 cubic metres of water, was opened here in 1902. Pop. 17,000 (of administrative division 268,000).

Assumption, Feast of The, festival in honour of the translation of the Virgin Mary to heaven, celebrated on Aug. 5.

Assur, name of the mythical founder of Assyria, apparently the Asshur mentioned in Gen. x. 22 as a son of Shem, who was afterwards deified and became the chief god of the Assyrians, giving his name to the country (Assyria) and to the capital of the country.

Assur-Bani-Pal, King of ancient Assyria at the height of her power. He succeeded his father, Esarhaddon, his twin brother receiving Babylonia. He successfully suppressed a revolt in Egypt, but before many years Egypt was lost to Assyria for ever. He was involved also in wars with Babylonia, the Arabians and the Elamites, and though he conquered all, the Assyrian empire was so drained of resources that even before his death (c. 626 B.C.) it was already tottering.

Assyria, an ancient kingdom, the origin uncertain, between the Niphates Mountains of Armenia on the N. and Babylonia on the S., 280 m. long and 150 broad, with a fertile soil and a population at a high stage of civilisation; closely associated geographically and historically with Babylonia; became a province of Media, which lay to the E., in 606 B.C., and afterwards a satrapy of the Persian empire, and was under the Turks from 1638 till the Great War, when it was mandated to France.



A COLOSSAL WINGED BULL FROM THE PALACE OF SARGON, KING OF ASSYRIA

Astarte, or **Ashteroth**, or **Istar**, the female divinity of the Phœnicians, as Baal was the male, these two being representative respectively of the conceptive and generative powers of nature, and symbolised, the latter, like Apollo, by the sun, and the former, like Artemis or Diana, by the moon.

Aster, a genus of plants of the order Compositae; so called because the expanded flowers resemble stars (Latin, *aster*; a star). There is only one British species, *A. tripolium*, sea starwort or Michaelmas daisy, but there are dozens of varieties of this species known to horticulture in single and double flowers of all sizes, from a sweet pea to rather larger than a shilling in diameter; and in colour from white to deep mauve and clear sky-blue, but always with a yellow centre.

Asteroids, small or minor planets the sun. The search for a new planet between Mars and Jupiter led to the discovery of the first of these, Ceres, by Piazzi in 1801; this is the largest of the group, and has a diameter of 485 m. Pallas, Juno, Vesta and Eros are other well-known asteroids, while the total number probably runs into many thousands, most of them very small, being scarcely more than masses of rock, with a diameter of only a few miles. The asteroids were probably formed by the disintegration of a single larger planet revolving between Mars and Jupiter.

Asthma, difficulty of respiration, returning at intervals, with a sense of stricture across the chest and in the lungs, a wheezing, hard cough at first, but more free towards the close of each paroxysm. It is essentially a spasm of the muscular tissue in the smaller bronchial tubes. It generally attacks persons advanced in years. The exciting causes are accumulation of mucus in the lungs, noxious vapours, a cold and foggy atmosphere, or a close, hot air, flatulence, accumulated faeces, violent passions, etc. The most important treatment is to remove the exciting cause. It seldom proves fatal.

Asti, an ancient city in Piedmont, Italy, on the Tanaro, with a Gothic cathedral; is noted for its wine; birthplace of Aiseri. Pop. 28,000.

Astigmatism, a defect of the eye clear vision of vertical objects but not of horizontal at the same distance. It is due to irregular curvature of the eye, and can be rectified by the use of cylindrical lenses. It is quite distinct from and may occur with either short or long-sightedness.

Astley, Philip, a famous equestrian and circus manager, who with Franconi established the Cirque Olympique in Paris. (1742-1814).

Astley Bridge, a cotton town of 8,500 inhabitants 2 m. N. of Bolton, Lancashire, England.

Aston Manor, a suburb of Birmingham, ham, England, until 1911 an independent municipal borough of Warwickshire.

Aston Villa, one of the outstanding Association Football clubs, formed during 1874 in connection with a Wesleyan Chapel at Aston. Under the guidance of George Ramsey the club flourished. The present ground is at Villa Park, Birmingham.

Astor, John Jacob, a millionaire, son of a German peasant, who made a fortune of four millions in America by trading in furs (1763-1848). His son, William Backhouse, doubled his fortune; known as the "landlord of New York" (1792-1875); his great-grandson, William Waldorf Astor, was U.S. Minister to Italy, and afterwards settled in England, becoming first Viscount Astor.

Astor, Nancy Witcher, Viscountess, the first woman to take her seat in the House of Commons, being returned for the Sutton Division of Plymouth as a Conservative in Nov. 1919, and since then returned at every election. A daughter of C. D. Langhorne of Virginia, she made temperance and social reform a life interest, the law prohibiting the sale of intoxicants to juveniles under 18 having been sponsored by her. Companion of Honour, 1937. (1879-).

Astor, William Waldorf, 2nd Viscount, M.P. for Plymouth 1910-1919, when he succeeded to the peerage; took a special interest in questions of public health and presided over the Parliamentary Committee which recommended the provision of sanatoria; Parliamentary Secretary to Ministry of Food, 1918, and Local Government Board, 1919-1921. He is a famous race-horse owner, and has won the Oaks five times, the Eclipse Stakes four times and the St. Leger. He owns *The Observer*. (1879-).

Astoria, a port of Oregon, U.S.A., on the mouth. The Columbia R. 10 m. from the mouth. The lumber trade and salmon packing are the chief industries. Pop. 10,000.

Astræa, the daughter of Zeus and Themis, the goddess of justice; dwelt among men during the Golden Age, but left the earth on its decline, together with her sister Pœdicia, the withdrawal explained to mean the vanishing of the ideal from the life of man on the earth; now placed among the stars under the name of Virgo.

Astrakhan, a Russian trading town on its mouth in the Caspian Sea, of which it is the chief port. Pop. 225,000.

Astralagus, a genus of herbs or shrubs three species of which are found in Britain, and are known as milk vetches. They are usually thorny plants and grow on dry soil (e.g., steppes and prairies, etc.).

Astral Spirits, spirits formerly or to people the heavenly bodies, to whom worship was paid, and to hover unembodied through space exercising demoniac influence on embodied spirits.

Astrid, Sophie Louise, Queen of the Belgians, third daughter of Prince Charles, Duke of Västergötland, brother of Gustav V., King of Sweden. Married Duke of Brabant (now Leopold III., King of the Belgians), 1926. Had three children. Killed on road near Lucerne Aug. 29, 1935, in motor accident, her husband being the driver. (1906-1935).

Astringents, drugs used in medicine to contract the tissues. They serve several purposes including the arrest of bleeding, diarrhoea, etc.

Astrolabe, an instrument used for stars. First used by astronomers, they are now used in astronomy and topographical calculations. Another kind is used in calculations of latitude by navigators, one being used by Columbus.

Astrology, a science founded on a presumed connection between the heavenly bodies and human destiny, and at one time believed in by men of such intelligence as Tacitus and Kepler; few great families at one time but had an astrologer attached to them to read the horoscope of any new member of the house.

Astronomer, Royal, the head of the Greenwich (founded by Charles II. in 1675).

Astronomy (Early History of). Astronomy is the scientific study of the stars and other heavenly bodies. Hundreds of years before the birth of Christ, the Chinese made observations of eclipses, comets and constellations, calculated the angle of the ecliptic, and may even have been able to measure the length of the solar and lunar years with precision. In Egypt, the importance of the annual flooding of the Nile valley led to careful observation of the heavens, in order that the passage of time should be accurately known and the date of the next flood predicted with certainty. The principal "star-gazers" of the ancient world were, however, the Babylonians, who not only prepared calendars showing in advance the dates and times of the new moon, but also predicted eclipses and calculated the positions of the planets in the heavens and the times of rising of some of the stars.

From Babylon a knowledge of astronomy was transmitted to Greece. As early as the 3rd Century B.C. Aristarchus of Samos advanced the theory that the earth revolved around the sun, while Eratosthenes (276-196 B.C.) measured the circumference of the globe with surprising accuracy. Hipparchus (186-125 B.C.), the founder of trigonometry, compiled a catalogue of more than a thousand stars, introduced the device of lines of latitude and longitude, calculated the obliquity of the ecliptic, and observed the precession of the equinoxes.

He regarded the earth, however, as the centre of the universe in which he was followed by the great Ptolemy (2nd Century A.D.), whose treatise on astronomy, the *Almagest*, remained the chief authority on the subject or over a thousand years. On this erroneous assumption celestial phenomena are actually much more difficult to describe with accuracy than on the heliocentric theory, though his system does very closely represent these phenomena as they actually appear to a spectator upon the earth.

During the supremacy of Islam, progress rather in the accumulation of observations

than in theoretical advance. It was not until the 16th Century that astronomy took another long step forward as a result of the work of Copernicus (1473-1543), who revived the heliocentric hypothesis. He believed the orbits to be true circles, and the complications thus involved prevented his theory from making much immediate headway, quite apart from the fact that men had grown so used to the idea that the earth was the centre of the universe that it had now become a religious dogma.

Fortunately, exact data, at that time being amassed by Tycho Brahe, enabled Johann Kepler (1571-1630) to calculate that the planets revolved in ellipses, not circles, and most of the Copernican difficulties were then resolved.

Astronomy, Modern. Early in the 17th Century (1608), astronomy was given a great impetus by the invention of the telescope by Lippershey, a Flemish optician; two years later Galileo had constructed a better instrument for himself, and found ocular evidence of the truth of the Copernican system. His work forms the basis of modern astronomy, and marks the opening of the scientific era in which we still live.

The next landmark was set up by Sir Isaac Newton, who discovered the law of gravitation—viz., that the gravitational attraction between two bodies varies inversely as the square of the distance between them. This discovery, together with Newton's improvements in mathematical methods, converted astronomy into an exact science, and enabled the movements of celestial bodies to be calculated with a degree of accuracy sufficient for all purposes except some of modern origin, where Einstein's theory of relativity affords a more exact tool.

For most of the two centuries which have elapsed since the death of Newton progress in astronomy was mainly due to improved technique in the manufacture of telescopes, and to the discovery of spectrum analysis by Bunsen and Kirchhoff (1859). Spectrum analysis provided the key to observations made some forty years earlier by Fraunhofer, who noticed and carefully mapped mysterious dark lines vertically crossing the solar spectrum.

It was known that the compounds of certain elements imparted a definite colour to a non-luminous flame when heated in it, and that the spectrum of such a coloured flame was not continuous. Bunsen and Kirchhoff's discovery was that an incandescent vapour will absorb light-radiations of the same kind as it emits, and the Fraunhofer lines must be caused by white light from the sun passing through a solar atmosphere in which the elements corresponding to the observed lines are heated to incandescence.

Further refinement in spectrum analysis has enabled the composition of the sun and other stars to be calculated not merely qualitatively, but to some extent quantitatively. In one case an element was discovered upon the sun while still unknown upon the earth; this was helium, discovered in the solar atmosphere by Sir Norman Lockyer in 1868, but not detected upon the earth until 1894 (Sir William Ramsay). The spectroscope has also made it possible to calculate whether stars are approaching, or receding from, the earth. See also *Comets; Moon, The; Milky Way; Solar System; Stars.*



13TH CENTURY
ASTROLABE



NEWTON'S
TELESCOPE

Astrophysics, that branch of astronomy which studies the physical components of the stars and their atmospheres. The principal instrument used is the spectroscopic, which consists of a kind of elaborate prism and which separates the light coming from the body under examination into its different wave-length constituents. Since each substance has a different spectrum, it is readily ascertained by examination what substances are indicated.

Asturias, an ancient province in the N. of Spain, gave title to the heir to the crown, rich in minerals, and with good fisheries; now named Oviedo, from the principal town.

Astyanax, the son of Hector and the Greeks from the ramparts after the fall of Troy, lest he should live and restore the city.

Asuncion or **Assumption**, capital and chief port of Paraguay, S. America. It was founded on the Feast of Assumption in 1837, from which it takes its name. It is on the Paraguay R., 950 m. from the sea. The climate is hot and healthy. Pop. 95,000.

Asyút, capital of a province of the same name in Upper Egypt, on the Nile, 200 m. S. of Cairo; has a few imposing mosques and a government palace; is a caravan station; noted for its red and black pottery; occupies the site of the ancient city of Lycopolis. It is the site of a famous barrage and lock. Pop. 57,000.

Atacama, an all-but-rainless desert in the N. of Chile, in the provinces of Atacama, Antofagasta, Los Andes, etc., abounding in silver and copper mines as well as yielding salt, nitrates, etc., in considerable quantities.

Atahualpa, the last of the Incas of Peru, who fell into Pizarro's hands through perfidy, and was executed by his orders in 1533—that is, little short of a year after the Spaniards landed in Peru.

Atalanta, a beautiful Grecian princess celebrated for her agility, the prize of any suitor who could outstrip her on the race-course, failure entailing death; at last one suitor, Hippomenes, accepted the risk and started along with her, but as he neared the goal, kept dropping first one golden apple, then another, provided him by Venus, stooping to lift which lost Atalanta the race, whereupon Hippomenes claimed the prize.

Atavism, name given to the reappearance in progeny of the features, and even diseases, of ancestors several generations before.

Atbara, or **Black R.**, rising in the Highlands of Abyssinia, the lowest tributary of the Nile, which it joins near Berber; the scene of General Kitchener's defeat of the Khalifa's army, April 8, 1898.

Atchafalaya, an outlet of the Red R. (W. tributary of the Mississippi in the U.S.A.) flowing into a bay of the same name, 220 m. long.

Ate, in the Greek mythology the goddess of strife and mischief, also of vengeance; was banished by her father Zeus, for the annoyance she gave him, from heaven to earth.

A tempo, a direction in music indicating that the performer is to return to the time in which the movement opened, after some variation.

Athabasca, a former territory, a river, and a lake in Canada; the territory was absorbed by the provinces of Alberta and Saskatchewan in 1905. The river rises near the Rockies, and after a course of 750 m. flows into the lake. Under the name Athabascan are included a number of Indian tribes which range from Yukon to California.

Athaliah, Queen of Judah, daughter of Ahab and Jezebel, celebrated for her crimes and impiety, for which she was in the end killed by her subjects.

Athanasian Creed, a statement, in the form of a confession, of the orthodox creed of the Church as against the Arians, and damnable of every article of the heresy severally; ascribed to Athanasius at one time, but now believed to be of later date, though embracing his theology in affirmation of the absolute co-equal divinity of the Father, the Son, and the Holy Ghost in the Trinity.

Athanasius, Christian theologian, a deacon of the Church; took a prominent part against Arius in the Council at Nicea (Nice), and was his most uncompromising antagonist; was chosen Bishop of Alexandria; driven forth again and again from his bishopric under persecution of the Arians; retired into Thebaid for a time; spent the last 10 years of his life as Bishop at Alexandria, where he died; his works consist of treatises and orations bearing on the Arian controversy, and in vindication of the doctrine of the Trinity viewed in the most absolute sense. (296-373).

Atheism, disbelief in the existence of God, in the intellect, or practical, in the life.

Athelney, Isle of, formerly an island in the Tone and Parret, Somerset; Alfred's place of refuge from the Danes.

Athelstan, King of England for 15 years from c. 925, son of King Edward the Elder, and grandson of King Alfred. Became King of Great Britain after invading Scotland, 934. Routed at Brunanburh (≠ Birrenswark), 937, an uprising of the various nationalities. Buried at Malmesbury. (c. 894-940).

Athena, the Greek virgin goddess of wisdom, particularly in the arts of war and peace; is said to have been the conception of Metis, to have issued full-armed from the brain of Zeus, and in this way the child of both wisdom and power; wears a helmet, and bears on her left arm the eagle with the Medusa's head; the olive among trees and the owl among birds sacred to her.

Athenæum, a temple in ancient Athens dedicated to Athena and used as a meeting-place by poets, philosophers; later a school of learning established in Rome about 133 by Hadrian. It is also the name of a London club, founded in 1824.

Athens, the capital of Attica, and the chief city of ancient Greece, the resort in ancient times of all the able and wise men, particularly in the domain of literature and art, from all parts of the country and lands beyond; while the monuments of temple and statue that still adorn it give evidence of a culture among the citizens such as the inhabitants of no other city of the world have surpassed. The two chief monuments of the architecture of ancient Athens, both erected on the Acropolis, are the Parthenon (q.v.), dedicated to Athena, the finest building on the finest site in the world, and the Erechtheum, a temple dedicated to Poseidon close by; is the capital of modern Greece and the seat of the government. Pop. 393,000. There is a cotton-market town of the same name in Georgia, U.S.A. Pop. 18,000.

Atherstone, a town in Warwickshire, England; hat-making is the chief industry. The ruins of Merevale Abbey are close by. Pop. 6,245.

Atherton, a town in Lancashire, England; has cotton mills, iron works and collieries. Pop. 19,985.

Athletics, sports such as running, jumping, wrestling and boxing, which were popular with the Greeks

and Romans, and which were indulged in at the Olympic Games from an early date. Oxford University was a pioneer of the modern athletic meeting in 1850, and now the Amateur Athletic Association, in co-operation with the universities and schools, organises several championship meetings. In 1896 an international championship meeting was held in Athens; the Olympic Games were thus revived, and except for the War years they have been held every four years since in different countries.

Athlone, a market-town on the Shannon, which divides it, and an important military station; is the chief broadcasting station in Ireland (Eire). Pop. 7,500.

Athlone, **Major-General the Earl of** (Prince Alexander of Teck), a son of the Duke and Duchess of Teck, and brother of Queen Mary. He entered the Life Guards and saw service in the South African war, and in Flanders in 1915. He adopted the English title in 1917, and was Governor-General of South Africa 1923-1930. Chancellor of London University. (1874-).

Athole, a district in the N. of Perthshire, Scotland, which gives name to a branch of the Murray family, the dukedom of Athole (or Atholl) having been granted to John Murray, the third Earl, in 1703.

Atholl, **Dukedom of**, created 1703, in favour of John Murray, second Marquess, who was loyal to the crown, though he opposed the union of England and Scotland; captured Rob Roy 1717. (1680-1724). John, third Duke, sold sovereignty of Man to the crown. (1729-1774). John James Hugh Henry, seventh Duke, changed his surname to Stewart-Murray. (1840-1917). John George, his son, served S. African and Great Wars. (1871-); his duchess, Katherine Marjory, daughter of Sir J. H. Ramsay, Bart., was Parliamentary Secretary to Board of Education 1924-1929.

Athos, **Mount, or Monte Santo**, a mountain over 6,000 ft. high at the southern extremity of the most northerly peninsula of Chalcidice in Greece, covered with monasteries, inhabited exclusively by monks of the Greek Church, and rich in curious manuscripts.

Athy, a town of Kildare, Ireland (Eire), at the junction of the Barrow R. and the Grand Canal. Pop. 3,500.

Atkinson, **Sir Henry**, a distinguished New Zealand statesman, born in England, emigrated 1855. Played a prominent part in the Waikato War, was Minister of Defence 1864-1865, three times Prime Minister of New Zealand. (1831-1892).

Atlanta, the largest city and capital of Georgia, U.S.A.; a large manufacturing and railway centre; is a university town. Pop. 270,000.

Atlantes, figures of men used in architecture instead of pillars.

Atlantic, one of the great oceans of the globe, separating the Old World and the New; covers nearly one-fifth of the surface of the earth; length 9,000 m., its average breadth 2,700 m.; its average depth 15,000 ft., or from 3 to 5 m. with waves in consequence at times of great height and volume. In the middle there is a ridge rising to less than 6,000 ft. deep, on which the Atlantic cables are laid.

Atlantic City, city and popular seaside resort of New Jersey, U.S.A. On a sandy island, it has fine beaches, a promenade 8 m. long and an area. Pop. 66,000.



ATLANTES

Atlantic Records: First crossing by sailing-boat by Columbus in 1492, who reached Guanahani in 70 days. The first crossing by steam-boat was made by the *Sirius* in 1838 in 19 days, though the *Great Western* was the first built for a regular transatlantic service and was only beaten by a matter of hours on the first crossing. Fastest steamship crossing, by the *Normandie* (August 1937), was 3 days 23 hrs. 2 mins. First aeroplane crossing W. to E. by Sir John Alcock and Sir A. W. Brown in a Vickers-Vimy biplane, Newfoundland to Ireland, 1,890 m., in 16 hrs. First solo aeroplane crossing by Charles Lindbergh in 1927. First E. to W. flight by Baron Hunefeldt, Capt. Koehl and Capt. Fitzmaurice, 1928. First airship flight, by British *R34*, in 4½ days from Scotland to New York.

Atlantis, an island alleged by tradition to have existed in the ocean W. of the Pillars of Hercules; Plato has given a beautiful picture of this island and an account of its fabulous history. The *New Atlantis*, a Utopia figured as existing somewhere in the Atlantic, which Lord Bacon began to outline but never finished.

Atlantosaurus, a fossil reptile, remains of which have been found in N. American strata. Its length was nearly 120 ft.

Atlas, a Titan who, for his audacity in attempting to dethrone Zeus, was doomed to bear the heavens on his shoulders; although another account makes him a king of Mauritania whom Perseus, for his want of hospitality, changed into a mountain by exposing to view the head of the Medusa.

Atlas Mountains, a range in NW. Africa, the highest point Tizi-n-Tamjurt (14,500 ft.); the Greater in Morocco, the Lesser extending through Algeria and Tunis, and the whole system stretching from Cape Nun, in Morocco, to Cape Bon, in Tunis.

Atmosphere, the gaseous envelope which surrounds the earth and becomes less and less dense as the distance from the earth increases. Its maximum thickness is not known with accuracy, but is estimated at about 300 m. The lower region, up to a height of about 6 m. or 10 km., is called the troposphere, while the upper region forms the stratosphere. The Aurora Borealis occurs in the stratosphere, which also contains a layer of ozone; the latter may be identical with the Heaviside layer of ionised gas which reflects wireless waves back to the earth.

Owing to its very tenuous character, the stratosphere offers very little resistance to objects passing through it, so that when flight in it becomes more easily possible, aeroplanes may be expected to attain enormous speeds. Ascents into the stratosphere have been made by Professor Piccard, Capt. Stevens and Anderson, and others, a maximum height of over 14 m. having been reached. See Air.

Atoll, the Polynesian name given to a coral island consisting of a ring of coral enclosing a lagoon; common in the Indian and Pacific oceans.



ATOLL

Atom and Atomic Theory.

*That matter is not continuous but discrete was suggested in classical times by Democritus, Leucippus, Epicurus, and Lucretius; Aristotle, however, opposed the suggestion, and such was his authority that atomism was little heard of for nearly two thousand years.

In the 17th Century A.D. Sir Isaac Newton used the hypothesis that matter is composed of hard, indivisible atoms to explain certain scientific phenomena, but the modern atomic theory is primarily due to John Dalton (1766-1844), who first showed how such a theory could be subjected to experimental tests. Dalton assumed that each element had its own peculiar type of atom, different from the atoms of all other elements; that atoms were indivisible, indestructible, and uncreatable; and that when atoms of elements combined to form molecules of compounds, they did so in small whole numbers. The theory met with little favour until Davy declared himself convinced.

Dalton represented atoms by circles suitably shaded, or distinguished in other ways, to differentiate those of one element from those of another, but this system was too clumsy, and was soon replaced by that of Berzelius, according to which the atom of an element is represented by the initial letter, or by the initial and another characteristic letter, of the Latin or latinised name of the element; thus H represents one atom of hydrogen, He one atom of helium, and Hg one atom of mercury (hydrargyrum).

Until the closing years of the 19th Century, Dalton's theory held almost undisputed sway. The work of Sir J. J. Thomson, however, on the passage of electricity through gases, the discovery of the cathode and Röntgen (X) rays, and the work of the Curies upon radioactivity, proved that atoms were composed of electric charges; and Lord Rutherford drew a picture of an atom as a miniature solar system, in which the sun is represented as a minute but heavy, positively-charged nucleus, around which revolve one or more planets in the shape of particles of negative electricity or electrons.

The simplest atom—that of hydrogen—consists of a nucleus of one proton, or particle of positive electricity, round which revolves one electron. More complex atoms have nuclei consisting of both protons and electrons, as well as of neutrons (particles consisting of equal charges of positive and negative electricity, and therefore without apparent charge), but the nuclei always have a resultant positive charge. Round these nuclei revolve a number of electrons equal to the number of units of resultant positive charge upon the nuclei; this number is known as the atomic number of the element.

Radioactive atoms spontaneously disintegrate, thus forming atoms of other elements; radium, for example, finally leaves a residue of lead. Artificial decomposition of atoms has recently been effected, and so the alchemists' dream of the transmutation of the elements has at length been accomplished. It has also been shown that atoms may be destroyed, or rather converted into energy. There seems to be no reason to doubt the possibility of the converse operation, viz., the synthesis of atoms from energy.

Atonement, a term common in the Old Testament for expiation of a sin by punishment or reparation so as to reconcile the sinner with God. Theologians differ widely as to the correct interpretation of the term.

Atonement, **Day of**, or the Great Day of Atonement, in the Mosaic law, was on the tenth day of the seventh month (see Levit. xxiii)—this being September or October. It is the last day of the Jewish year.

Atreus, a son of Pelops and King of Mycenae, who, to avenge wrong done him by his brother Thyestes, killed the latter's two sons and served them up in a banquet to him, for which act, as tradition shows, his descendants had to pay heavy penalties.

Atrides, descendants of Atreus, particularly Agamemnon and Menelaus, a family frequently referred to as capable of and doomed to perpetrate the most atrocious crimes.

Atrium, the chief room in the villa of the ancient Romans. Also meant a public building, and later was synonymous with "porch."

Atropa, a genus of two plants of the order Solanaceae. *A. belladonna* (deadly nightshade) is the source of atropine, and leaves, fruit and flower are all highly poisonous.

Atrophy, a wasting of the flesh due to some interference with the nutritive processes. It may arise from a number of causes, including disuse, pressure, interference with the supply system, or organic disease. In old age the whole frame, except the heart, undergoes atrophic change.

Atropine, an alkaloid found in deadly nightshade. The sulphate is used for ophthalmic cases.

Atropos, one of the three Fates, the one who cut asunder the thread of life; one of her sisters, Clotho, appointed to spin the thread, and the other, Lachesis, to direct it.

Attaché, a diplomatic officer attached to the staff of a commanding officer, or an embassy or legation, and sometimes travelling with an ambassador, whose duty it is to report on the naval and military organisation of the country they visit.

Attachment, in English law a taking of property by virtue of a writ or precept. It differs from arrest by proceeding out of a higher court, whereas arrest proceeds only out of an inferior court. Attachment applies to a man's goods (though not to his lands) as well as to his person, and, unlike an arrested person, the person attached is held until the day assigned, and not brought before court at once. Foreign attachment is the obtaining of the security or goods of a debtor in the hands of a third person.

Attainder, a consequence attached to the passing of sentence of death upon a criminal, or outlawry for a capital offence. The chief consequences were forfeiture of real and personal estate and loss of privileges as a freeman. The last bill of attainder was brought in 1820 against Queen Caroline.

Atterbury, Francis, Bishop of Rochester and controversialist, said to have inspired Sacheverell's defence. A Jacobite in sympathy, he was arrested for plotting with the Pretender to proclaim him King and exiled. (1662-1732).

Attestation, the act of bearing witness to any document by appending one's signature to it; also the act of witnessing any opinion or statement in a less formal manner; most important documents, like deeds and wills, require attestation; in Scotland all deeds and in England all wills must be attested by two witnesses. In a narrower sense the word is associated with attestation by a recruit under the Derby Scheme of Enlistment 1915-1916 prior to the introduction of conscription.

Attica, a country in ancient Greece, on the NE. of the Peloponnese, within an area not larger than that of Lanarkshire, which has nevertheless had a history of world-wide fame and importance.

Atticism, a pure and refined style of expression in any language, originally the purest and most refined style of the ancient literature of Greece.

Atticus, Titus Pomponius, a wealthy Roman and friend of Cicero, devoted to study and the society of friends, took no part in politics, died of voluntary starvation rather than endure the torture of a painful and incurable disease. (109-32 B.C.).

Attila, or *Etzel*, the King of the Huns, called "the Scourge of God," from the terror he everywhere inspired; overran the Roman Empire at the time of its decline, vanquishing the emperors of both East and West, extorting heavy tribute; led his forces into Germany and Gaul, was defeated in a great battle near Châlons-sur-Marne by the combined armies of the Romans under Aëtius and the Visigoths under Theodoric, retreated across the Alps and ravaged the N. of Italy; died of hemorrhage on the day of his marriage, and was buried in a gold coffin containing immense treasures in 453, the slaves who dug the grave having been killed, it is said, lest they should reveal the spot.

Attleborough, a market town, in m. SW. of Norwich by rail; formerly the site of a 14th-Century college of the Holy Cross. Pop. 2,608.

Attlee, Rt. Hon. Clement Richard, leader of British Labour Party since 1935. Educated Haileybury and Oxford. Barrister, 1905. Member of Fabian Society since 1908. Secretary, Toynbee Hall, 1910. Tutor and lecturer in social science, London School of Economics, 1913-1923. Served in S. Lancashire Regiment and Tank Corps—Gallipoli, Mesopotamia, France; retired as major, 1919. Mayor of Stepney, 1919-1920; alderman 1919-1927. M.P., Limehouse division of Stepney, since 1922. Under-Secretary for War, 1924; Chancellor, Duchy of Lancaster, 1930-1931; Postmaster-General, 1931; P.C., 1935. (1883-).

Attock, a town and fortress in the Punjab, on the Indus where the Kabul joins it, and standing on the road through the Khyber Pass to Afghanistan, along which Alexander the Great, Tamerlane, and other invading leaders must have marched.

Attorney, one acting as a substitute for another to manage his affairs, under a Power of Attorney. The term applies generally also to those legally qualified to conduct law proceedings for their clients, and is synonymous with solicitor. By an act of 1873 laws governing attorneys and solicitors were consolidated and unqualified persons were prevented from practising. See *Solicitor*.

Attorney-General, The, with General, a law officer of the Crown, giving advice to the Government and leading for the Crown in important criminal cases and in civil cases concerning the public revenue. He is always to-day a member of Parliament and holds Cabinet rank (with a salary of £4,500 a year which is considerably increased by fees), the first Attorney-General to be admitted a member of the Cabinet having been Sir Rufus Isaacs (later Earl Reading).

Attraction, the force which draws of a body. 1. *Cohesion* or molecular attraction fixes the state of a body. If the molecules rigidly cohere, the state is *solid*; if they separate readily, *fluid*; if they tend to diffuse, *gaseous*. 2. *Adhesion* is the attraction of molecules of different substances brought into close contact. 3. *Capillary attraction* occurs when water rises up the sides of a glass rod dipped into it, or when oil rises up wick. 4. *Electrical attraction* occurs when bodies electrified positively attract those electrified negatively. 5. *Magnetic attraction* is that property which enables certain ferruginous ores to attract iron, etc. See *Magnetism*. 6. *Gravitation* (q.v.) is that law of attraction which operates when bodies "fall" to the earth, a law which applies, according to Newton, to the heavenly bodies. Researches begun by Faraday and continued by leading scientists on the subject of dielectrics go to show that attraction may act through the medium between two distant bodies.

Atwood, George, a mathematician, invented a machine for illustrating the law of uniformly accelerated motion, as in falling bodies. (1746-1807).

Atys, a beautiful Phrygian youth, beloved by Cybele, who turned him into a pine, after, by her apparition at his marriage to forbid the bans, she had driven him mad.

Aube, a dept. in France, formed of Burgundy, Champagne and a small part of

Auber, Daniel François Esprit, a popular French composer of operas, born at Caen; his operas included *La Muette de Portici*, *Le Domino Noir*, and *Fra Diavolo*. (1782-1871).

Aubergine, or *Egg Plant*, a plant (S. *Melongena*) of the Solanaceae family, so named because its fruit is shaped like an egg, is a kind of peach, and is cultivated in France and Italy, being eaten as a vegetable. Its foliage is cultivated for covering walks and trellis.



AUBERGINE

Aubers, a village in the dept. du Nord, France, about 10 m. from Lille, at the foot of the Aubers Ridge. These low hills were in the possession of the Germans during the Great War. They were unsuccessfully attacked by the Allies in March 1915. Their capture would have threatened the German hold on Lille.

Aubrey, John, an eminent antiquary, a friend of Anthony Wood; inherited estates in Wilts., Hereford, and Wales, all of which he lost by law-suits and bad management; left a vast number of MSS.; published one work *Miscellanies*, being a collection of popular superstitions; preserved a good deal of the gossip of the period. (1626-1697).

Aubrietia, a genus of plants of the order Crucifera, mostly native of the Alps and Mediterranean regions, but cultivated in England as rock-plants.

Auburn, (1) a suburb of Sydney, New South Wales, Australia. (2) a manufacturing town of Cayuga Co., New York, U.S.A. The State prison is here. Pop. 36,000. (3) A town in Androscoggin Co., Maine, U.S.A. Bootmaking is the chief industry. Pop. 19,000. (4) A village of Co. Westmeath, Ireland. Formerly *Lissey*, it has taken the name Goldsmith gave it in *The Deserted Village*.

Aubusson, Pierre d', grand-master of Jerusalem, the Knights of St. John of Jerusalem, of French descent, who in 1480 gallantly defended Rhodes when besieged by the Turks, and drove the assailants back. (1423-1503).

Auch, capital of the dept. of Gers, France, 14 m. W. of Toulouse, with one of the finest Gothic cathedrals in France, perched on a hill, and accessible only by a flight of 200 steps; has a trade in wine and brandy and cotton and woollen manufactures. Pop. 9,000.

Auchinleck, a village of Ayrshire, Scotland, 15 m. E. of Ayr, with the mansion of the Boswell family. Pop. 3,400.

Auchterarder, a small town in Perthshire, Scotland, where the forcing of a presentation by a patron on an unwilling congregation led to the disruption of the community and the creation of the Free Church in 1843. Pop. 2,250.

Auckland, the largest town in New Zealand, in the N. island, with an excellent harbour in the Gulf of Hauraki, and the capital of a large province of the name, 400 m. long, and 200 m. broad,

with a fertile soil and a fine climate, rich in natural products of all kinds. Was the capital of New Zealand till the seat of government was transferred to Wellington. Has a University and many fine buildings, extensive docks, etc. Has a considerable shipping trade, sawmills, glassworks, shipyards, and sugar refineries. Pop. (prov.) 517,000; (town) 221,000.

Auckland Islands, a group of small islands 180 m. S. of New Zealand, with some good harbours and whale fisheries. Uninhabited.

Auction, a method of public sale whereby the object for sale is secured by the maker of the highest offer. Sale by auction was used by the Romans for the disposal of military spoils. Assent of the buyer is given by his bidding, while assent of the seller is signified by the fall of the auctioneer's hammer, and until this declaration the bidder may withdraw his offer.

Auction Bridge, a card game for four players, ranged in two pairs of partners. The whole pack is dealt round, the dealer being the first to bid. A game consists of 30 points, scored by tricks below the line. Only the tricks above six are counted towards the score, 6 points being allowed for each trick above six in clubs when clubs are trumps, 7 in diamonds, 8 in hearts, 9 in spades, and 10 in no-trumps.

A player may make an opening bid of any number of tricks, but any succeeding call must be higher—e.g., one diamond takes precedence over one club, one heart over one diamond, and so on, but, e.g., two hearts can only be beaten by two spades or two no-trumps, or by three clubs or three diamonds. A player may pass or may increase his partner's bid. He may double his opponent's bid, thus doubling the penalties if his opponent loses and the score if he wins.

The highest bid determines the Trump suit, and the highest bidder plays his own and his partner's hand, which is laid down on the table. The tricks are taken as in whist. Rubber is gained by a win of two games out of three, and for rubber 250 points are scored above the line. Other scores above the line are honours, according to the court cards and aces in each hand. For every trick below the number contracted, the opponents score 50 points above the line. Grand slam (all tricks) scores 100 points, and Little slam (all but one trick) 50.

Aucuba, a genus of three species of shrubs of the Cornaceae (dogwood) family, one of which (*A. japonica*) is cultivated in England as a garden plant.



Aucuba himalaica

Aude, a maritime dept. in the S. of France, being a portion of Languedoc; yields cereals, wine, etc., and is rich in minerals. Pop. 296,000.

Audenshaw, a town of Lancashire, England, 5 m. E. of Manchester by rail. Manufactures include hats, hosiery, and there are cotton mills and engineering works. Pop. 8,460.

Audiphone, a fan-shaped plate of vulcanite which is sensitive to sound-waves. Fitted against the front teeth, the plate conveys sounds to the auditory nerve without passing through the external ear, thus enabling the deaf to hear.

Audit and Auditor, the examination of accounts of the State, public bodies, companies, or private persons, in cases of importance by an accountant who is appointed as auditor, and who issues a certificate to the

effect that the accounts he examines are properly kept. The duties of auditors are laid down in the Companies Act of 1900. A limited liability company is compelled to furnish a properly audited balance-sheet annually.

The Exchequer and Audit department of the Civil Service is administered by the Comptroller and Auditor-General. He is appointed by Letters Patent under the Great Seal. He authorises all issues from the exchequer after Parliamentary authority has been obtained. He examines exchequer accounts, and issues an annual report. He is also Auditor-General of Public Accounts, the receipt of public revenue and accounts of Government stores and trading services.

Local government accounts are audited by auditors appointed by the Ministry of Health, formerly the Local Government Board.

Audley, urban district of Staffordshire, England, 4m. from Newcastle-under-Lyme. Coal is mined. Pop. 14,000.

Audley, Thomas, Lord, born in Essex, son of a yeoman; became Speaker of the House of Commons and Lord Chancellor of England; selfish, unscrupulous tool of Henry VIII. (1488-1544).

Audran, Edmond, French musical composer; wrote *La Cigale*, *La Poupée*, and many other light operas. (1842-1901).

Audubon, John James, a celebrated American ornithologist of French Huguenot origin; author of two great works, the *Birds of America* and the *Quadrupeds of North America*, written and illustrated by himself, the former characterised by Cuvier as "the most magnificent monument that Art had raised to Nature." (1780-1851).

Auerbach, Berthold, a German poet, novelist, and journalist of Jewish birth, born in the Black Forest; his novels are in the main of a somewhat philosophical bent, he having been early led to the study of Spinoza, and having edited the latter's works early in his literary career; his *Village Tales of the Black Forest* were widely popular. (1812-1882).

Augeas, a legendary king of Elis, in Greece, and one of the Argonauts; had a stable with 3,000 oxen, that had not been cleaned out for 30 years, but was cleansed by Hercules turning the rivers Peneus and Alpheus through it; the act a symbol of the worthless lumber a reformer must sweep away before his work can begin.

Augereau, Pierre François Charles, Marshal of France and Duke of Castiglione, born at Paris; distinguished in the campaigns of the Republic and Napoleon; executed the *coup d'état* of Sept. 4, 1797; his services were rejected by Napoleon on his return from Elba, on account of his having supported the Bourbons during his absence. (1757-1816).

Augite, a mineral, green, brown, or black, in colour, of the pyroxene group; found in volcanic rocks.

Augsburg, a busy manufacturing and trading town, in Bavaria, once a city of great importance, where in 1530 the Protestants presented their Confession to Charles V., and where the peace of Augsburg was signed in 1555, ensuring religious freedom. Pop. 177,000.

Augsburg Confession, a document drawn up by Melancthon in the name of the Lutheran reformers, in statement of their own doctrines and of the doctrines of the Church of Rome against which they made their protest; presented to the Emperor Charles V. in 1530 at the Diet of Augsburg.

Augurs, a college of priests in Rome and decide the will of the gods by observing the omens.

August, originally called *Sextilis*, as the sixth month of the Roman year, which began in March, and named August in honour of Augustus, as being the month identified with memorable events in his career.

Augusta, (1) a prosperous town in Georgia, U.S.A., on the Savannah, 231 m. from its mouth. Is one of the largest cotton-market towns in the U.S.A., and has a U.S.A. arsenal. Pop. 60,000. (2) A town, the capital of Maine, U.S.A., with some manufactures. Pop. 17,000. (3) A seaport of Sicily, N. of Syracuse, devastated by an earthquake in 1693. The harbour, which is used for naval purposes, is fortified. Pop. 17,000.

Augustan Age, a period in the history of Rome during the reign of Emperor Augustus when national achievement reached its climax, especially in literature. Ovid, Livy, Horace, Virgil, and Catullus were living and writing at this time. The term has been used to refer to similar ages of cultural greatness in other countries.

Augustine, or **Austin, St.**, the apostle of England, sent thither with a few monks by Pope Gregory I. in 596 to convert the country to Christianity; began his labours in Kent; founded the archbishopric of Canterbury; d. 605.

Augustine, St., the Bishop of Hippo, and the greatest of the Latin Fathers of the Church; a native of Tagaste, in Numidia; son of a pagan father and a Christian mother, St. Monica; was converted to Christ by a text of St. Paul (Rom. xiii. 13, 14). He became bishop in 395, devoted himself to pastoral duties, and took an active part in the Church controversies of his age, opposing especially the Manicheans, the Donatists, and the Pelagians; his principal works are his *Confessions*, his *City of God* and his treatises on Grace and Free-Will. No Churchman has exercised greater influence in moulding the creed as well as directing the destiny of the Christian Church. He was especially imbued with the theology of St. Paul. (354-430).

Augustinians, (a) Canons, called also Black Cenobites, following the so-called "Rule of St. Augustine," had 200 houses in England and Wales at the Reformation; (b) the Augustinian or Austin Friars or Hermits, also known as the Black Friars, mendicant, a portion of them barefooted; the street Austin Friars in London commemorates the site of their house.

Augustus, called at first Gaius Octavius, ultimately Gaius Julius Caesar Octavianus, the first of the Roman Emperors or Caesars, grand-nephew of Julius Caesar, and his heir; at Mantua helped to defeat and drive Antony out of Italy; became consul, formed one of a triumvirate with Antony and Lepidus; together with Antony overthrew the Republican party under Brutus and Cassius at Philippi; defeated Antony and Cleopatra at Actium, and became master of the Roman world; was voted the title of "Augustus" by the Senate in 27 B.C.; proved a wise and beneficent ruler, and patronised the arts and letters, his reign forming a distinguished epoch in the history of the ancient literature of Rome. (63 B.C.-A.D. 14).

Augustus II., Elector of Saxony and King of Poland; was defeated by Charles XII. of Sweden at the Battle of Clissow (1702) and deposed; recovered the throne, in 1709; is known to history as "The Strong"; among his many illegitimate children was the famous Marshal Saxe. (1670-1733).

Augustus III., son of the preceding; cynski in the struggle for the crown of Poland;

lost Saxony to Frederick the Great during the Seven Years War, but recovered it in 1763. Shown great interest in painting and music. (1696-1763).

Auk, the common name of all birds of the family Alcidae, including the Auks, Guillemots, Puffins, Razor-bills (q.v.), which breed on and are common round the rocky coasts of Northern countries, and are for the most part black and white in colouring. The little Auk (*Alle Alle*) is a winter visitor to England. All birds in this family have short wings and webbed feet on heavy bodies. The Great Auk or Garo-fowl (*Plautus* or *Alca impennis*), now extinct, had such small wings as to be incapable of flight, and was finally exterminated in 1844. Eggs of the Great Auk are now very valuable.



OREAT AUK

Aulic Council, supreme council in the Holy Roman Empire, from which there was no appeal, established by Maximilian I. in 1497; it had no constitution, dealt with judicial matters, and lived and died with the emperors.

Aulis, a port in Boeotia, where the fleet of the Greeks assembled before taking sail for Troy, and where Iphigenia, to procure a favourable wind, was sacrificed by her father Agamemnon, an event commemorated in the *Iphigenia in Aulis* of Euripides.

Aumale, Duc d', fifth son of Louis in Algiers, but resigned the governorship when his father abdicated; lived in England for twenty years after, and left his estate and valuables to the French nation. (1822-1897).

Aurangabad, a city in Hyderabad, in the Nizam's dominions; once the capital, now much decayed, with the ruins of a palace of Aurangzebo.

Aurelianus, Lucius Domitius, powerful Roman emperor; son of a peasant of Panonia; distinguished as a skilful and successful general; was elected emperor 270; drove the barbarians out of Italy; vanquished Zenobia, queen of Palmyra, carrying her captive to Rome; subdued a usurper in Gaul, and while on his way to crush a rebellion in Persia was assassinated by his troops. (212-275).

Aurelius. See Marcus Aurelius.

Aureole, in Christian art a cloud of light represented as encircling the entire figure of saints and martyrs. Properly the nimbus encircles the brows only.

Auricle, the name of (1) the two parts of the heart, viz., the left auricle which receives the arterial blood from the lungs, and the right auricle which receives the venous blood from the body; (2) the flap or pinna of the ear.

Auricula (*Primula auricula*), a plant of the primula order (Primulaceae) which includes the primrose, oxlip, cowslip, etc.; found wild abundantly on the Swiss Alps. It has long been cultivated by florists, and many varieties have been raised from seed having little resemblance to the wild plant except in foliage.

Auriga, one of the constellations, to be found between Gemini and Perseus. Contains the stars Capella, Beta, and Nova, or the New star which shows considerable variability. This star was discovered in 1891 by Dr. Anderson with the aid of a pocket telescope.

Aurillac, capital of the dept. of Cantal, in France, on the Jordanne, affluent of the Dordogne, built round the famous abbey of St. Geraud, now in ruins. Pop. 16,000.

Aurochs, name given to two species of Bovidae (cattle): (1) *Bos primigenius*, the original wild cattle of Europe, standing as much as 6 ft. high at the shoulder, from which the European domesticated cattle are derived; now extinct; (2) the European Bison, *Bos (Hison) bonasus*, small herds of which still exist in Lithuania.

Aurora, a city in Illinois, U.S.A., 35 m. SW. of Chicago, said to have been the first town to light the streets with electricity. Pop. 46,000.

Aurora, the Roman goddess of the dawn, charged with opening for the sun the gates of the East; had a star on her forehead, and rode in a rosy chariot drawn by four white horses. See *Eos*.

Aurora Borealis, bright luminous beams seen in the night sky in northern latitudes, especially within the Arctic Circle; sometimes visible in the British Isles. It is supposed to be due to electrical disturbances having their origin in the upper atmosphere, but its exact nature is obscure. A similar light seen in southern latitudes is known as *Aurora Australis*.

Aurangzebe, Mogul emperor of Hindustan, third son of Shah Jehan; ascended the throne by the deposition of his father, the murder of two brothers and of the son of one of these; he governed with skill and courage; extended his empire, and, though fanatical and intolerant, was a patron of letters; his rule was far-shining, but the empire was rotten at the core, and when he died it crumbled to pieces in the hands of his sons, among whom he beforehand divided it. (1618-1707).

Ausonius, Decimus Magnus, a Roman poet, a native of Gaul, born in Bordeaux; tutor to the Emperor Gratian, who, on coming to the throne, made him prefect of Latium and of Gaul and consul of Rome. (310-394).

Austen, Jane, a gifted English novelist, daughter of a clergyman in N. Hampshire; member of a quiet family circle, occupied herself in writing without eye to publication, and only in mature womanhood thought of writing for the press. Her first novel, *Sense and Sensibility*, was published in 1811, and was followed by *Pride and Prejudice*—her masterpiece—*Mansfield Park*, *Emma*, *Northanger Abbey*, and *Persuasion*, her interest being throughout in ordinary, quiet, cultured life and the delineation of it, which she achieved in an infinitely charming manner. (1775-1817).



JANE AUSTEN

Austerlitz, Brünn, where Napoleon defeated the emperors of Russia and of Austria, at "the battle of the three emperors," Dec. 2, 1805.

Austin, the capital of Texas, U.S.A., on the Colorado. Founded 1838, its original name was Waterloo, but was changed in 1839 when Texas won its independence in honour of Stephen Austin, who was largely instrumental in achieving it. Pop. 53,000.

Austin, Alfred, poet-laureate, appointed Tennyson, born near Leeds, bred for the bar,

but devoted to literature as journalist, writer and poet; wrote *The Season*, *The Human Tragedy*, *Sacrorotula*, *English Lyrics*, and several works in prose. (1835-1913).

Austin, Henry Wilfred, "Bunny Austin," English lawn-tennis player. Won junior championships, Great Britain, 1922-1925. Captained his university and represented Great Britain in matches, Dominions and U.S.A., 1928. In Inter-Zone Final; in 1931 defeated S. B. Wood and F. X. Shields; in 1933, E. Vines (U.S.A.), who had beaten him 1932. Greatest British tennis stylist. (1906-).

Austin, Sir Herbert, First Baron; chairman Austin Motor Co., Ltd., born at Little Missenden, Bucks. Manager Wolseley Tool and Motor Car Co., Ltd., Birmingham, 1900-1905. Began own manufacture of motor-cars, Longbridge Works, Northfield, Birmingham, 1905, and became one of the largest manufacturers of motor-cars in the country with his "Austin" cars. K.B.E. 1917; Unionist M.P., King's Norton Division of Birmingham, 1919-1924. Ennobled, 1936. (1866-).

Austin, John, a distinguished English jurist, professor of Jurisprudence in London University; mastered the science of law by the study of it in Germany, but being too profound in his philosophy, was unsuccessful as professor. His great work was his *Province of Jurisprudence Determined*. (1790-1859).

Austin Friars. See *Augustinians*.

Australasia (i.e., Southern Asia), a popular name given chiefly to Australia, New Zealand, and the islands adjoining, but sometimes employed to include the Malay Archipelago, the Philippines, and the Pacific Is.

Australia, a continent entirely within the Southern Hemisphere, about one-fourth smaller than Europe, its utmost length from E. to W. being 2,400 m. and breadth 1,971; the coast has singularly few inlets, though many and spacious harbours, only one great gulf—Carpentaria—on the N. and one bight—the Great Australian Bight—on the S.

The interior consists of a low desert plateau, depressed in the centre, bordered with ranges of various elevation, between which and the sea is a varying breadth of coastland; the chief mountain range is in the E., and extends more or less parallel all the way with the E. coast; the rivers are few, and either in flood or dried up, for the climate is very parching, only one river—the Murray, 2,345 m. long—of any consequence, while the lakes, which are numerous, are shallow, and nearly all salt.

The flora is peculiar, the eucalyptus and the acacia the most characteristic, grains, fruits, and edible roots being all imported; the fauna is no less peculiar, including, in the absence of many animals of other countries, the kangaroo, the dingo, and the duck-bill, the useful animals being all imported; of birds, the cassowary and the emu, and smaller ones of great beauty, but songless: reptiles are numerous.

The aborigines, of many tribes, of primitive habits, and a low order of intelligence, are disappearing. The territory is divided into Victoria, New South Wales, Queensland, S. Australia, W. Australia, and the Northern Territory (N. and Central Australia), which, with Tasmania, federated in 1901 and became the Commonwealth. The capital is Canberra.

The climate is warm, temperate to tropical, and rainfall is, on the whole, sparse. Inland areas are waterless. A large area in tropical Australia has monsoon winds, is warm and dry in winter and hot and wet in summer, producing tropical forests near the coast and

savannah grasslands. The Southern strip has winter rains with a Mediterranean climate.

Production and Industries. The industries of Australia are pastoral, agricultural, mining, manufacturing, and lumbering. The pastoral industries are the most important, wool forming half the value of the exports. Sheep are grazed mostly in dry grass country inland, while cattle are numerous on the hillsides and coastal plains.

In agriculture, wheat is the chief product, and much fruit is grown, especially in the S., where the hillsides are favourable for the culture of grapes producing wine. Currants and raisins are grown in irrigated districts of the Murray basin and at Mildura.

Goldfields in Central Victoria, Western Australia, and New South Wales caused the establishment of towns like Ballarat, Bendigo and Bathurst, Kalgoorlie and Coolgardie. Production in 1937 amounted to 1,380,000 fine oz. Other minerals include copper in S. Australia and New South Wales; silver, lead, and zinc at Broken Hill, New South Wales; a very rich coal-field is worked in New South Wales at Newcastle (now the second largest town in New South Wales).

Manufactured articles include iron and steel goods, leather articles, woollen textiles, soap, and furniture. Little is exported. Timber-cutting yields special woods including hardwoods for railway-sleepers and road-paving. Railways link Perth, Fremantle, Kalgoorlie, Adelaide, Melbourne, Sydney, Brisbane, and Townsville in Queensland, while railways run inland from the principal towns to serve agricultural and mining transport needs.

An overland telegraph line from Port Darwin in the N. to Adelaide in the S. was completed in 1872. Air mail and passenger services connect the larger towns. Sydney is the centre of Australian commerce and the greatest port of the S. Pacific Ocean. Pop. 6,883,000 white and some 55,000 aborigines.

Australia Day, Jan. 26, the anniversary of the foundation of Sydney, New South Wales, in 1788 by Capt. Arthur Phillip.

Australia House, Strand, London, erected 1911-1914 by the Commonwealth of Australia as offices of the High Commissioner and Agents-General for Victoria and Tasmania and opened in 1918.



AUSTRALIA HOUSE

Australian Alps, a range of mountains in the W. of Victoria and S. of New South Wales, a continuation of the Great Dividing Range. The highest point is Mt. Kosciuszko (7,330 ft.).

Austria, formerly a Federal State in Central Europe with an area of 32,000 sq. m. and a population of 6,700,000, and bounded on the N. by Germany and Czechoslovakia, on the S. by Italy and Yugoslavia, on the W. by Switzerland, and on the E. by Hungary, now incorporated with Germany in Greater Germany.

It is an Alpine region. Agriculture is the leading industry. Wheat, rye, barley, oats, maize, and potatoes grow in the lowlands. Cattle are reared and horses, goats, pigs, and sheep. In the alpine districts dairy and poultry-farming are the chief industries, while forests provide valuable pinewoods.

The minerals include gold in the Hohe Tauern, lignite, anthracite, and iron ore (in considerable quantities), lead, zinc, salt, upper, graphite, and sulphur. Water-power

is an aid to industry. Manufactures include textiles, leather goods, cellulose, paper and wood pulp, and rubber goods, besides luxury articles, toys, and wood carvings. Railways (mostly State-owned) are being electrified, as the mountainous conditions consume large quantities of coal.

Until 1918 it formed part of Austria-Hungary. On the collapse of the Central Powers in 1918, the Hungarians, Czechs, Poles, Yugoslavs, and Rumanians previously incorporated in the "Dual Monarchy" seceded, and the Republic of Austria was proclaimed on Nov. 12, 1918. Its boundaries were defined by the Treaty of St. Germain, and the constitution by which it became a federation of nine provinces (including Vienna) was fixed in 1920. From 1923 onwards there was constant friction between the Socialists and anti-Socialists, resulting in serious rioting in July 1927 and in Civil War in 1934, during which the Karl Marx buildings in Vienna were shelled and the Socialist movement was ruthlessly suppressed.

Austria felt the depression acutely, Vienna ever since the War having been in the position of a capital without a country, and the question of an "anschluss" with Germany was frequently discussed. After the rise of Hitler, however, the democratic forces which had hitherto favoured "anschluss" became irreconcilably opposed to union with Nazi Germany. In July 1934, Dr. Dollfuss, the Chancellor, was assassinated by Nazis. He was succeeded in office by Herr von Schuschnigg. The constitution was changed in 1934, parliamentary government abolished, and the Republic replaced by a Federal State on Fascist lines. On July 11, 1936, an agreement between Germany and Austria was signed in which Germany recognised the sovereignty of the Federal State and Austria declared itself a "German state." The agreement, however, was never implemented, and for some time German wireless propaganda in Austria continued.

In Feb. 1938, Herr Hitler suddenly called Herr von Schuschnigg to Berchtesgaden, and under threat compelled the acceptance of a renewal of the truce of 1936, a condition being that Austrian Nazis should be given representation in the Austrian Cabinet, an amnesty granted to certain political offenders, and other measures taken "designed to improve Austro-German relations." Herr von Schuschnigg stood firm on the question of the sovereignty of Austria, and suddenly announced the holding of a plebiscite to decide the wishes of the people on the question of independence or union with Germany.

Germany immediately moved, and Hitler demanded and secured the resignation of Herr von Schuschnigg, a Nazi nominee, Dr. Seiss-Inquart, taking his place as Chancellor. On March 11, 1938, German troops crossed the frontier. Within 24 hours they had occupied the whole of Austria. *De facto* recognition of this was given by Great Britain and other countries, who reduced the status of their embassies to that of Consulates-General.

Austria-Hungary, an empire, formerly known as the Dual Monarchy, which existed from 1867 to 1918, and consisted of the Austrian Empire, including Bohemia, and the Kingdom of Hungary, Croatia-Slavonia, and after 1908, Bosnia-Herzegovina. For nearly 250 years before the union Austria and Hungary had the same sovereign, and after the union, under the Emperor Francis Joseph, each retained its independence and separate constitution, foreign, military and certain financial affairs being administered jointly. At the end of the World War, largely owing to the great diversity of races that made up its population, the Dual Monarchy came to an end. See further **Austria; Hungary.**

Auteuil, a village in the dept. of the Seine, now included in Paris.

Authorised Version of The Bible

was executed between the years 1604 and 1610 at the instance of James I., so that it is not undeservedly called King James's Bible, and was the work of 47 men selected with marked fairness and discretion, divided into three groups of two sections each, who held their sittings for three years severally at Westminster, Cambridge, and Oxford, the whole being thereafter revised by a committee of six, who met for nine months in Stationers' Hall, London, and received thirty pounds each, the rest being done for nothing. The result was a translation that at length superseded every other, and that has since woven itself into the affectionate regard of the whole English-speaking people. The men who executed it evidently felt something of the inspiration that breathes in the original, and they have produced a version that will remain to all time a monument of the simplicity, dignity, grace, and melody of the English language; its very style has had a nobly educative effect on the national literature.

Autochthones, the original inhabitants of a land, a term applied by the ancient Athenians to themselves, equivalent to our modern word aborigines.

Auto-da-Fé, or Act of Faith, a ceremony held by the court of the Inquisition in Spain, in the Middle Ages, preliminary to the execution of a heretic, in which the condemned, dressed in a hideously fantastic robe, called the San Benito, and a pointed cap, walked in a procession of monks, followed by carts containing coffins with malefactors' bones, to hear a sermon on the true faith, prior to being burned alive.

Autogyro. See *Aeronautics*.

Autolykus, in Greek mythology a son of Hermes (q.v.), and maternal grandfather of Ulysses by his daughter Anticlea; famed for his cunning and robberies; synonym for thief.

Automatic Action, a term used in physiology and psychology for non-reflex actions, not the result of conscious will. Sleep-walking is the commonest form of automatic action. *Automatism* is the power of self-movement without external stimulus. The highest form is volition, the function of certain parts of the brain to originate thought apart from the stimulus of sensation.

Automaton, a mechanical contrivance which, when set in motion, reproduces the movements of man or animals. During the Middle Ages *Regiomontanus* is reputed to have devised an iron fly which returned to his hand after flying round the room. The most remarkable automaton of the 18th Century was a duck which dived, swam, ate, drank, and by a chemical solution in its stomach digested food. In recent years the Slav word *robot* has been adopted into English in the same sense as a result of the presentation in London of an English translation of Karel Capek's Hungarian play *R.U.R.* (Rossum's Universal Robots).

Autun, an ancient city in the dept. of Saône-et-Loire, France, on the R. Arroux, believed to be the site of Bibracte, the capital of the Gallic tribe, Aedui, named *Augustodunum* in the time of Caesar Augustus, of which name the modern Autun is a corruption; has a fine cathedral and is rich in Roman antiquities; manufactures serges, carpets, velvet, etc. Pop. 14,000.

Auvergne, an ancient province of France, embracing the depts. of Puy-de-Dôme, Cantal and part of

Haute-Loire, the highlands of which separate the basin of the Loire from that of the Garonne, and contain a hardy and industrious race of people descended from the Avern or original inhabitants of Gaul; they speak a strange dialect.

Auxerre, an ancient city of France, capital of the dept. of Yonne; has a fine cathedral in the Flamboyant style; drives a large trade in wine. Pop. 21,000.

Ava, on the Irrawaddi, capital of the Burmese empire from 1364 to 1740 and from 1822 to 1838; now in ruins from an earthquake in 1839.

Avalanche, a mass of snow and ice moving rapidly down a mountain slope. They are very frequent in the Alps, and are sometimes very destructive both to property and life. There are four kinds. *Drift*, or loose snow-avalanches of accumulated snow dislodged by wind; *rolling avalanches*, when a large portion of packed snow rolls down the slope, gathering weight and impetus; *sliding avalanches* when layers of ice during a thaw become detached from the lower slopes; and *ice or glacier avalanches*, caused by pieces of ice breaking from a glacier and crashing down the mountain-side.

Avalon, in the Celtic mythology an island of faerie in the region where the sun sinks to rest at eventide, and the final home of the heroes of chivalry when their day's work was ended on earth; the island-valley of Avilion in Tennyson's *Morte d'Arthur*.

Avars, a tribe of Huns who, driven from their home in the Altai Mts. by the Chinese, invaded the E. of Europe about 553, and committed ravages in it for about three centuries, till they were subdued by Charlemagne and all but exterminated in 827.

Avatar, or *Descent*, the incarnation of a Hindu deity.

Avebury, a village in Wiltshire, England, in the middle of a so-called Druidical structure consisting of 100 monoliths, the original purpose of which is a matter of surmise.

Avebury, Baron (Sir John Lubbock), the founder of bank holidays. Educated at Eton, he went in for his father's profession of banking in 1848, and became M.P. in 1870 as a Liberal. He sponsored the Bank Holiday Bill in 1871 and the Shop Hours Bill of 1886. He took a keen interest in natural history, was President of the British Association, wrote *The Use of Life* and *The Pleasures of Life*, was Vice-Chancellor of London University, and was raised to the peerage in 1900. (1834-1913).

Avellino, chief town in a province of the same name in Campania, Italy, 59 m. E. of Naples, famous for its trade in hazel-nuts and chestnuts; manufactures paper, macaroni, etc.; has been subject to earthquakes. Pop. 26,000.

Ave Maria, an invocation to the Virgin, so called as forming the first two words of the salutation of the angel in Luke i. 28.

Avens. See *Geum*.

Aventine Hill, one of the seven hills of Rome, the plebs sullenly retired on their refusal to submit to the patrician oligarchy, and from which they were enticed back by Menenius Agrippa by the well-known fable of the members of the body and the stomach. It was included in Rome by Servius Tullius.

Average, the mean proportion between certain given quantities; it is ascertained by adding all the quantities

together and dividing their sum by the number of the quantities. The more that the extremes vary, the less possible is it to reason out any individual case from a study of the average. But for elucidating general laws, the study of averages is of great value.

Average, *General and Particular* (in *mercantile law*), means the apportionment of losses or sacrifices of cargo, etc., incurred by accident or to avoid danger. **General Average** connotes "all loss which arises in consequence of extraordinary sacrifices made, or expenses incurred, for the preservation of the ship and cargo and such loss must be borne proportionately by all who are interested." Ordinary cases of loss which amount to a general average are: jettison of cargo; voluntary stranding to avoid wreck; damage to cargo by scuttling the ship to "extinguish fire; repairs rendered necessary by collision. It is the duty of the master to retain cargo until he has been paid the amount due in respect of it for general average. **Particular Average** arises whenever any damage is done to the property of an individual by accident or otherwise, but which is not suffered for the general benefit—e.g., loss of an anchor, damage by water to cargo. Such losses remain where they fall, and no extraordinary compensation is granted in respect of them.

Averaging, on the Stock Exchange, the operation of increasing a speculator's holdings of a particular share or stock at a lower price than he gave for those already bought, with the object of averaging the price of the whole. Also the converse operation of selling more stock or shares when the price is rising against the speculator.

Averescu, *Alexander*, Rumanian soldier and politician, Chief of Staff in war with Bulgaria 1913; in Great War commanded army in Transylvania and later on the Dobruja. In 1917 defended Moldavia until general surrender. President of People's Party, Prime Minister 1920-1921 and 1926-1927. (1858-).

Averno, or *Avernus*, a deep lake in Italy, near Naples, 1½ m. in circumference, occupying the crater of an extinct volcano, at one time surrounded by a dark wood, and conceived, from its gloomy appearance, as well as from the mephitic vapours it exhaled, to be the entrance to the infernal world, and identified with it.

Averroes, an Arabian physician and philosopher, a Moor by birth and a native of Cordova; devoted himself to the study and the exposition of Aristotle, earning for himself the title of the "Commentator." (1126-1198).

Aversa, an Italian town 8 m. from Naples, amid vineyards and orange groves; much resorted to by the Neapolitans. Pop. 24,000.

Aveyron, S. of France, with excellent pastures, where the Roquefort cheese is produced. Pop. 383,000.

Aviation. See *Aeroplane*; *Aeronautics*; *Balloon*; etc.

Aviation, Civil, commenced in effect after the War, though the pre-war invention and development of the aeroplane were in civilian hands. The War gave a tremendous impetus to flying, and immediately afterwards the establishment of regular services for the transport of mail and passengers was undertaken. Pioneer work by individuals contributed tremendously to the opening up of long-distance services across the Atlantic and to the farthest parts of the empire.

The first regular air-mail and passenger service between London and Paris was established in 1919 by Aircraft Transport

and Travel, using an Airco "DH" type of plane. The service was extended in 1920 to Brussels and Amsterdam. Imperial Airways was established in 1924, amalgamating four pre-existing companies. To-day there is a network of services covering Great Britain as almost every country in the world, regular services to Australia, India, the Cape, etc., and international services linking all the chief cities of the world.

The chief international Air Lines are Imperial Airways (British), Air France, Deutsche Luft Hansa (German), Pan-American Airways (U.S.A.), K.L.M. (Royal Dutch Air Lines), and Sabina (Belgian).

Avicenna, an illustrious Arabian prince of physicians, a man of immense learning and extensive practice in his art; of authority in philosophy as well as in medicine, his philosophy being of the school of Aristotle with a mixture of Neoplatonism, his *Canon of Medicine* being supreme in medical science for centuries. (980-1037).

Avignon, capital of the dept. of Vaucluse, France; an ancient city still surrounded by the fine 14th-Century wall, and with part of the famous Pont d'Avignon intact; beautifully situated on the left bank of the Rhône, near the confluence of the Durance; was the seat of the Papacy from 1309 to 1377, purchased by Pope Clement V. at that period, and belonged to the Papacy from that time till 1797, when it was appropriated to France; it contains a number of interesting buildings, and carries on a large trade in wine, oil, and fruit; grows and manufactures silk in large quantities. Pop. 57,000.

Avila, a town in Spain, in a province of the name, in S. of Old Castile, 3,000 ft. above the sea-level, with a Gothic cathedral and a Moorish castle; birthplace of St. Theresa. Pop. (prov.) 223,000, (town) 14,000.

Avlona, *Valona* or *Vionë*, a port of Albania, in Vionë prefecture, on an inlet of the Adriatic. Pop. (prefecture) 53,400; (town) 9,000.

Avoca, or *Ovoca*, a short river of Co. Wicklow, Ireland (Eire). Arklow stands at its mouth. Formed by the rivers Avonmore and Avonbeg. Thomas Moore referred to the delightful scenery of the "Sweet Vale" in his *Irish Melodies*.

Avocet, a widely distributed group of birds of the snipe family. They are long-legged wading birds with a curiously curved, up-turned beak.

The Common Avocet (*Recurvirostra avocetta*) was formerly common in the fens of Norfolk, but has ceased to breed there, and occurs now only as a visitor. Two species are also found in America, and one, the Handed Avocet, in Australia.



AVOCET

Avogadro, *Amadeo*, Count, Italian physicist, born at Turin; professor there 1820; formulated "Avogadro's Laws," that equal volumes of different gases at the same temperature and pressure contain each the same number of molecules. (1776-1856).

Avoirdupois Weight. 16 drams = 1 ounce, 16 ounces = 1 pound, 14 pounds = 1 stone, 2 stones (28 lb.) = 1 quarter, 4 quarters = 1 hundredweight (cwt.), 20 cwt. = 1 ton. In the U.S.A. and Canada the "short" ton of 2,000 lb. (100 lb. to the cwt.) is used in the measurement of many commodities.

AVOLA

Avola, a seaport on the E. coast of Sicily, ruined by an earthquake in 1693, rebuilt since; place of export of the Hybla honey; wine and sugar also produced. Pop. 16,500.

Avon, the name of several English rivers, from a Celtic word meaning water. (1) "Shakespeare's" Avon in Warwickshire, rising in Northants and a confluent of the Severn; (2) the Hampshire Avon, rising in Wiltshire and flowing through Salisbury to the English Channel at Christchurch; (3) the Bristol Avon, rising in the Cotswolds and flowing through Bath and Bristol to the mouth of the Severn at Avonmouth.

Avonmouth, growing port in Gloucestershire, England, 6 m. NW. of Bristol. It has extensive docks belonging to the Bristol Corporation.

Avranches, a town in dept. of Manche, Normandy; the place, the spot marked by a stone, where Henry II. received absolution for the murder of Thomas à Becket. Pop. 6,000.

Awe Loch, in the centre of Argyllshire, Scotland, over-shadowed by mountains, 23 m. in length, the second in size of Scottish lakes, studded with islands, one with the ruin of a castle; the scenery gloomily picturesque; its surface is 100 ft. above the sea-level.

Awomori (or *Aomori*), a town of Honshu (mainland) I., Japan. It stands at the back of a big bay of the same name with fine anchorage at the N. end of the island.

Axholme, Isle of, a tract of land in Lincolnshire, 17 m. long and 5 m. broad; once a forest, then a marsh; drained during the reign of Charles I. and now fertile. Chief town Crowle. Pop. about 5,500.

Axim, a trading settlement on the Gold Coast, Africa, belonging to Britain; belonged to Holland till 1871.

Axial, the imaginary line round which a body rotates, and which passes through imaginary points called poles. The axis of the earth is inclined 23½° from the vertical, relative to its path round the sun, and the consequent inclination causes the seasons. Foucault proved that the earth, and not the stars, moved, from the fact that the axis of a gyroscope (q.v.) is invariable with regard to the stars and varying with regard to the earth. Axial in anatomy means two things: (1) The second vertebrae of the neck on which the atlas section revolves, and (2) a short central artery whence arteries diverge. There are two kinds of arterial axes in the body: the abdominal aorta and the two thyroid axes.

Axminster, a town of Devonshire, England, on the R. Axe, E. of Exeter 26 m. by rail. It gave its name to the Axminster carpet, which was first manufactured here, 1755, and was the chief industry. This is now carried on at Wilton, and brushmaking has replaced it in importance. Textiles are also manufactured, and there are corn mills and iron-works. Theminster from which Axminster takes its name is believed to have been founded by King Athelstan. Its fair dates from mid-13th Century. Pop. 2,327.

Axolotl, a larval form of the amphibian *Amblystoma* (*A. tigrinum*), common in lakes in Mexico and the Western States of America. It has external gills, reproduces itself by laying eggs, but in Mexico does not as a rule undergo metamorphosis to become the adult salamander-like *Amblystoma*.



AXOLOTL

AYUTHIA

Axum, capital of an Ethiopian kingdom in Abyssinia, now in ruins, where Christianity was introduced in the 4th Century, and which as the outpost of Christendom fell early before the Mohammedan power.

Ayacucho, a thriving town in Peru, founded by Pizarro in 1539, where the Peruvians and Colombians achieved their independence of Spain in 1824, and ended the rule of Spain in the S. American continent. It is capital of a mountainous dept. of the same name with a pop. of 303,000; (town) 15,000.

Aye-Aye (*Chiromys madagascariensis*), a small lemur of nocturnal habits found in the woods of Madagascar.

Ayesha, the daughter of Abubekr, and favourite wife of Mohammed, whom he married soon after the death of Kadijah; as much devoted to Mohammed as he was to her, for he died in her arms. "A woman who distinguished herself by all manner of qualities among the Moslems," who is styled by them the "Mother of the Faithful" (see Kadijah). (610-677).

Aylesbury, a borough and market-town in Buckinghamshire, England, centre of a fertile agricultural district in the Vale of Aylesbury; has an extensive industry in dairy-farming and duck-rearing. Pop. 13,000.

Aylesford, a town of Kent, England, Medway. Near by are remains of a Carmelite friary, cromlechs, and the "Countless Stones." It is the site of the victory of Alfred the Great over the Danes. Pop. 3,644.

Aylesham, a garden suburb village in Kent, England, N. of and not far from Dover. Planned in 1921, and built since as accommodation for workers in the new collieries opened in the neighbourhood. Pop. about 3,500.

Aymaras, the chief native race of Peru and Bolivia, the dominant people of Peru at the time of the Spanish conquest though then subject to the Incas; attained a high degree of civilisation, and number to-day 500,000.

Aymer of Valence, half-brother of Henry III., was illiterate, and knew no English, but was forced into the see of Winchester by Henry. Repudiated the new Constitution at the Parliament of Oxford in 1258, and was forced by the barons to leave the country. (d. 1260).

Aymon, The Count of Dordogne, the father of four sons, Renaud, Guiscard, Alard, and Richard, renowned in the legends of chivalry, and particularly as paladins of Charlemagne.

Ayr, the county town of Ayrshire, at the mouth of a river of the same name, a clean, ancient town, its charter granted by William the Lion, dating from 1200; well built, with elegant villas in the suburbs, a good harbour and docks for shipping. Pop. 36,700.

Ayrshire, a large and wealthy county bordered on the W. by the Firth of Clyde, agricultural and pastoral, with a large coal-field and thriving manufactures. Area, 1,132 sq. m. Pop. 285,000.

Aytoun, William Edmondstone, poet and critic, a native of Edinburgh, professor of Rhetoric and belles-lettres in Edinburgh University, author of the *Lays of the Scottish Cavaliers* and part-author with Sir Theodore Martin of the *Bon Gaultier Ballads*. (1813-1865).

Ayuthia (now called Krungkai), a city of Siam, built, largely on piles, on an island in the I. Menam, former capital of Siam; has fine temples and palaces, now largely in ruins. Pop. 50,000.

Azalea, a group of slow-growing shrubs included in the Rhododendron family, belonging to the order Ericaceae, some being evergreen, some deciduous. They flourish on the mountain slopes of Asia and N. America, and are extensively grown in gardens.

Azerbaijan, a Soviet Republic, in Transcaucasus, W. of the Caspian Sea, part of the U.S.S.R., with valuable oil-fields. Pop. 2,900,000. Cap. Baku. Also a province of Armenian Persia, S. of the R. Aras, with fertile plains, cattle-breeding, and rich in minerals. Principal town, Tabriz. Pop. 2,891,000.

Azimuth, of a heavenly body, the arc of the horizon comprehended between the meridian of the observer and a vertical circle passing through the centre of the body. The azimuth and altitude give the exact position of the body with reference to the horizon.

Azo, an Italian jurist of the 12th Century. He was a professor of civil law at Bologna. His chief work was a methodical exposition of Roman Law, and was accepted

by the courts as the final judgment on difficult points of law.

Azores, (i.e., Hawk Islands), a group of nine volcanic islands in the Atlantic, 800 m. W. of Portugal, and forming a province of it; are in general mountainous; covered with orange groves, of which the chief are at St. Michael's and Faial; the climate is mild, and good for pulmonary complaints. Cap. Angra on Terceira. Pop. 253,000.

Azov, Sea of, an opening from the Black Sea, very shallow, and gradually silting up with mud from the Don; in winter it is generally ice-bound. Azov is also the name of a town on the Don. Pop. 17,000.

Aztecs, a civilised race of small stature, broad-featured, which occupied the Mexican plateau for some centuries before the Spaniards visited it, and founded a powerful empire; they were overthrown by the Spaniards under Cortez in 1520.

Azuay, a fertile province of the Republic of Ecuador. Cap. Cuenca. Area 3,370 sq. m. Pop. 230,000.

Baader, Franz Xaver von, a German philosopher and (Catholic) theologian, born at Munich; a mining engineer by profession, was patronised by the King of Bavaria, and became professor of philosophy and theology in Munich. His philosophy, or theosophy, inspired by the mysticism of Boehme, had great influence on his Roman Catholic contemporaries of Germany. (1765-1841).

Baal (meaning Lord), *pl.* Baalim, the principal male divinity of the Canaanites and Phœnicians, identified with the sun; his crowning attribute, strength; worshipped on hill-tops with sacrifices, incense, and dancing. Baal-worship, being that of the Canaanites, was for a time mixed up with the worship of Jehovah in Israel. The name recurs often in personal and place-names.

Baalbek (i.e., City of Baal, or the Sun), an ancient city of Syria, 35 mi. NW. of Damascus; called by the Greeks, Heliopolis; once a place of great size, wealth, and splendour; now a small, insignificant village; conspicuous among its ruins is the Great Temple to Baal, one of the most magnificent remains of the ancient East, covering an area of four acres.

Babbacombe, a Devonshire, England, seaside resort in the borough of Torquay. Near by is Kent's Cavern, in which were found remains of prehistoric man. Pop. 3,000.

Babbage, Charles, a mathematician, born in Devonshire; studied at Cambridge, and professor there from 1828 to 1839; spent much time and money over the invention of a calculating machine; wrote on *The Economy of Manufactures and Machinery*, and an autobiography entitled *Passages from the Life of a Philosopher*. (1791-1871).

Babel, Tower of, described in Genesis xi. 9. Built with the aim of reaching to Heaven; its workmen were made to speak in confusing languages and the work stopped.

Bab-el-Mandeb (i.e., the Gate of Tears), a strait between Arabia and Africa, forming the entrance to the Red Sea; so called from the strong currents which rush through it, and often cause wreckage to vessels attempting to pass it.

U.E.

Baber (i.e., the tiger), the name by which is known Zehir ed-Din Mohammed, the founder of the Mogul empire in Hindustan; thence invaded India, and became at length master of it in 1526; his dynasty lasted for many centuries. (1483-1530).

Babington, Anthony, an English Catholic gentleman; conspired against Elizabeth on behalf of Mary, Queen of Scots, confessed his guilt and was executed at Tyburn in 1586. (1561-1586).

Babirusa, a mammal of the pig family found exclusively in Celebes and Burn, in the E. Indies; remarkable for four curved tusks which are elongated growths of the upper canine teeth, these arching backwards towards the forehead.

Babis, a Persian sect founded in 1843 by Mirza Ali Mohammed; their doctrines a mixture of pantheistic with Gnostic and Buddhist beliefs; adverse to polygamy, concubinage, and divorce; insisted on the emancipation of women; suffered persecution, their leader being executed, but the sect has survived in Acre and elsewhere.

Babœuf, François Noel, a violent revolutionary; headed an insurrection against the Directory, "which died in the birth, stifled by the soldiery"; convicted of conspiracy, was guillotined, after attempting to commit suicide. (1764-1797).

Baboon, a genus of monkey (*Papio*), native to Africa and Arabia. They are characterised by having projecting, naked, dog-like muzzles, powerful teeth, and ugly (often coloured) bare haunches. The species include the mandrill of W. Africa (*P. maimon*) with a blue and vermillion-streaked muzzle, and the drill (*P. leucophaeus*), both of which have short tails. The chacma (*P. porcarius*) of S. Africa, the anubis monkey (*P. anubis*), which was held sacred in ancient Egypt, and the hamadryas (*P. hamadryas*) of Arabia all have medium-length tails.



MANDRILL

Baby-Farming, a system of nursing new-born infants whose parents desired to be rid of the responsibility; previously subject to no supervision and much abused. Under the Infant Life Protection Act of 1897 and the Children Acts persons so receiving infants are subject to supervision.

Babylon, the capital city of Babylonia, one of the richest and most magnificent cities of the East, the gigantic walls and hanging gardens of which were classed among the seven wonders of the world; was taken, according to tradition, by Cyrus in 539 B.C., by diverting out of their channel the waters of the Euphrates, which flowed through it, and by Darius in 519 B.C., through the self-sacrifice of Zopyrus. Our knowledge of the city is derived mainly from Herodotus and Diodorus Siculus. Archaeologists have excavated wall remains near the town of Hillah. The city seems to have been rectangular in form and about 15 m. by 15 m., divided into two parts linked by an immense covered bridge of stone and iron clamps. The gardens of Semiramis and the Temple of Bael were two of the most notable features.

Babylonia, the name given by the Greeks to that country called in the Old Testament Shinar, Babel, and "the land of the Chaldees"; it occupied the rich, fertile plain through which the lower waters of the Euphrates and the Tigris flow, now called Iraq. From very early times it was the seat of a highly developed civilisation introduced by the Sumero-Accadians, who descended on the plain from the mountains in the NW. Semitic tribes subsequently settled among the Accadians and impressed their characteristics on the language and institutions of the country.

The 8th Century B.C. was marked by a fierce struggle with the northern empire of Assyria, in which Babylonia eventually succumbed and became an Assyrian province. Nabopolassar in 625 B.C. asserted his independence, and under his son Nebuchadnezzar Babylonia rose to the zenith of its power. Judah was captive in the country from 599 to 538 B.C. In that year Cyrus conquered it for Persia, and its history became merged with Persia's.

Babylonish Captivity, the name given to the deportation of Jews from Judea to Babylon after the capture of Jerusalem by Nebuchadnezzar, the migration continuing for 70 years, till they were allowed to return to their own land by Cyrus, who had conquered Babylon; those who returned were solely of the tribes of Judah, Benjamin, and Levi.

Baccarat, a gambling game which was introduced into France from Italy and is unlawful in England. There are two forms of the game, *Baccarat à banque* and *Baccarat chemin de fer*.

Bacchanalia, ancient Roman festivals, originally of a loose and riotous character, in honour of Bacchus. They were finally suppressed.

Bacchantes, votaries and priestesses of Bacchus; they wore their hair dishevelled and thrown back and had loose, flowing garments.

Bacchus, son of Zeus and Semele, the god of the vine, and promoter of its culture as well as the civilisation which accompanied it; represented as riding in a car drawn by tame tigers, and carrying a Thyrsus (q.v.); he rendered signal service to Zeus in the war of the gods with the Giants (q.v.). See *Dionysus*.

Bacchylides, a Greek lyric poet, 5th Century B.C., nephew of Simonides and uncle of Æschylus, a rival of Pindar; only a few fragments of his poems extant.

Bach, Johann Sebastian, one of the greatest of musical composers, born in Eisenach, of a family of Hungarian origin, noted—sixty of them—for musical genius; was in succession a chorister, an organist, a director of concerts, and finally director of music at the School of St. Thomas Leipzig; his works, from their originality and scientific rigour, difficult of execution. (1685-1750).

Bach, Karl Philipp Emanuel, third son of the preceding, born at Weimar. Abandoned law for music, and also became a distinguished composer, especially for the clavier. His greatest work was his *Sonaten für Kenner und Liebhaber*. (1714-1788).

Bache, A. Dallas, an American physicist, born at Philadelphia, superintendent of the United States coast survey. (1806-1867).

Bachelor, a word generally signifying a man who has not been married. It also commonly denotes inferiority of rank, as in knights bachelors who fought under the banner of another, and to newly appointed monks. As unmarried men English bachelors were taxed for five years under an Act of 1694 to meet the cost of the war with France and by present-day legislation their income-tax relief is slighter than that of married men. Italy and Germany impose special taxes on bachelors.

Bachelor of Arts, is one who has passed the first academical examination of a university, and is thus qualified to proceed to the degree of Master, which qualifies to teach. At Oxford and Cambridge bachelors can obtain the latter degree without further examination.

Back, Sir George, Arctic explorer, born at Stockport, entered the navy, was a French captive for five years, associated with Franklin in three polar expeditions, went in search of Sir John Ross in 1833, discovered instead and traced the Great Fish (or Back) R. in 1839. (1796-1878).

Backgammon, a game for two players on a board of alternate white and black point design. The board is in two parts, each end of each part having 6 points. One player has 15 white men, the other 15 black. A throw of dice indicates points which must be travelled. The direction of White's moving is from Black's right to Black's left, thence to White's right, and finally to White's left. Black's course is the reverse.

Backhaus, Wilhelm, German pianist. He studied under Reckendorf at Leipzig and D'Albert at Frankfurt. won the Rubenstein Prize at Paris in 1905, achieved world-wide fame. (1884-).

Backwardation, the term used on the Stock Exchange to describe the money paid by a seller of stock for the privilege of deferring delivery until the next account.

Bacillus. See *Bacteria*.

Bacon, a cured product of pigs and hogs. Curing is by salting and smoking. The usual method is to place the flesh in a solution of brine and rub salt into it by hand, or to inject salt by syringe. For smoking, sawdust of hardwoods is used.

Bacon, Delia, an American authoress, who first broached, though she did not originate, the theory of the Baconian authorship of Shakespeare's works. (1811-1869).

Bacon, Francis, Lord Verulam and Viscount St. Albans, the father of the inductive method of scientific inquiry; born on the Strand, London; son of Sir Nicholas Bacon; educated at Cambridge; called to the Bar when 21, after study at Gray's Inn; represented successively Taunton, Liverpool and Ipswich in Parliament; was a

favourite with the Queen; attached himself to Essex, but witnessed against him at his trial; became at last in succession Attorney-General, Privy Counsellor, Lord Keeper, and Lord Chancellor; was convicted of venality as a judge, deposed, fined, and imprisoned, but pardoned and released; spent his retirement in his favourite studies; his great works were his *Advancement of Learning* (1605), *Novum Organum* (1620) and *De Augmentis Scientiarum* (his greatest work; it expounds a new method of scientific discovery), but the most popular of his works is the *Essays* (first published in 1598), which are full of practical wisdom and keen observation of life. Ingenious, if futile, attempts have been made to claim for him the authorship of Shakespeare's plays, and have, indeed been extended, so as to include those of Marlowe and even the essays of Montaigne. Bacon's moral character was singularly mixed and complex and strikingly in contrast with his great intellect, showing, as it does, remarkable coldness and bluntness of moral perception. (1561-1626).



LORD BACON

Bacon, John, sculptor, born in London, won the first gold medal for sculpture awarded by the Royal Academy; executed busts of Pitt which are now in Westminster Abbey and the Guildhall, as well as busts of Dr. Johnson and other notabilities. (1745-1799).

Bacon, Sir Nicholas, the father of Francis, Lord Bacon, Privy Counsellor and Keeper of the Great Seal under Queen Elizabeth. (1510-1579).

Bacon, Sir Reginald, Admiral; commander of the Dover Patrol (q.v.) from 1915 to 1918. He wrote a *Life of Admiral Fisher*. (1863-).

Bacon, Roger, a Franciscan monk, born at Ilchester, Somerset; a fearless truth-seeker of great scientific attainments; accused of magic, convicted and condemned to imprisonment, from which he was released only to die; suggested several scientific inventions, such as the telescope, the air-pump, the diving-bell, the camera obscura, and gunpowder, and wrote some eighty treatises. (1214-1291).

Bacteria, minute forms of plant life at one time classified with the fungi, but now assigned to a separate group under the name of Schizomycetes ("fission fungi"), in reference to their characteristic method of reproduction by simple cleavage. Bacteria were discovered by the Dutchman Anthony van Leeuwenhoek in 1683, but were little investigated until the 19th Century, when the foundations of bacteriology were laid by Cohn, Pasteur, and Koch. Two great advances were made when Weigert (1871) introduced the method of staining bacteria with various dyes, thus rendering them more easily visible, and when Koch (1881) showed that pure cultures—i.e., individual strains—could be obtained without difficulty by growing bacteria on solid media such as gelatine or agar-agar.

Bacteria are roughly classified according to their shape into four chief types—viz., the coccus, the bacillus, the spirillum, and the spirochæte. Cocci are spherical, but after division the new individuals may remain in association in straight chains (streptococci), in bunches more or less resembling bunches of grapes (staphylococci), in cubical groups of eight (sarcinae), or in blocks of four or a multiple of four (micrococci). Bacilli, as their

name implies, are rod-shaped organisms, and sometimes possess the protoplasmic threads (flagella) by means of which they are able to swim in liquid media. Spirilla are spirally twisted, and, like bacilli, may be provided with flagella. Spirochætae resemble spirilla in being spirally twisted, but they are comparatively longer and thinner, and effect movement by undulation, not by means of flagella.

Certain more complex organisms, showing indubitable relationship with the types already mentioned, are usually included in the general group of bacteria; such, for example, are the Myxobacteria or slime fungi, the Trichobacteria or Chlamydobacteria (among which are the "iron bacteria"), the Thio-bacteria or sulphur bacteria, and the Actinomycetes. There are also many species of virus which are too small to be seen even with the most powerful microscope, but which, from their effects, are presumed to be of a bacterial nature; these are often known as the non-filterable viruses, since they are so minute that they pass through the pores of an unglazed porcelain filter.

The relation of cause and effect which exists between some species of bacteria and certain diseases, such as tuberculosis, anthrax, bubonic plague, and leprosy, is now well established. Bacteria should not be regarded as entirely inimical, for the pathological varieties are probably in a minority. Many are of no known effect or importance, but some are of the greatest possible value to man, and indeed without bacteria life would be impossible. In the soil, several species of bacteria convert dead organic matter into nitrates, the chief nitrogenous food of green plants, and thus not only prevent a cumbering of the ground but also provide necessary nutrition for the plants on which all other life finally depends. The nitrogenous content of the soil is moreover actually increased by certain nitrogen-fixing bacteria which convert atmospheric nitrogen into nitrogen compounds. Bacteria are also instrumental in the souring of wine to form vinegar, in the manufacture of cheese and butter, in the curing of tobacco, the manufacture of leather, and in other ways.

Bactria, a province of ancient Persia, now Balkh (q.v.), at one time regarded as the probable fatherland of the Aryans; the birthplace of the Zoroastrian religion.

Bacup, a manufacturing town in Lancashire, England, about 20 m. N.E. of Manchester; cotton-spinning, weaving, and metal-working the main industries. Pop. 20,000.

Badajoz, capital of a Spanish province of the name, on the Guadiana, near the frontier of Portugal; a place of great strength; surrendered to Soult in 1811, and taken after a violent and bloody struggle by Wellington in 1812. In August 1936, during the Civil War, the town was taken by storm by anti-Government troops after savage hand-to-hand fighting. Pop. (prov.) 72,000; (town) 46,000.

Badakhshan, a Mohammedan territory N.E. of Afghanistan, part in the Tadjikistan S.S.R., part in Afghanistan; a picturesque hill country rich in minerals; it is 200 m. from E. to W. and 150 from N. to S.; Marco Polo visited it; the inhabitants, called Badakhshans, are of the Aryan family and speak Persian. Pop. 95,000.

Baden, or Oberbaden, a town in the canton of Aargau, Switzerland, 14 m. NW. of Zurich, long a fashionable resort for its mineral springs.

Baden, Free State of, or Land Baden, Germany, extends along the left bank of the Rhine from Constance to Mannheim; consists of valley, mountain, and

plain; includes the Black Forest; is rich in timber, minerals, and mineral springs; agriculture plays a large part in the economy; cotton fabrics, clock-making, wood-carving, jewellery, etc., also give much employment. There are two university seats, Heidelberg and Freiburg. Formerly a grand duchy, but after the Great War the National Assembly voted a republican constitution. Under the Nazi regime popular government was abolished and the State put under a governor. Pop. 2,300,000.

Baden, a town in the state of Baden, noted for its hot mineral springs, which were known to the Romans; popular as a summer resort. Pop. 30,000.

Baden-Bei-Wien, a fashionable resort, 17 mi. from Vienna. Pop. 22,000.

Badenoch, a forest-covered district of the Highlands of Scotland, 45 m. long, by 19 broad, traversed by the Spey, in the SE. of Inverness-shire.

Baden-Powell, **Baron**, founder of the Boy Scouts in 1908 as Sir Robert Baden-Powell. He first leapt to fame by his defence of Mafeking in the Boer War; from 1903 to 1907 he was Inspector-General of Cavalry, and in 1910 he retired from the army to devote his whole time to the Scout movement. He was raised to the peerage in 1929. O.M., 1937. (1857-).

Badge, an emblem, usually symbolic, designed to distinguish countries, societies, clubs, and their members, etc. Famous badges are the Fleur-de-lis, the Swastika, and, most famous, the Cross of Christianity. Badges do not come under the laws of Heraldry.

Badger, an animal of the sub-family *Melidae* in the Musteline or otter family.

The common badger is greyish-brown on back and black below, head white, with dark lines on side, muzzle pointed. Length is about 2 to 2 ft. 6 in., and height 1 ft. Badgers burrow by day and feed at night on roots, small quadrupeds, and insects. The hair is used for shaving-brushes and artists' brushes. Badger-baiting was a sport in England until prohibited in the middle of last century.



BADGER

Bad Lands is a term used generally to denote the large areas of rocky land in the W. of the U.S.A., particularly in Nebraska and S. Dakota. They are rich in fossil specimens.

Badminton, a village of Gloucestershire, England, in the Cotswolds. In the parish is Badminton House, 17th-Century seat of the Earl of Beaufort. Pop. 400.

Badminton, a game similar to tennis, but shuttlecocks take the place of balls. Badminton may be played as single or double, and within or out of doors. A badminton shuttlecock has 16 feathers 2½ in. long and cork 1 in. in diameter, and weighs 75 to 85 grains. A badminton racket weighs about 6 oz. The net is 5 ft. high in centre, 5 ft. 1 in. at ends, and 17 to 24 ft. long. Winner of toss chooses service, loser the ends. The game is of 15 aces. The side first to reach 13 all has option of setting 5, and when at 14 all, of 3. A full-sized court is 40 ft. long, 20 ft. wide, divided into courts of 15 ft. by 10 ft., leaving a centre space of 10 ft. by 20 ft. Serving is diagonal, always a volley from within the court.

Badoglio, **Pietro**, Italian soldier, born in Sclavi. Was a corps commander at the Battle of Caporetto in the

Great War. Replaced General de Bono as commander-in-chief of the Italian forces in the invasion of Abyssinia, bringing the war to a successful issue. Created Marshal in 1936. (1871-).

Badrinath, a peak of the Himalayas in the United Provinces, India, 10,000 ft. high much frequented by pilgrims for the sacred waters near it, which are believed to be potent to cleanse from all pollution.

Baedeker, **Karl**, a German printer in Coblenz, famed for the guide-books to almost every country of Europe that he published. (1801-1859).

Baekeland, **Leo Hendrik**, chemist; born in Ghent (Belgium), at the university of which he was educated. Studied electro-chemistry at Charlottenburg, taught at Ghent and Bruges. Emigrated to America 1889. Manufactured Velox photographic paper. Invented Bakelite, an electric insulator. (1863-).

Bael (*Agle Marmelos*), a tree of the order Rutaceae, found in India. It grows wild, but is also cultivated for its fruit, which is a valuable remedy for dysentery.

Baer, **Karl Ernst von**, a native of Esthonia; professor of zoology, first in Königsberg and then in St. Petersburg; styled the "father of comparative embryology"; the discoverer of the law that the embryo when developing resembles those of successively higher types. (1792-1876).

Baeyer, **Johann Friedrich von**, German chemist, professor at Strassburg (1872) and Munich (from 1875); carried out a large number of investigations into the structure of organic compounds, particularly indigo, which he prepared artificially. (1835-1917).

Baffin, **William**, an early English Arctic explorer, who, when acting as pilot to an expedition in quest of the NW. Passage, discovered Baffin Bay. (1584-1622).

Baffin Bay, or **Sea**, a strait stretching northward between N. America and Greenland, open four months in summer to whale- and seal-fishing; discovered by the expedition of 1615 of which William Baffin was pilot.

Baffin Land, a large island N. of the mainland by the Gulf of Boothia, Foxe Channel, and Hudson Strait; very cold and with a small population of Eskimos only. Area 236,000 sq. m.

Bagamoyo, a seaport town of Tanganyika, E. Africa, the capital of a fruit-producing district of the same name. It was formerly a centre of Arab slave-trading. Pop. 5,000.

Bagatelle, an indoor game played on a special board or table, fitted with 9 numbered, cup-like receptacles. Nine balls are used, 1 black, 4 red and 4 white. They are played with a cue and must drop into the "holes." In ordinary bagatelle each player uses all the balls; French bagatelle is played with partners alternately; Mississippi bagatelle is played through a wooden bridge of numbered archways, and the balls must enter them off the rubber side-cushions with which the table is fitted.

Bagehot, **Walter**, an English political economist, born in Somerset, a banker by profession, and an authority on banking and finance; a disciple of Ricardo; author of, besides other publications, an important work, *The English Constitution*; was editor of *The Economist*. (1826-1877).

Bagenalstown, or **Maíne Sheng**, a market town and railway junction of Co. Carlow, Ireland (Eire), on the R. Barrow. Its industries include flour-milling and malting, and it has a tobacco factory. Pop. 2,000.

Baggara, an Arab people in the Sudan; Mohammedans by religion, they formed part of the dervish armies in the Egyptian wars of 1881-1889.

Baggesen, Jens Emmanuel, a Danish writer, poet, travelled a good deal, wrote mostly in German, in which he was proficient; his chief works, a pastoral epic, *Parthenais oder die Alpenreise*, and a mock epic, *Adam and Eve*; his minor pieces are numerous and popular, and are remarkable for their satiric humour. (1764-1826).

Baghdad, on the Tigris, 500 m. from its mouth, and connected with the Euphrates by canal, the capital of Iraq; dates, wool, grain, and horses are exported; red and yellow leather, cotton, and silk are manufactured; the transit trade, though much less than formerly, is still considerable. It is a station on the England to Indian telegraph route, and is served by a railway and a fleet of river-steamers plying to Basra. Formerly a centre of Arabic culture, it had belonged to Turkey since 1638, but was captured by the British under General Maude in the Mesopotamia campaign of 1917. The town now possesses all the amenities of a modern city. A university was opened in 1926. Pop. (liwa or political division) 359,000.

Baghdad Railway. In 1899 the Anatolian Railway obtained a concession from Turkey to build a railway from Konieh to Koweit on the Persian Gulf, via Baghdad, a total length of 1,550 m. By a provisional agreement of 1903 preference was given to a German company for the construction of a railway from Konieh to Baghdad and Basra. As a result of objection raised by Britain to the control of the railway by Germany, its construction was placed under international control. At the outbreak of the Great War 1,200 m. were operating, but there were gaps in the section in the hills NW. of Aleppo and in the desert W. and S. of Mosul. The line is open to Tell-Kochok on the Syro-Iraq frontier. Tell-Kochok and Kirkuk are connected by motor service. Since the Great War a line has been completed between Baghdad and Kirkuk.

Bagheria, a town in Sicily, 8 m. from the latter have stylish villas. Pop. 20,000.

Bagirmi, a Mohammedan kingdom in French Equatorial Africa, SE. of Lake Tchad, 240 m. from N. to S. and 150 m. from E. to W.

Bagnères ("the baths"), two French towns (Bagnères-de-Bigorre and Bagnères-de-Luchon) in the Pyrenees, well-known watering-places, with hot mineral and sulphur springs.

Bagpipe, an ancient musical instrument the reed-pipe. It is constructed of a leather bag which, filled with air, gives the drone or bass, and a melody pipe. It is a favourite instrument with the Scotch and Irish. The Scotch pipes have a range of 9 notes, the Irish 12, and the Northumbrian 15. The most solemn dirge or the gayest dance can be played on the bagpipe. Bagpipes were brought into England by the Romans and from there were introduced into Scotland and Ireland.

Bagration, Prince, Russian general, distinguished in many engagements; commanded the vanguard at Austerlitz, Eylau, and Friedland, and in 1812 against Napoleon; achieved a brilliant success at Smolensk; fell at Borodino. (1765-1812).



BAGPIPES

Bagshot, a town of Surrey, England, on the Berkshire border, 3 m. S. of Ascot. Bagshot Heath runs into both counties. Bagshot Park is the residence of the Duke of Connaught. Pop. 3,000.

Bahamas, The, a group of low-lying coral islands (29), islets (about 650), and rocks (about 2,400) in the W. Indies between Florida and Haiti. They are a British possession, and were discovered by Columbus on his first voyage to America. The chief islands are New Providence, on which is Nassau, the capital, Andros, Elouthera, Long I., Cat I., Abaco, Gt. Exuma, Acklin I., Bahama, Crooked I., Harbour I., and Great Inagua; only 20 are inhabited. There are sponge and turtle fisheries, and sisal and fruit (chiefly tomatoes) are grown for export. The climate is salubrious. Pop. 60,000, mainly negroes.

Bahia, or Sao Salvador, a fine city, one of the chief seaports of Brazil, in the Bay of All Saints, and originally capital of the country, now capital of a province of the name. Has a fine protected harbour. Pop. 850,000. Bahia the State has an area of 164,601 sq. m. and a pop. of 1,700,000. It lies within the tropics. Interior is mountainous, coast fertile; chief river the S. Francisco; produces sugar, coffee, cotton, tobacco.

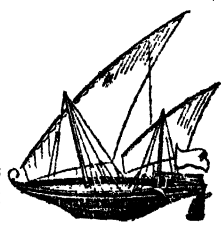
Bahia Blanca, a city and one of the principal seaports of the Argentine, S. America, on the left bank of the R. Naposta, about 425 m. S. of Buenos Aires, with which it is connected by rail. It serves a large area for the shipment of grain, wool, and frozen beef, and is also a petroleum-distributing base. It has a large modern harbour with two dry docks, and an air line connects it with Gallegos. Pop. 100,000.

Bähr, Hermann, Austrian journalist, author, and theatre-manager; settled in Vienna; plays include *Wienerinnen*, 1900; *Der Krampus*, 1902; *Das Konzert*, 1909. (1863-1934).

Bahraich, a town on the R. Sarju in the United Provinces of Agra and Oudh, India, centre of a district of the same name. The town contains a sacred tomb of the Moslems and is a place of pilgrimage.

Bahrain Islands, a group of islands, in the Persian Gulf,

independent under the rulership of Al Khalifa, but in treaty relations with the Government of India; the largest island, Bahrain by name, is 27 m. long and 10 broad, cap. Manameh. The islands produce dates and have long been famous for their pearl-fisheries, among the richest in the world. Pop. 120,000.



BAHRAIN ISLANDS
PEARL-FISHING BOAT

Bahr-el-Ghazal, an old Egyptian province including the district watered by the tributaries of the Bahr-el-Jebel (the White Nile) and the Bahr-el-Ghazal.

Baiae, a small town near Naples, now in ruins and nearly all submerged; famous as a resort of the old Roman nobility, for its climate and its baths. Julius Caesar, Hadrian, and Nero had villas here. Founded by Baius, a companion of Ulysses.

Baif, Jean Antoine de, a French poet, one of a group of seven known in French literature as the "Pélade," whose aim was to accommodate the French language and literature to the models of Greek and Latin. (1532-1539).

Baikal, a clear, fresh-water lake, in Asiatic Russia, S. of Siberia, 397 m. long and from 13 to 54 wide, in some parts 4,500 ft. deep, and at its surface 1,550 ft. above the sea-level, the third largest in Asia; sledges ply on it for six or eight months in winter, and steam-boats in summer; it abounds in fish, especially sturgeon and salmon, and contains several islands, the largest Olkhon, 32 m. by 10 m. It is skirted on the W. by the Baikal Mts.

Baikie, **W. Balfour**, an Orcadian, born at Kirkwall, surgeon in the Royal Navy; was attached to the Niger Expedition in 1854, and ultimately commanded it, opening the region up and letting light in upon it at the sacrifice of his life; died at Sierra Leone. (1825-1884).

Bail, the security given by a person that a person charged with an offence will surrender to the charge. In case of default the bail is forfeited. In felonies other than treason and in certain misdemeanours a magistrate may admit to bail. In all other misdemeanours and summary cases he must admit to bail. Bail is never allowed in murder cases. In treason, only a judge of the King's Bench Division or a Secretary of State can grant bail. In Scotland the only charges for which bail cannot be granted are treason and murder.

Bailey, **Philip James**, poet, born at Nottingham; author of *Festus*, which appeared in 1839. (1816-1902).

Bailey, **Samuel**, an English author, born in Sheffield, a liberal-minded man, a utilitarian in philosophy, who wrote on psychology, ethics, and political economy, and left a fortune, acquired in business, to his native town. (1791-1870).

Bailleul, an old Flemish town of France, in the dept. of Pas-de-Calais. It suffered great damage during the Great War, when occupied by the Germans. Hand-made lace is its chief product. Pop. 8,000.

Baillie, or **Baillie**, a municipal officer of Scotland, whose functions are similar to those of an English alderman. The term formerly denoted an officer whose functions were similar to those of the English sheriff.

Baillie, **Lady Grizel**, a heroic Scottish lady of Covenanting days, famous for her songs; *And werea my heart licht I wad dee* is well known. (1665-1746).

Baillie, **Joanna**, a poetess, born at Bothwell, child of the Presbyterian manse there; produced a series of dramas entitled *Plays of the Passions*, besides many others, both comedies and tragedies, one of which, the *Family Legend*, was acted in the Theatre Royal, Edinburgh, under the auspices of Sir Walter Scott. (1762-1851).

Baillie, **Robert**, a Scottish Presbyterian divine who resisted Laud's attempt to thrust Episcopacy on the Scottish nation; became a zealous advocate of the national cause, and was sent to the continent to offer the Scottish crown to Charles II. (1599-1662).

Baillie, **Robert**, of Jerviswood, a zealous Scottish Presbyterian tried for complicity in the Rye House Plot, was unfairly condemned to death and barbarously executed the same day (in 1684).

Bailiff, an under-officer of a sheriff whose duty it is to execute warrants, writs, distrainments, etc., and to serve summonses and orders. The term is also used of an agent who looks after an estate for a landowner (farm bailiffs).

Bailly, **Jean Sylvain**, French astronomer, wrote a *History of Astronomy* in five volumes; elected president of the National Assembly; installed mayor of Paris; lost favour with the people; was imprisoned as an enemy of the popular cause and guillotined. (1736-1793).

Bailment, in law, the entrusting of the goods by one person, the bailor, to another, the bailee, for a specific purpose and upon the understanding that the goods will be returned when the purpose for which they were bailed has been fulfilled. The usual division of bailments is into those bailments which are for the benefit of the bailor or of his representative, those for the benefit of the bailee or of his representative; and those which are for the benefit of both parties. In the first class the bailee is responsible, if damage occur, only for gross neglect; in the second he is responsible for even slight neglect; and in the third he is merely required to exercise ordinary care.

Baily, **Edward Hodges**, a sculptor, born in Bristol, studied under Flaxman; his most popular works were "Eve listening to the Voice," the "Sleeping Girl," and the "Graces Seated." Executed the Nelson monument in Trafalgar Square, as well as many busts of famous people. (1788-1867).

Baily, **Francis**, astronomer; in business as stockbroker in London before devoting his time to science; founder of the Astronomical Society (1820); discovered "Baily's Beads" on the sun; started the reform of the *Nautical Almanac*. (1774-1844).

Bain, **Alexander**, born at Aberdeen, professor of Logic in the university, and twice Lord Rector. His chief works, *The Senses and the Intellect*; *The Emotions and the Will*; *Mental and Moral Science*. (1818-1903).

Bairam, a Mohammedan festival of the Ramadan, followed by another of four days, seventy days later, called the Greater Bairam, in commemoration of the offering up of Isaac, and accompanied with sacrifices.

Baird, **Sir David**, a distinguished English general of Scottish descent; entered the army at 15; served in India, Egypt, and at the Cape; was present at the taking of Seringapatam and the siege of Pondicherry; in command when the Cape of Good Hope was wrested from the Dutch, and wounded at Cornu. (1757-1829).

Baird, **John Logie**, inventor of television, was born at Helensburgh, Dunbartonshire.

Superintendent, Clyde Valley Electrical Power Co., till end of Great War. Went to Trinidad for health, opened jam-factory. In broken health at Hastings 1921, experimented in television. Also invented noctovision, picturing what is hidden by darkness. (1888-).

Baize, a woollen cloth with long nap,

usually dyed in plain colours. It is most commonly made as a coarse fabric for tablecloths and interior furnishings. Finer makes were once commonly used for suitings.

Bajazet I., Sultan of the Ottoman Turks, surnamed *Uderim*, i.e., Lightning, from the energy and rapidity of his movements; aimed at Constantinople, but was met and defeated on the plain of Angora by Timur, who is said to have shut him in a cage and carried him about with him in his train till the day of his death. (1347-1403).

Bakelite, a carbon compound of formaldehyde and phenol invented by L. H. Baekeland. It is a substitute for wood in many articles of furniture, and for bone, celluloid, etc., in various uses. It is made in several colours, has a high polish, and may be handsomely grained.



MRS. J. L. BAIRD

Baker, Mount, an extinct volcano in the Cascade range, in Washington, U.S.A., 11,000 ft.

Baker, Sir **Herbert, R.A.**, architect. In Capetown from 1892; built Groote Schuur for Cecil Rhodes. After Union, built: Government House and Capital Buildings, Pretoria; Rhodes Memorial, Table Mountain; cathedrals at Capetown, Pretoria, and Salisbury (Rhodesia). Helped in designing buildings of new Indian capital at Delhi, and government houses at Nairobi and Mombasa. In England: rebuilt Bank of England, built India House, Aldwych, and S. Africa House, Trafalgar Square. Knighted, 1926; K.C.I.E., 1930; R.A., 1932. (1862-).

Baker, Sir **Richard**, a country gentleman, born in Kent, often referred to by Sir Roger de Coverley; author of *The Chronicle of the Kings of England*, which he wrote in the Fleet prison, where he died. (1568-1645).

Baker, Sir **Samuel White**, a man of London; discovered the Albert Nyanza; commanded an expedition under the Khedive into the Sudan; wrote an account of it in a book *Ismailia*; left a record of his travels in five books. (1821-1893).

Bakersfield, a city of California, U.S.A.; central, the centre of an agricultural and oil-producing district. Pop. 26,000.

Bakewell, a market town of Derbyshire, England, on the R. Wyo. It has an ancient church and a Saxon cross; near by are Haddon Hall and Chatsworth. There are warm springs, and zinc and marble are worked. Pop. 3,000.

Bakewell, **Robert**, grazier, born at Dishley, Leicestershire, son of a farmer; travelled about England, studying live-stock; took over parental farm and popularised his new breed of Leicestershire sheep (now extinct) and his new Leicestershire long-horn cattle, also a breed of black horses. (1725-1795).

Baking Powder, a mixture of tartrate of soda used in cooking as a substitute for yeast. This mixture, when water is added, sets up a gas which renders the dough porous and lighter.

Bakony Wald, a mountainous region of Hungary, between Budapest and Lake Balaton. Marble is worked, and pigs are reared in the oak and beech forests.

Bakst, **Leon**, Russian painter, grew up in St. Petersburg (Leningrad). Attended Imperial Academy of Arts. For a while a fashionable portrait-painter. Visited Paris at time of the first Entente. Returning to Russia, became scene-painter in theatres, reviving the Russian tradition. Became famous 1908 as scene-painter of Russian ballet. (1856-1924).

Baku, a Russian port on the Caspian Sea and capital of the Azerbaijan S.S.R., in a district so impregnated and saturated in parts with petroleum that by digging in the soil wells are formed, in some cases so gushing as to overflow in streams, the wells, reckoned by hundreds, being connected by pipes with refineries in the town; a district which, from the spontaneous ignition of the petroleum, was long ago a centre of attraction to the Parsees or fire-worshippers of the East, and resorted to by them as holy ground. Belonged to Persia till the Russians captured it in 1736. Was the headquarters of Gen. Dunsterville's force in the Great War. Pop. 709,009.

Bakunin, **Michael**, an extreme and violent Russian anarchist and a leader of the movement; was banished to Siberia, but escaped; joined the International, but was expelled. (1814-1876).

Bala, the county town of Merioneth Wales, 4 m. long, 100 ft. deep, formed by the R. Dee. Pop. 1,400.

Balaam, a Midianitish soothsayer and prophet of God who was sent for by Balak, King of Moab, to curse Israel, but who could only speak the blessings that God put into his mouth; for the account of him see Num. xxii-xxiv, and Carlyle's essay on the *Corn-Law Rhymes* for its application to modern State councillors of the same time-serving type, and their probable fate. In the New Testament he is cited as a type of those who "loved the wages of unrighteousness."

Balaclava, a small port 6 m. S.E. of Sebastopol, with a large land-locked basin; the headquarters of the British during the Crimean War, and famous in that war, among other events, for the "Charge of the Six Hundred."

Balalaika, a stringed instrument like a guitar, popular in Russia.

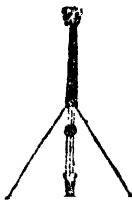
Balance, an instrument for determining the weight, or comparing the masses, of bodies; the word is derived from the Latin *bi*, two, and *lanx*, a plate, and refers to the usual type of instrument, which has two plates or pans attached to a swinging beam. Balances of this kind have been known for thousands of years, and were in common use among the ancient Egyptians and Greeks, particularly for weighing the precious metals.

A typical sensitive balance consists of a flat strip or beam of metal, pivoted half-way along its length upon a horizontal knife-edge of agate (or, less commonly, stainless steel or other hard alloy). A pan is suspended from a similar knife-edge at each end of the beam, equidistant from the central fulcrum; when the balance is not in use, the beam is generally lowered so that no load rests on any of the knife edges. A vertical pointer is attached to the centre of the beam and swings over a scale with suitable divisions. To ensure accuracy, the two arms of the beam must be exactly equal in length, and when the pans are empty the instrument should be in equilibrium.

Stability is ensured by arranging that the centre of gravity of the beam lies slightly below the fulcrum, while sensitiveness or delicacy is increased by eliminating friction as far as possible, by making the arms longer and of lighter material, and by lessening the distance between the fulcrum and the centre of gravity. Increased length of arm, however, causes an increased length of time of swing, and in practice a compromise has to be made. Should the arms of a balance be of unequal length, an accurate result may yet be obtained from it by weighing the object first in one pan and then in the other, and taking the geometric mean, i.e., by multiplying the two apparent weights together and taking the square root.

The type of balance used as a letter-scale is known after its inventor as Roberval's; observation will show that its mode of construction ensures that the bars supporting the pans are always vertical, and that an accurate weight is consequently obtained even when the object and weights are not in the centre of the pans. Owing, however, to the comparatively large friction, Roberval's balance is not very sensitive.

Balance of Power, the preservation of the equilibrium existing among the States of Europe as a security of peace, for long an important consideration with European statesmen.



Balance of Trade, the difference in value between the exports and the imports of a country, and said to be in favour of the country whose exports exceed in value the imports in that respect. Invisible imports and exports, which have to be taken into account before the balance is arrived at, consist of payments for freight, insurance, interests on loans, etc.

Balata, a vegetable gum obtained from the tree *Mimusops balata* and used as a substitute for gutta-percha, being at once ductile and elastic.

Balaton, Lake, the largest lake in Hungary, 48 m. long, and 10 m. broad, 56 m. SW. of Budapest; slightly saline, and abounds in fish.

Balbo, *Italo*, Italian general and co-generator of the Italian air forces, was born in Quaratesana. At one time commander-in-chief of the Fascist militia. Air-marshal and governor-general of Italian Libya (Tripoli, etc.) since 1933. (1896-).

Balboa, a seaport of the Panama Canal Zone, at the Pacific end of the canal. The port for Panama City, and a U.S.A. navy yard. It has a dry dock, repair shops, coaling plant, etc. Pop. (with Ancon), 10,000.

Balboa, *Vasco Nuñez de*, a Castilian noble, established a settlement at Darien; discovered the Pacific; took possession of territory in the name of Spain; put to death by a new governor, from jealousy of consequent influence in the State. (1475-1517).

Balbriggan, a seaside resort of Co. Dublin, Ireland (*Kilre*). It has a small fishing harbour, and makes linen, hosiery, and woollen goods. Pop. 2,000.

Baldachino, a tent-like covering or canopy over portals, altars, or thrones, supported on columns, suspended from the roof, or projecting from the wall.

Balder, the sun-god of the Norse mythology, "the beautiful, the wise, the benignant." Son of Odin and Frigg, no person or thing could hurt him except the mistletoe. Loki, the God of mischief, caused him to be killed by the throw of a piece of mistletoe, and refused to weep for him, thus refusing the universality of grief which alone could bring him to life again.

Baldness, an absence of hair, particularly upon the scalp. The latter condition is so common among civilised people that it is regarded as a symptom of age. Baldness may be caused by such diseases as fevers, syphilis, consumption; or by anxiety and worry. It is sometimes congenital. Cantharides, electricity, and massage are said to be the best stimulants to growth of the hair.

Baldock, a town of Hertfordshire, England, in a barley-growing district. Malting, brewing, and the making of hosiery are carried on. Six horse fairs are held annually. Pop. 3,000.

Baldrick, an ornamental belt worn across the body diagonally, with a sword, dagger, or horn suspended from it.

Baldung, *Hans*, or *Hans Grün*, a German artist, born in Suabia; a friend of Dürer; his greatest work, a masterpiece, a painting of the "Crucifixion," now in Freiburg Cathedral. (c. 1470-1545).

Baldwin I., King of Jerusalem; Godfrey de Bouillon; assuming said title, made himself master of most of the towns on the coast of Syria; contracted a disease in Egypt; returned to Jerusalem, and was buried on Mount Calvary; there were five of this name and title, the last of whom, a child some eight years old, died in 1186. (1058-1118).

Baldwin I., the first Latin emperor of Constantinople; by birth, count of Hainault and Flanders; joined the fourth crusade, led the van in the capture of Constantinople, and was made emperor; was defeated and taken prisoner by the Bulgarians. (1171-1206). **B. II.**, nephew of Baldwin I., last king of the Latin dynasty, which lasted only 57 years. (1217-1273).

Baldwin of Bewdley, (The Rt. Hon. Stanley), Earl, K.G., P.C., F.R.S., British statesman. Educated at Harrow and Cambridge, he entered Parliament as a Conservative for Bewdley in 1908, and first took office as Financial Secretary to the Treasury in the Coalition Govt. in 1917. In 1921 he became President of the Board of Trade, and the following year took an active part in replacing the Coalition by Bonar Law's Conservative Govt., taking the post of Chancellor of the Exchequer and succeeding to the Premiership in May 1923, on the death of Bonar Law.

He went to the country for a mandate for Protection in Nov., 1923, was defeated at the polls, and resigned when Parliament met in Jan. 1924. On the defeat of the Labour Govt. in Nov. 1924, he again became Prime Minister, and held office till his party was defeated at the election of May 1929. In politics he will be remembered for his funding of the American debt in 1923 and his handling of the General Strike situation in 1926. In 1931 he took office as Lord President of the Council in the National Govt. formed by Mr. Ramsay MacDonald. Headed the British Govt.'s delegation to the Imperial Economic Conference in Ottawa 1932. When Mr. MacDonald resigned in 1935, he took his place as Prime Minister. He played an important part in the events leading up to the abdication of Edward VIII. Retired 1937 and was raised to the peerage. (1867-).

Balearic Isles, a group of five islands off the coast of Valencia, in Spain. Majorca the largest; inhabitants in ancient times famous as expert slingers (whence the name Balearic), having been one and all systematically trained to the use of the sling from early childhood; cap. Palma. Pop. 376,000.

Balfe, *Michael William*, a musical composer, of Irish birth, born near Wexford; author of *The Bohemian Girl*, his masterpiece. (1808-1870).

Balfour, *Earl of (A. J. Balfour)*, British politician. Educated at Eton

and Cambridge; nephew of Lord Salisbury, and First Lord of the Treasury and leader of the House of Commons in his ministry. He became Prime Minister in 1902, was defeated in 1905, lost his seat in Manchester the following year and was elected for the City of London; till 1911 he was leader of the Conservative Opposition; served as Foreign Secretary in the Coalition, 1916-1919; in 1917 he visited the U.S.A. to seek war co-operation. Raised to the peerage in 1922, he acted as Lord President of the Council from 1924 to 1929. A keen philosopher, he was president of the British Association in 1904, and was the author of a *Defence of Philosophic Doubt* and a volume of *Essays and Addresses*. In politics he will be remembered for his coercion policy in Ireland (1887-1892); his successful negotiations with Russia concerning N. China; his part in forming the Committee of Imperial Defence; his conduct of the British Mission to the



LORD BALFOUR

U.S.A. in 1917; and as the author of the Balfour Declaration (q.v.). He was also prominent in the Washington Conference (q.v.). (1848-1930).

Balfour, **Francis Maitland**, brother of the preceding; a promising biologist who wrote on animal embryology. His career was cut short by death in attempting to ascend one of the peaks of Mont Blanc. (1851-1882).

Balfour Declaration, **The**, a statement made by the British Govt. in Nov. 1917, promising that Palestine should be made a national home for the Jewish people, as a result of which the League of Nations gave Great Britain a mandate for the country in 1919. Owing to Arab riots in 1936 a Royal Commission, under Lord Peel, was appointed to inquire into the manner in which the mandate was being carried out in relation to British obligations towards Arabs and Jews respectively, and a partition of Palestine between Arabs and Jews with a small portion under British government was recommended and placed before the League of Nations. In 1938 a technical Commission was sent to consider the practical possibilities of a scheme of partition.

Balfour of Burleigh, **barony**, was conferred, 1607, on Michael Balfour of Burleigh Castle, Orwell, Kinross-shire (d. 1619); inherited by his daughter Margaret, whose husband Robert Arnot sat in Parliament as Lord Burleigh. The title passed lineally through a John and a Robert, to a Robert who was sentenced to death for murder, 1710, but who, escaping, and joining the rising of 1715, was attainted (d. 1757). A claim was kept up through the descendants of a nephew named Bruce—until, 1869, Alexander Hugh Bruce secured the title through reversal of the attainder. He was a representative peer, and held posts in Conservative governments; Secretary for Scotland 1895-1903; and he remained a free-trader in spite of Chamberlain. (1849-1921). He was succeeded by his son George John Gordon Bruce, a representative peer, who served in the Great War. (1883-).

Bali, or **Little Java**, one of the Lesser Sunda Is., forming with Lombok a Presidency in the Dutch East Indies; 75 m. long by 40 broad; produces cotton, rice, sugar, coffee, and tobacco. Pop. 950,000.

Baliol, **Edward**, son of the following, king at Scone, supported by Edward III.; was driven from the kingdom and obliged to renounce all claim to the crown, on receipt of a pension; died at Doncaster 1369.

Baliol, **John de**, son of Sir John de; laid claim to the Scottish crown on the death of the Maid of Norway in 1290; was supported by Edward I., and did homage to him for his kingdom, but rebelled, and was forced publicly to resign the crown; died in 1315 in Normandy, after spending three years in the Tower; has been satirised by the Scots as *Klug Toom Tubard*, i.e., Empty King Cloak.

Baliol, **Sir John de**. See **Baliol College**.

Balkan Peninsula, the territory between the Adriatic and the Aegean Sea, bounded on the N. by the Save and the Lower Danube, and on the S. by Greece. The Balkan States are Turkey, Greece, Albania, Yugoslavia, Rumania, Bulgaria.

Balkan Wars, wars fought between the Balkan States in 1912 and 1913. After the Balkan League had captured Macedonia and Albania, Greece continued the war alone from December 1912 to February 1913, when she was again joined by the other allies. On the

disintegration of the Balkan League in June 1913 a second Balkan war started. Serbia, Montenegro, and Greece fighting Turkey, Bulgaria, and Rumania.

Balkans, **The**, a mountain range extending from the Adriatic to the Black Sea; properly the range running through the middle of Bulgaria; mean height 6,500 ft.

Balkash, **Lake**, a lake in Siberia in the Kazak S.S.R. 780 ft. above sea-level, the waters clear, but intensely salt, 345 m. long and 55 m. broad.

Balkh, anciently called Bactria, a district of Afghan Turkestan lying between the Oxus and the Hindu-Kush, 250 m. long and 120 m. broad, with a capital of the same name, reduced now to a village; birthplace of Zoroaster.

Ball, **Albert**, V.C., captain in Royal Flying Corps; b. at Nottingham, son of Sir Albert Ball. Enlisted in Sherwood Foresters on outbreak of Great War; transferred to R.F.C.; in Sept. 1916 began his series of single-handed triumphs (said to number 47) over enemy aviators; himself shot down less than two years later, May 7. (1896-1917).

Ball, **John**, a priest who had been excommunicated for denouncing the abuses of the Church; a ring-leader in the Wat Tyler rebellion; captured and executed at St. Albans in 1381.

Ball, **Sir Robert Stawell**, mathematician and astronomer, born in Dublin; Astronomer-Royal for Ireland from 1874 to 1892; appointed director of Cambridge Observatory 1892; author of works on astronomy and mechanics, the best known of a popular kind on the former science being *The Story of the Heavens*. (1840-1913).

Ballad, **spirit**, generally of patriotic interest, and sung originally to the harp.

Ballade, a poem of one or more triplets with the same refrain. There is, or should be, an envoi. It is a form of poem which originated in France, and should not be confused with the English ballad. Villon is the acknowledged master of this particular lyric form. English examples are to be found in Swinburne.

Ballantrae, a fishing village and sea-side place of Ayrshire, Scotland, formerly a resort of smugglers. Herring and salmon are caught. R. L. Stevenson made the name familiar in *The Master of Ballantrae*. Pop. 1,000.

Ballantyne, **James**, a native of Kelso, became a printer in Edinburgh, printed all Sir Walter Scott's works; failed in business, a failure in which Scott was seriously implicated. (1772-1833).

Ballantyne, **Robert Michael**, author of many popular books for boys; nephew of James Ballantyne (above); for some time in Canada in the fur trade; afterwards in the publishing house of Constable of Edinburgh. (1825-1894).

Ballarat, a town in Victoria, Australia, the centre of the chief goldfields in the colony; it is the seat of both a Roman Catholic and a Church of England bishopric, and has an observatory, a school of mines, gardens, and numerous industries. Pop. 38,000.

Ballast, that which is taken on board ship to increase the vessel's draft and steadiness. Ballast is carried when ships are insufficiently loaded with cargo. Some ships are provided with tanks for accepting water ballast. Balloons normally carry sand or gravel ballast the ejection of which allows the vessel to rise and so prolong its flight. Also stones and sand and similar material which, when mixed with cement, form concrete.

Ballater, village of Aberdeenshire, Scotland, on the Dee, a favourite summer resort; stands 668 ft. above sea-level. Pop. 1,200.

Balleny Islands, a cluster of volcanic islands in the Antarctic, discovered by John Bulleny and H. Freeman in 1839. Peak Freeman, on one of the islands, is 1,200 ft. high.

Ballet, the art of expressing an idea or telling a story by means of a dance, sometimes executed *sur les pointes*, and involving the art of mimic, to the accompaniment of music, sometimes composed especially for the purpose.

Ballet proper originated in France in the 16th Century, and was later adapted to Italian and Greek mythology. From the 17th Century until the Revolution, ballet was greatly encouraged in Russia, where an imperial school was maintained from which many of the world's greatest dancers, including Nijinsky, Kshessinskaya, Karasvina, and Pavlova, graduated. The famous Marinsky Theatre, where Taglioni and Elsie appeared, was connected with this school, and was for many years under the direction of Marius Petipa.

Music, decor, and choreography are essential factors in the formation of a ballet, and among the musicians who have composed especially for the ballet are Tchaikovsky, Stravinsky, and Rimsky-Korsakov. Fokine and Massine, also graduates of the imperial school, are two of the greatest living choreographers. Leon Bakst designed the scenery for many of the most famous ballets, especially those performed by Diaghileff's company.

Ball Flower, in architecture a form of a ball cupped in a flower. They were much used in English 13th- and 14th-Century buildings, placed in a row at regular intervals in a moulding.

Ballina, a seaport and market town of the Moy, across which is Ardara, its suburb, in Co. Sligo. It has a Roman Catholic cathedral. Salmon are caught. Pop. 5,000.

Ballinasloe, a market town of Co. Galway, Ireland (Eire). It has canal connection with the Shannon, and holds annual wool and cattle, sheep and horse fairs. Pop. 5,000.

Balliol College, a college of Oxford. It was founded by Sir John de Balliol of Barnard Castle, Co. Durham, who, as penance for having, about the year 1260, "unjustly vexed and enormously damaged" the church of Tynemouth and the church of Durham, undertook to provide a perpetual maintenance for certain poor scholars in the university. Under the influence of a Franciscan Friar, the widow of Sir John de Balliol placed this house on a sound footing.

Ballista. See **Ballistics**.

Ballistics. The ballista was in ancient times a military contrivance for hurling huge stones at the enemy; hence the term ballistics signifies the scientific study of the motion of projectiles, especially in the military sense. There are two main branches of the subject—viz., internal ballistics, which is concerned with the movement of the projectile before it leaves the barrel of the gun, and external ballistics which deals with its subsequent motion. The theory of ballistics which is of considerable mathematical complexity is supplemented by experimental research.

Balloch, a village of Dumbartonshire, Scotland; a terminus for steamers on Loch Lomond. Near by are remains of Balloch Castle, ancient seat of the Earls of Lennox.

Balloons. Ordinary free balloons are gas-filled envelopes, almost

circular in shape, with a basket below containing crew and passengers. The base of the envelope has a vent which prevents gas pressure exceeding that of the atmosphere. Beyond the employment of wind, which varies at different heights,



AN EARLY BALLOON
(TISSANDER'S)

balloons of this type have no control of speed and direction. Height is controlled by the release of gas and/or of ballast—generally sand—enabling the balloon to descend or ascend. The first practical use of balloons was in army observation service. A competition for free balloons for the Gordon-Bennett Cup is held annually. The duration record is held by H. Kaulen, who remained in the air for 87 hours in 1913. The distance record is held by Berliner who covered 1,890 m. in 1914. Meteorological experiments have long been carried out by small balloons carrying light recording instruments. See also **Aeronautics**.

Ballot, secret voting, usually by marking a ballot-paper and inserting it in a ballot-box. It was first used in England in 1870, becoming compulsory for elections by the Ballot Act, 1872. (See further under **Vote**.) Under that Act a voter who puts his cross in the wrong place may apply for a fresh paper. Ballot-papers may be marked on behalf of blind voters. At the close of a poll the presiding officer makes up into separate packets all the election documents—e.g., spoilt and unused papers—and delivers them, with the box, to the returning officer, who, before counting votes, may reject ballot-papers on certain specified grounds.

Ballycastle, Ireland, in Co. Antrim, on Ballycastle Bay. It has a sand-choked harbour and a wireless station, and is a popular seaside resort. Pop. 1,500.

Ballyclare, a market town of Northern Ireland, in Co. Antrim, with large paper-mills and bleaching-works. Pop. 3,000.

Ballymena, a market town of Northern Ireland, in Co. Antrim; has linen industries and iron-ore ruins. Pop. 11,000.

Ballymoney, a town of Northern Ireland, in Co. Antrim. Linen-making, brewing, distilling, and soap-making are carried on. Pop. 3,000.

Ballymote, a market town of Co. Sligo, Ireland (Eire). Here are remains of a castle built in 1300 and of a Franciscan monastery where the Ballymote Book, a medieval MS., was made. Pop. 1,000.

Ballyshannon, a market town of Co. Donegal, Ireland (Eire), on Donegal Bay. Its harbour obstructed by a bar, is only accessible to small vessels. It has salmon fisheries. Pop. 2,000.

Balm, a species of Labiatae (*Melissa officinalis*) cultivated for the leaves, which are used medicinally. The properties are not of great value. Balm is grown in Europe, Asia, and in other parts. The stem is upright, leaves opposite and alternate, toothed and ovate. The flowers are nettle-shaped.

• **Balm of Gilead**, a resin yielded by a sam tree and much in demand in Egypt in olden times for its aromatic and medicinal properties; produced in quantities in the mountainous region of Gilead, east of the river Jordan, in Palestine.

Balmain, an industrial and mining suburb of Sydney, New South Wales. It owns the deepest coal shaft in the world (3,000 ft.) and has soap-works and shipbuilding yards. Pop. 32,000.

Balmerino(ch), **Barony of**, was bestowed, 1006, on James Elphinstone, president of the Court of Session, attained 1609 for having (1599) forged a letter purporting to be from King James to the Pope; died in prison. (1557-1612). The title was restored to his son John. Arthur, the sixth Baron, fought for Prince Charles, was captured at Culloden, and executed on Tower Hill. With him the barony became extinct. (1688-1746).

Balmoral, a castle on the upper valley of the Dee, at the foot of Braemar, 9 m. from Ballater; the Highland residence of the Royal Family since 1848, when it was purchased by Queen Victoria.

Balneology, the medico-scientific study of bathing in its effects upon health and disease. The effects of baths of various descriptions are well understood to-day, and cold, tepid, hot, Turkish, and a wide variety of other forms are prescribed as required; thus mud baths are often recommended for gout and rheumatism. Balneotherapeutics includes the internal, as well as the external, application of spa or mineral waters, a common object being to tone up the skin, the intestines, and the kidneys. Celebrated watering-places are Bath, Harrogate, Cheltenham, Leamington Spa, and Droitwich in this country. While of those on the Continent, Aix-les-Bains, Vichy, Evian, Carlsbad, Marienbad, Bad Ems, and Vittel may be mentioned.

Balsam, a name given to various resins and oils of tonic and stimulant properties which are used in medicine and, for their perfume, in confectionery and perfumery. The principal varieties are those of Peru and Tolu, derived from leguminous plants.

Balta, a town in the Podolia District, Ukraine, situated between the Bug and Dniester; has trade in grain and soap and brewing industries. Pop. 30,000.

Baltic. The Baltic Mercantile and Shipping Exchange, Ltd., St. Mary Axe, London, is a market for the purchase and sale of corn, etc. Its members are shipowners and shipbrokers trading in corn, and not limited to Baltic ports only. Business is carried on verbally within the exchange and contracts are completed outside. Membership numbers about 2,000.

Baltic Port, or **Baltiski**, a seaport of Finland, NW. Estonia on the Gulf of Finland, the outport for Tallinn (Reval). It exports mainly timber and is seldom icebound. Pop. 1,500.

Baltic Provinces, regions bordering previously forming part of Russia but now established as the independent states of Estonia, Latvia, and Lithuania.

Baltic Sea, an inland sea in the N. of Europe, 900 m. long and from 100 to 200 m. broad; comparatively shallow; has no tides; waters fresher than those of the ocean, owing to the number of rivers that flow into it and the slight evaporation that goes on at the latitude; the navigation of it is practically closed from the middle of December to April, owing to the inlet being blocked with ice.

Baltimore, the metropolis of Maryland, on an arm of Chesapeake Bay, 250 m. from the Atlantic; is picturesquely situated; not quite so regular in design as most American cities, but noted for its fine architecture and its public monuments. It is the seat of the Johns Hopkins University. The industries are varied and extensive, including textiles, flour, tobacco, iron, steel,

and canning of oysters. The staple trade is in broad-stuffs; principal exports, grain, flour, and tobacco. Pop. 806,000.

Baltimore Bird, (*Icterus Baltimore*), a N. American bird, resembling the finch, also called the American Oriole though it is not a true oriole, but classifies with the Icteridae or Hang-nests. It has long, pointed wings, a rounded tail, and is notable for its bright orange-and-black plumage.

Baltimore, **George Calvert**, Baron, a native of Yorkshire. Secretary to Sir Robert Cecil. Engaged in government of Ireland, where he came to have estates. M.P. successively for Bossiney, Yorkshire, and Oxford University. Secretary of State, 1612-1613 and 1619-1625. Planted colony of Avalon, Newfoundland, 1621-1623. Obtained grant of land, 1632, for colony that became Maryland. (1580?-1632).

Baluchistan, a desert plateau lying between Persia and India, Afghanistan and the Arabian Sea; is crossed by many mountain ranges, the Suliman, in the N., rising to 12,000 ft. Rivers in the NE. are subject to great floods. The centre and W. is a sandy desert exposed to bitter winds in winter and sandstorms in summer. Fierce extremes of temperature prevail. There are few cattle, but sheep are numerous; the camel is the draught-animal.

Where there is water the soil is fertile, and crops of rice, cotton, indigo, sugar, and tobacco are raised; in the higher parts wheat, maize, and pulse. Both precious and useful metals are found; petroleum wells were discovered in the N. in 1887. The population comprises Baluchis, robber nomads of Aryan stock, in the E. and W., and Mongolian Brahuis in the centre. The large majority are Mohammedan.

It is divided into British Baluchistan, which includes territory ceded after the Afghan War, the Agency territories under direct control of British officers, and the states of Kalat and Las Bela. The NW. Railway serves Quetta and the N. part of the country. Kalat is the capital; its position commands all the caravan routes. Quetta (destroyed by an earthquake in 1936) in the N., is a British stronghold and health resort. Area 134,600 sq. m. Pop. 870,000.

Balzac, **Honoré de**, native of Tours, in France; a brilliant as well as

prolific novelist; his productions remarkable for their sense of reality; they show power of observation, warmth, and fertility of imagination, and subtle and profound delineation of human nature, his design in producing them being to make them form part of one great work, the *Comédie Humaine*, the whole being a minute dissection of the different classes of society; is regarded as the father of realistic fiction, an honour which is now, however, usually assigned to his fellow-countryman, Flaubert. His best-known works include *Les Contes Drôlatiques*; *La Maison du Chat-qui-pétole*; *La Peau de Chagrin*; *Eugénie Grandet*; *Père Goriot*; *Les Illusions Perdues*. (1799-1850).

Balzac, **Jean Louis Guez de**, born at Angoulême, a French litterateur and gentleman of rank, who devoted his life to the refinement of the French language, and contributed by his *Lettres* to the classic form it assumed under Louis XIV. (1594-1654).



HONORÉ DE
BALZAC

Bamangwato, a people of the Bantu stock, their country lying in the Bechuanaland Protectorate.

Bambarra, a district in the French Sudan on the banks of the Upper Niger, opened up to trade; the soil fertile; yields grain, dates, cotton, and palm-oil; the inhabitants are negroes of the Mohammedan faith, and are good husbandmen and workers in metal. Segu is the chief town.

Bamberg, a manufacturing town in Upper Franconia, Bavaria; once the centre of an independent bishopric; with a cathedral, a magnificent edifice, containing the tomb of its founder, the Emperor Henry II. Pop. 54,000.

Bambino, a figure of the infant Christ, wrapped in swaddling-bands, the infant in pictures being surrounded by a halo and angels.

Bamboo (*Bambusa*), a genus of immense grasses which grow in many parts of the tropics. The stems are hollow and partitioned at the nodes. These are used in the building trade in the East as frames for houses, gutters, etc. Bamboos attain a height of well over 100 ft. and a diameter of 5 to 6 in. The young shoots are edible.

Bamburgh, a village of Northumberland, land, England, with an imposing castle, on a crag between it and the sea, which dates from Saxon times. Dismantled in the Wars of the Roses, it has since been restored. Grace Darling was born and buried here. Pop. 700.

Bamian, a high-lying valley in Afghanistan, 8,500 ft. above sea-level; out of the rocks on its N. side, full of caves, are hewn huge Buddhist figures, one of them 173 ft. high, all of ancient date.

Bampton, John, an English divine, Canon of Salisbury, and founder of the Bampton divinity lectures. These are preached in alternate years at Great St. Mary's and must be based on the "articles of the Christian Faith, as comprehended in the Apostles' and Nicene Creeds." (1690-1751).

Banana (*Musa sapientum*), a large herbaceous plant of the order Musaceae, sometimes over 20 ft. high. It grows throughout the tropics and subtropics. The leaves are very large, the flower is enveloped in a bract. The edible fruit is a long, seedless berry, either yellow or red, with soft skin over edible pulp.

Banat, was the name of a territory bounded by the rivers Maros, Theiss, Danube and the SE. border of Hungary. It was forfeited by Hungary under the Versailles Peace Treaty, and divided between Yugoslavia (one-third) and Rumania (two-thirds).

Banbury, a market town in Oxfordshire, England, celebrated for its cross and its cakes. Pop. 14,000.

Banca (Bangka), an island in the Malay Archipelago and a Dutch Presidency, with an unhealthy climate; rich in tin, worked by the government. Pop. 205,000 (chiefly Chinese).

Bancroft, Richard, Archbishop of Canterbury, a zealous Churchman and an enemy of the Puritans; represented the Church at the Hampton Court Conference; and was chief overseer of the Authorised Version of the Bible. (1554-1610).

Bancroft, Sir Squire, English actor, born in London, made his first appearance in Birmingham in 1861; married Miss Wilton, an actress; opened with her the Haymarket Theatre in 1880; retired in 1885. (1841-1926).

Band, a number of musical instruments played in combined performance. Bandmaster and bandsman are respectively leader and member of a military band. There are

various kinds of Bands—Brass Bands, Orchestras, Wind Bands, etc. The French word "bande" though applying to all bands generally, applies particularly to the *Petits Violons* and to the *Vingt-Quatre Violons*. A Brass Band is the smaller variety of Military Band employed by cavalry when on mounted duty. The English Military Band is composed of piccolo, flutes, clarinets, saxophones, bassoons, horns, cornets, trumpets, trombones, euphonium, tympani, side drum, bass drum and percussion instruments. The Royal Military School of Music is at Kneller Hall, Twickenham, Middlesex.

Banda Isles, a group of the Moluccas, belonging to Holland; yield nutmegs and mace; subject to earthquakes. Pop. 12,000.

Bandana, a handkerchief, originally made in India, with pattern of diamonds or spots. (Other countries also now manufacture it. The pattern is made by bleaching.)

Bandar-Abbas, the port of entry for Persia, on the Persian Gulf. It has considerable trade with Bombay and the E., and is connected with Kerman by motor-road. During the Great War it served as a British Naval station. Pop. 9,000.

Bandello, Matteo, an Italian Dominican monk, a writer of tales, some of which furnished themes and incidents for Shakespeare, Massinger, and others. (1480-1562).

Bandicoot,

an animal of the order of Marsupials and native to Australia. Though much smaller, they resemble the kangaroo in the formation of their hind legs, the front legs being less disproportionate. They are about as big as a domestic cat.



LONG-NOSED
BANDICOOT

Bandinelli, a Florentine sculptor, tried hard to rival Michelangelo and Cellini; his work "Hercules Slaying Cacus" is the most ambitious of his productions. (1487-1559).

Band of Hope, The, a society for once principles among the young, founded in 1855.

Bandon, a market town in Co. Cork, Ireland (Eire), on the R. Bandon. It has breweries, distilleries, tanneries, and textile factories. Pop. 3,000.

Bandy, the game of ice hockey, popular in the northern parts of the U.S.A.; known also as "shinty."

Banff, (1) county town of Banffshire, Scotland, on the Moray Firth, at the mouth of the Deveron; the county itself stretches level along the coast, though mountainous on the S. and SE.; fishing and agriculture the great industries; Pop. 3,500. (2) a township in Alberta, Canada, tourist resort with hot sulphur springs. Pop. 2,000.

Bangalore, the largest town in Mysore, India, and the capital; stands high; is concerned in manufacturing and trading. Hyder Ali resided here. It was taken by Cornwallis in 1791. Pop. 306,000.

Bangkok, the capital of Siam, on the Menam; a very striking city; styled, from the canals which intersect it, the "Venice of the East"; 20 m. from the sea; the centre of the foreign trade, carried on by Europeans and Chinese; includes the royal palace standing on an island, in the courtyard of which several white elephants are kept. Outside the royal palace and throne hall of marble the town is a mixture of large concrete buildings and wooden hovels. Pop. 456,000.

Bangor, (1) an episcopal city in Caernarvon, N. Wales, with large slate quarries; a place of summer resort, from the beauty of its surroundings. Pop. 11,000. (2) Seaport and watering-place of Co. Down, Northern Ireland, on Belfast Lough. Muslin embroidery is carried on. Here was a large abbey, destroyed by the Vikings. Pop. 13,000. (3) A lumber town in Maine, U.S.A. Pop. 29,000.

Bangorian Controversy, a controversy in the Church of England provoked by a sermon which Hoadley, Bishop of Bangor, preached before George I. in 1717, and which offended the sticklers for ecclesiastical authority.

Bangweolu, a lake in Northern Rhodesia discovered by Livingstone, and on the shore of which he died; 150 m. long, and half as wide; 3,690 ft. above sea-level.

Banian Days, days when no meat was eaten in the Navy, probably an allusion to the Banians, Hindu ascetics.

Banim, John, Irish author, a native of Kilkenny, novelist of Irish peasant life on its dark side, who, along with his brother Michael, wrote 24 vols. of Irish stories, etc.; his health giving way, he fell into poverty, but was rescued by a public subscription and a pension; Michael survived him 32 years. (1798-1842).

Banishment, a state of being exiled as a punishment for crime. It was a lawful sentence from the reign of Elizabeth to the 19th Century, and is still inflicted in some countries.

Banjermassing, the capital of Dutch Borneo, a seaport in the rice-producing province of Banjer-massing. It is built on piles as precaution against floods, and exports gold, precious stones, coal, iron, spices, cane, and drugs. Pop. 17,000.

Banjo, a musical instrument with long neck and drumhead body over which parchment is stretched, and having five to nine catgut strings. The tuning peg of the melody string is placed half-way up the neck. The pitch of a banjo is an octave lower than the written notation.

Bank Holidays, established in 1871 through the efforts of Sir John Lubbock (Lord Avebury), fall in England on Easter Monday, Whit Monday, the first Monday in Aug. and Dec. 26 (or Dec. 27 if 26 is a Sunday).

Bank Note, any note or bill of exchange of the Bank of England or Bank of Ireland, or of any other person, body corporate, or company carrying on the business of banking. This old statutory definition was extended in 1914 so as to include currency notes. It also includes any bill of exchange or promissory note issued by any banker, other than the Bank of England, for the payment of money not exceeding £100 to the bearer on demand.

Bank of England, national bank, founded by W. Paterson and M. Godfrey, and incorporated in 1694. It is a joint-stock bank, but has always been closely connected with the Government. For all practical purposes it is the only bank in England allowed to issue monetary notes.

Under the authority of Acts of Parliament, the management of the National Debt is entrusted to the Bank of England. It

conducts the issue and inscriptions of new loans and prepares and issues, under instruction from the Treasury, exchequer bills, bonds, and treasury bills. It makes advances to the Treasury, especially under the Exchequer and Audit Acts, at the end of each quarter to meet heavy payments for dividends upon public funds. It acts for the great revenue departments and conducts the banking business of public departments.

It stands at the basis of the country's credit system, holds the country's gold reserve, controls the note issue, and acts as banker's bank to the other banks, accepting deposits from them (without interest), the balance of account between them on settlement of cheques at the clearing-house being adjusted by alteration to the deposits at the Bank of England.

Bank Rate, the rate at which the Governors of the Bank of England are prepared to lend money. Fixed at their meeting every Thursday, it affects the price of money throughout the London market.

Bankruptcy, the status of a debtor (including married woman and in some circumstances a foreigner, but not a company or corporation) who has been judicially declared incapable of paying his debts either on his own petition to the courts or on the petition of his creditors. Indebtedness must exceed £50 and proof of certain specified acts of bankruptcy during the three months preceding the petition must be given. Bankruptcy is now regulated by the Bankruptcy Act of 1914 (and the rules made under that Act, as amended by the Bankruptcy (Amendment) Act of 1926), which increased the stringency of conditions and placed on the debtor the onus of proving himself not guilty of fraudulent intent.

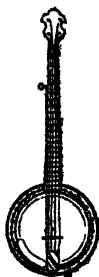
An undischarged bankrupt may not sit in the House of Commons or become a councillor unless the court grants a certificate that he is the victim of misfortune. He may apply for discharge if his assets were more than 10s. in the £, if no criminal intent has been proved. A discharge order releases him from all obligations with certain exceptions, such as debts to the Crown, etc.

Banks, Sir Joseph, a zealous naturalist, particularly in botany; a collector, in lands far and wide, of specimens in natural history; accompanied Captain Cook in his voyage round the world, and was one of the founders of Botany Bay settlement; left his collection and a valuable library and herbarium to the British Museum; President of the Royal Society for 41 years. (1743-1820).

Banks, Thomas, an eminent English sculptor, born at Lambeth; first appreciated by the Empress Catharine of Russia; his finest works, "Psyche" and "Achilles Enraged," now in the entrance-hall of Burlington House; he excelled in imaginative art. (1735-1805).

Banks and Banking. Banks are institutions where deposits of money are received and paid, where credit is manufactured and extended to borrowers, where the exchange of property is facilitated, and where loans and discount are negotiated. Further operations are the buying and selling of foreign exchange and the issuing of notes, though this latter operation is usually restricted to a central bank (like the Bank of England, in this country).

A bank deals with two classes of person: a depositor who wishes to obtain interest on his capital, and a borrower who is willing to pay a higher interest than that given to the depositor. The difference in interest constitutes the banker's profit. The bank obtains additional profit by commissions for services rendered to the customer, and also from the capital left upon current account.



The work of a bank includes the following: (a) The opening of deposit accounts with commercial houses and private individuals. (b) The opening of current accounts, from which money may be withdrawn on demand, and which usually bears no interest. (c) The discounting of Bills of Exchange and making of loans upon negotiable securities. (d) The establishment of agencies for foreign banks. (e) The purchase and sale of stocks, the collection of dividends on stocks, and the receipt of pay and pensions of customers. (f) The keeping of books of corporations and companies and paying of half-yearly dividends. (g) The issue of circular notes, travellers' cheques, and letters of credit. (h) The duties of executor or custodian trustee. (i) The collection of funds for new issues of capital by company customers. (j) The maintenance of a system of night banking whereby customers may deposit money to be credited in the morning, and (k) the issue of home safes with interest payable on deposits.

Deposit accounts are of three kinds: (1) Repayable at call or demand; (2) repayable subject to a specified notice; (3) fixed deposits. The usual specified notice is seven days, though present-day practice is to repay on demand and charge seven days' interest. Fixed deposits are in favour with colonial banks, especially Australian, due to the fact that colonial banks have to sink their funds into undertakings of a longer duration. Interest on Deposit accounts varies with the Bank Rate. Money paid into a bank is entered by the customer on a paying-in slip or voucher, and money withdrawn is usually by cheque.

The rapid growth of the cheque as a medium for cancelling debts has rendered a clearing system necessary. They are cleared through the London Clearing House, and during a year cheques to the value of £50,000,000,000 pass through its office. Other clearing houses are in the large commercial centres. Local clearings are operated by Local Exchanges. The most important section of clearing is town clearing, which acts as a reflex of the London Money market. The London Bankers' Clearing House is managed by a committee of influential bankers. A feature of post-war banking is the growth of new capital issues passing through the hands of bankers, due to the increase of new companies.

The principal banks of London, after the Bank of England (q.v.), sometimes called the "Big Five," are Barclay's Bank Ltd.; Lloyd's Bank Ltd.; Midland Bank Ltd.; National Provincial Bank Ltd.; and Westminster Bank Ltd. They are affiliated with a number of other banks. The Bank for International Settlements was formed under the League of Nations to provide a means for the settlement of Germany's obligations under the Reparations Plan, and a huge reparations loan was raised.

Bankside, a district of SE. London, a part of Southwark. Here in Elizabethan and Stuart times were the famous Globe, Swan, and Hope Theatres, a bear garden and a bull-baiting ring.

Bann, a river of Northern Ireland, rising in the Mourne Mts., Co. Down, and entering the Atlantic 4 m. from Coleraine. Above Lough Neagh, through which it passes, it is known as Upper Bann, below as Lower Bann. Salmon and eels are caught.

Bannatyne Club, a club founded by Sir Walter Scott to print rare works of Scottish interest, whether in history, poetry, or general literature, of which it printed 116, all deemed of value; dissolved in 1881. It was named after George Bannatyne, who collected much of Scotland's ancient poetry.

Banner, a piece of drapery usually attached to a staff, indicating both dignity and rank. Banners of military regiments are commonly known as colours. The national banner of England is that of St. George, a red cross on a white ground. The Union-flag is formed of it, the cross of St. Andrew and the cross of St. Patrick added.

Bannockburn, a manufacturing village 3 m. SE. of Stirling, Scotland, the scene of the victory, on June 24, 1314, of Robert the Bruce over Edward II., which reasserted and secured Scottish independence; it manufactures carpets and tartans. Pop. 4,000.

Banns of Marriage, the practice of churches on three successive Sundays the names of those who intend to marry, in order that objections can be made. The custom dates back to 1200.

Banshee, among the Irish, and in some parts of the Highlands and Brittany, a female fairy, believed to be attached to a family, who gave warnings by wailings of an approaching death in it, and kept guard over it.

Bantam, a chief town and decayed seaport in Java, abandoned as unhealthy by the Dutch; whence the Bantam fowl is thought to have come.

Bantam, a small domestic fowl of eastern origin. It weighs rather over one pound when fully grown. It is smooth-feathered and game. The hens lay well.

Banteng, a species of wild ox of Malaya. It has no dewlap. It has a hump behind the neck, rounded horns and a pointed head.

Banting, Sir Frederick Grant, K.B.E., D.Sc., F.R.S., born at Alliston, Ontario; wounded in Great War; practised medicine in London, Ontario, till 1921. At Toronto University in 1921, began, under J. J. R. Macleod, investigations into internal secretion of the pancreas, which resulted in discovery of the insulin cure for diabetes. Nobel Prize, 1923. Professor of Medical Research, Toronto. (1891-).



BANTENG

Banting System, a dietary for keeping down fat, recommended by a Mr. Banting, a London tradesman, in a *Letter on Corpulence* in 1863; he advocated lean meat, and the avoidance of sugar and starchy foods.

Bantock, Sir Granville, M.A., D.Mus., (Edin.), was born in London, son of George Granville Bantock, M.D. Conductor to Gaiety Company America and Australia, 1894-1895. Musical director, New Brighton, 1896-1900. Professor of Music, Birmingham University, 1908-1934. His works include dramatic and choral compositions, and a setting of FitzGerald's *Omar Khayyam*. (1868-).

Bantry, a market and fishing town of Bantry, Co. Cork, Ireland (Eire), on Bantry Bay. It is a popular tourist resort and makes tweeds. Pop. 3,000.

Bantry Bay, a deep inlet on the SW. coast of Ireland (Eire); a place of shelter for ships; the scene of a naval fight between the French and British, ending in the French favour, on May 1, 1688.

Bantu, the name of most of the races, with their languages, that occupy Africa from 6° N. lat. to 20° S.; are negroid rather than negro, being in several respects superior; the name, however, suggests rather a linguistic than an ethnological

distinction, the language differing radically from all other known forms of speech—the inflection, for one thing, chiefly initial, not final

Banville, Théodore Faullain de, a French poet, born at Moulins, with whom form was everything, and the matter comparatively insignificant; was the author of the play *Gringoire*, produced in London by Sir H. Boerbohm Tree under the title of *The Ballad-monger*. (1823–1891).

Banyan, the Indian fig; a tree whose branches, bending to the ground, take root and form new stocks, till they cover a large area and become a forest.

Baobab, a large African tropical tree, remarkable for the girth of its trunk, the thickness of its branches, and their expansion; its leaves and seeds are used in medicine.

Bapaume, a village in the dept. of Pas-de-Calais, France, captured by British troops in March 1917, recaptured by the Germans in March 1918; by New Zealand troops in Aug. 1918. Pop. 3,000.

Baphomet, a mysterious two-headed image, presumed to represent Mohammed, which the Templars were accused of worshipping.

Baptism, the Christian rite of initiation into the membership of the Church, identified by St. Paul (Rom. vi. 4) with that No to the world which accompanies Yea to God, but a misunderstanding of the nature of which has led to endless diversity, debate, and alienation all over the Churches of Christendom.

Baptistry, a circular building, originally in which the rite of baptism is administered; the most remarkable, that of Pisa.

Baptists, a denomination of Christians, who insist that the rite of initiation is duly administered only by immersion, and to those who are of age to make an intelligent profession of faith; they are a numerous body, particularly in America, and more so in England than in Scotland, and have included in their membership a number of eminent men.

Bar, *Confederation of the*, a confederation of Polish nobles, formed in 1768, at the fortress of Bar, in opposition to the Confederation of Radom, which latter had called upon Russia for help. The outcome of the dispute was the first partition of Poland.

Bar, *General Council of the*, established 1895 in substitution for the Bar Committee. It is the accredited representative of the English Bar, its duty being to deal with all matters affecting the profession, such as the proposal of legal reforms, professional etiquette, etc., and to take such action as may be expedient in the circumstances. It consists of a number of K.C.'s and members of the Junior Bar, together with the law officers of the Crown and others. The offices are at 5 Stone Buildings, Lincoln's Inn, London.

Barabbas, mentioned in all four gospels as a prisoner (described in John xviii as a robber and in Mark xv as a murderer) whom the Jewish multitude chose that Pontius Pilate should release at the Pass-over in preference to Jesus of Nazareth.

Barbacan, or *Barbican*, a fortification, generally at the end of the drawbridge in front of the gate.

Barbados, or *Barbadoes*, one of the Windward Is., rather larger than the Isle of Wight; almost encircled by coral reefs; the most densely peopled of the group; subject to hurricanes; healthy and well cultivated; it yields sugar, arrowroot, ginger and aloe, and has rum distilleries.

Codrington College (rebuilt in 1928) provides for a university education. Pop. (est.) 182,000 (70 per cent. negro).

Barbara, St., a Christian martyr of the 3rd Century; beheaded by her own father, a fanatical heathen, who was immediately after the act struck dead by lightning; she is the patron saint of those who might otherwise die impenitent, of artillerymen, and of the city of Mantua; her attributes are a tower, a sword, and a crown. Festival, Dec. 4.

Barbarians, originally those who could not speak Greek, and ultimately synonymous with the uncivilised and people without culture.

Barbarossa, the surname of Frederick I., Emperor of Germany, of whom there is this tradition that "he is not yet dead; but only sleeping, till the bad world reach its worst, when he will reappear." (1152–1190).

Barbarossa (i.e., Red-beard), *Moruk*, a native of Mitylene; turned corsair; became sovereign of Algiers by the murder of Selim the emir, who had adopted him as an ally against Spain; was defeated twice by the Spanish general Gomarez and slain. (1473–1518).

Barbarossa, *Khair-ed-Din*, brother of the preceding; became viceroy of the Porte, made admiral under the sultan, opposed Andrea Doria, ravaged the coast of Italy, and joined the French against Spain; died at Constantinople in 1546.

Barbaroux, *Charles*, advocate, born at Marseilles, of which he became town clerk; went to Paris "a young Spartan," and became chief of the Girondins in the French Revolution; represented Marseilles in the Constituent Assembly and the Convention; joined the Rulands; sent "fire-eyed" message to Marseilles for six hundred men "who knew how to die"; held out against Marat and Robespierre; declared an enemy of the people, had to flee; was captured and guillotined. (1767–1794).

Barbary Ape, a tailless macaque habits, native of the mountainous parts of Barbary; there is a colony of them on the Rock of Gibraltar, the only one in Europe.

Barbary States, the four states of Morocco, Algeria, Tunisia, and Tripoli, so called from the Berbers who inhabit the region.

Barbecue, a feast in the open air on a large scale, at which the animals are roasted and dressed whole, formerly common in the SW. States of N. America.

Barbel, a genus of fish (*Barbus*) of the several species. They are fresh-water fish with four appendages, or barbels, from the mouth, and are found in Asia, Africa and Europe; *B. barbus*, common in Europe, grows to a weight of 20 lb. in English rivers and to 40 and 50 lb. in the Danube.



BARBEL

Barberini, an illustrious and influential Florentine family, several of the members of which were cardinals, one being made pope in 1623 under the name Urban VIII.

Barberry, a species of *Berberidaceae* common in England. It bears flowers on long, hanging stalks and oval berries. The berries are made into jam. Barberry is productive of rust which attacks grasses and wheat.

Barbers, became an incorporated body in 1461, and in the reign of Henry VIII. were united with the company of surgeons, a union which continued until 1745. The work included tooth extracting and bleeding. The barber's pole signifies the arm bandage used in the latter operation.

Barberton, a mining town and important centre in the Transvaal. Also a manufacturing town in Ohio, U.S.A. Pop. 24,000.

Barbieri, Giovanni Francesco, nicknamed *Guercino* (Squint-eyed), painter, born at Cento near Bologna. Painted frescoes on cupola of Piacenza cathedral. (1591-1666).

Barbizon, a village in Seine-et-Marne, France, which has given its name to a school, or group, of realist artists among whom have been Millet, Corot, Diaz, and Daubigny.

Barbour, John, a Scottish poet and chronicler, Archdeacon of Aberdeen, his only extant work a poem entitled *The Bruce*, being a long history in rhyme of the life and achievements of Robert the Bruce. (c. 1316-1395).

Barbuda, a small island of the British W. Indies, in the dependency of Antigua. Area 62 sq. m.

Barbusse, Henri, French novelist. Practically unknown before the Great War, he produced in 1916 *Le Feu*, one of the greatest indictments of war ever penned, and with it gained the Prix Goncourt. Other works include *Les Pleureuses* (poetry), *Les Suppliants*, *L'Enfer*, *Nous Autres*. He served in the Infantry in the Great War and received the Croix de Guerre. Invalided, he returned to literature as editor of *L'Humanité*. Joined the communists and died in Moscow. Last work, *Stalin*. (1873-1935).

Barca, name of a Carthaginian family to which Hamilcar, Hasdrubal, and Hannibal belonged, and determinedly opposed to the ascendancy of Rome, hence known as the Barcine faction.

Barcarolle, musical composition written in imitation of the songs sung by the gondoliers of Venice. They are commonly characterised by alternating light and heavy beats, as representing the movement of the oars.

Barcelona, a large town and the chief port of Spain, capital of the maritime province of Barcelona, standing on the Mediterranean. It has a naval arsenal, and is the largest manufacturing town, called the "Spanish Manchester," the staple manufacture being cotton; is the seat of a bishopric and a university; has numerous churches, convents and theatres. The older part of the city, with narrow and irregular streets, offers a striking contrast to the modern part. There is a good harbour. Often besieged, it was captured by the Earl of Peterborough in 1706, by the Duke of Berwick in 1714, and by Napoleon in 1808. In the past twenty years it has often been the scene of riots and disorders, notably at the time the republic was formed, and again in 1936 during the anti-Government revolt under General Franco. In 1938 it was severely bombed by General Franco's air forces, over 3,000 persons being killed or wounded in the raids. Pop. (prov.) 2,000,000; (town) 1,148,000.

Another town of the same name is a seaport and capital of the State of Anzoategui, Venezuela. Pop. 16,000.

Barclay, Alex. a poet and prose-writer, of Scottish birth; bred a monk in England, which he ceased to be on the dissolution of the monasteries; wrote *The Ship of Fools*, partly a translation and partly an imitation of the German *Narrenschiff* of Brandt. (1475-1552).

Barclay, Robert, the celebrated apologist of Quakerism, born in Morayshire; his greatest work written in Latin as well as in English, and dedicated to Charles II., *An Apology for the True Christian Divinity, as the same is held forth and preached by the People, called in scorn Quakers*. (1643-1690).

Barclay de Tolly, Michael Andreas, a Russian general and field-marshal, of Scottish descent, and of the same family as Robert Barclay the Quaker; on Napoleon's invasion of Russia his tactics were to retreat till forced to fight at Smolensk; he was defeated, and superseded in command by Kutusov; on the latter's death was made commander-in-chief; commanded the Russians at Dresden and Leipzig, and led them into France in 1815; he was afterwards elevated to the rank of prince. (1761-1818).

Bard. The ancient bards were the sages and prophets, teachers of religion and administrators of justice among the Celtic peoples of Great Britain and Ireland. In early days they led the armies into battle. Their poetry, chiefly of the martial kind, and sung usually to the harp, had tenderness and refinement, and the bards became recognised as the national historians, especially in Wales after the times of Howell the Good and Gruffydd ap Iwan. They were allowed a regular stipend for their labour, and any misrepresentation rendered them liable to disgrace. The bards flourished from the earliest times, and in Ireland until the 17th Century. The Eisteddfodau or great gatherings at which they competed in Wales were revived in the early part of the 19th Century, and bardship has become again a distinction of the poets of Wales, bards being elected by popular vote at the annual gatherings.

Bardsey, a small island off the coast of Caernarvon, Wales, the legendary last home of the old Welsh bards; has a lighthouse and is remarkable for its distinctive bird life.

Barebone's Parliament, Cromwell's Little Parliament, met July 4, 1653; derisively called Barebone's Parliament, from one Praise-God Barebone, member for London and a wealthy leather merchant but by no means a prominent politician.

Barèges, a village in the Hautes-Pyrénées, France, at 4,000 ft. above the sea-level, resorted to for its mineral waters.

Bareilly, a city in NW. India, the chief town of Rohilkhand in the United Provinces, notable as the scene of an outbreak in the Indian Mutiny. Pop. 144,000.

Barents, Willem, an Arctic explorer, born in Friesland; discovered Spitzbergen, and doubled the NE. extremity of Nova Zembla, in 1597, and died the same year; gave his name to Barentz I. and Barentz Sea, in the Arctic.

Barère, de Vieuzac, Bertrand, French States-General, the National Assembly of France, and the Convention; voted in the Convention for the execution of the king, uttering the oft-quoted words, "The tree of Liberty thrives only when watered by the blood of tyrants"; became a spy under Napoleon; died in beggary. (1755-1841).

Baretti, Giuseppe, an Italian lexicographer, born in Turin; taught Italian in London, was patronised by Johnson, and became secretary of the Royal Academy. (1719-1789).

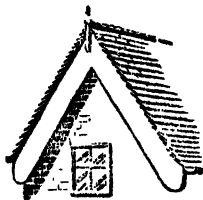
Barfleur, a seaport 15 m. E. of Cherbourg, France, where in May 1692 the battle began which ended in the naval victory of La Hogue.

Barfurush, or **Babal**, a town of Persia, in the province of Mazanderan, between the Elburz Mts. and Caspian Sea, from which it is 12 m. distant. It has a caravan trade in silk, cotton and rice, and trades with Russia through its port, Meshed-jer. Pop. 30,000.

Barge, flat-bottomed boats designed for transporting merchandise in rivers, canals and coastal waters. They vary according to their purpose. River and canal barges are usually pulled by horse from the tow-path or towed by tugs. When used for transshipping goods between merchantmen and the shore, they are termed "lighters." State barges are highly ornamented ceremonial boats rowed by ten or more oars, and used on state occasions. Coastal barges are also flat-bottomed, but are provided with lee-boards and rigged as sailing-boats. The Thames sailing barges are the most famous of this type.

Bargeboard,

a board which covers the ends of rafters of a gable-end of a roof. Bargeboards are both plain and ornamented and, in ancient buildings, sometimes elaborately carved.



BARGEBOARD

Barguest, a goblin long an object of terror in the N. of England, frequently assuming the form of a dog.

Barham, **Richard Harris**, his literary name Thomas Ingoldesby, born at Canterbury, minor canon of St. Paul's; friend of Sydney Smith; author of *Ingoldesby Legends*, published originally as a series of papers in Bentley's *Miscellany*. (1788-1845).

Bari, ancient city of Apulia, Italy, capital of Bari province, on the Adriatic, seat of an Archbishop. Its fisheries are important now as in Greek and Roman days and there are important industries including olive oil, soap, wine and fruit. Here is Italy's high-power broadcasting station. Pop. (prov.) 940,000; (city) 150,000.

Baring, **Sir Francis**, founder of the great banking firm of Baring Brothers & Co. (1740-1810).

Baring, **Maurice**, British author. A son of Lord Revelstoke, he entered the diplomatic service and acted as war correspondent in the Russo-Japanese War. His writings include poems, essays, books of travel, novels, and plays. (1874-).

Baring-Gould, **Sabine**, rector of Lewisham; the author of *Onward, Christian Soldiers*; celebrated in various departments of literature, history, theology, and romance, especially the latter; a voluminous writer on all manner of subjects, and a man of wide reading. (1834-1921).

Baritone, the male human voice with a range between that of the tenor and that of the bass.

Barium, a metallic chemical element related to calcium, strontium and radium. Symbol Ba, atomic number 56, atomic weight 137.36. It was first isolated by Davy in 1808, and occurs fairly abundantly in nature as the sulphate, barytes, or heavy spar (BaSO_4) and as the carbonate witherite (BaCO_3). Barium compounds are poisonous; the nitrate is used in pyrotechny to make green flares, whilst a precipitated mixture of the sulphate with zinc sulphide is known as lithopone (q.v.). The metal itself is fairly soft, and possesses a silvery-white lustre; its specific gravity is 3.8, and it readily tarnishes in moist air.

Bark, the dead matter formed on the exterior of a tree, serving to protect the tree from exterior moisture. It may remain for a long period or strip off in patches or rings. A thin layer of living cells below the bark, called cambium, is added annually to the inside of the bark and to the outside of the wood beneath it.

Barker, **Sir Herbert**, surgeon, who attained extraordinary skill in bonesetting. His methods were not always approved by the medical profession, in which for years he had no status. He was knighted in 1922. (1869-).

Barking, a market town and suffragan bishopric in Essex, 7 m. N.E. of London, England, with the remains of an ancient Benedictine convent; a high-power station in the grid system of the Central Electricity Board. Pop. 51,000.

Barlaam and Josaphat, a medieval legend, being a Christianised version of an earlier legend relating to Buddha, in which Josaphat, a prince like Buddha, is converted by Barlaam to a like ascetic life.

Barletta, a seaport of Italy in the province of Bari. It has a fine 12th-Century cathedral. Wine is produced in the neighbourhood. Pop. 50,000.

Barley, a cultivated and widely-disseminated cereal (*Hordeum vulgare*) of the order Gramineae. It was the drink-corn as rye was the bread-corn of the Middle Ages. It was of two kinds. The head with two rows of grain was used extensively for brewing; the coarser four-rowed head, known as "drugs," was used partly for brewing and partly for feeding pigs and poultry. A six-rowed variety is also grown. The malting barley of the country is now almost wholly Pilsener. Archer of a cross kind called Spratt-Archer.

Barmecide Feast, an imaginary feast, so called from a story in the *Arabian Nights* of a hungry beggar invited by a Barmecide prince to a banquet, which proved a long succession of merely empty dishes, and which he enjoyed with such seeming gusto and such good-humour as to earn for himself a real one.

Barmecides, a Persian family of the 8th Century, celebrated for their magnificence, which in the end met with the cruellest fate. Yahya, one of them, eminent for ability and virtue, was chosen by Haroun-al-Raschid to be his vizier; his four sons rose along with him to such influence in the government as to excite the jealousy of the caliph, whereupon the latter had the whole family invited to a banquet, and every man, woman, and child of them massacred at midnight in cold blood.

Barmen, a long town, consisting of a series of hamlets, in Rhenish Prussia; the population consists chiefly of Protestants; staple industry, the manufacture of ribbons. Administered jointly with Ellerfeld under the name of Wuppertal. Pop. 188,000.

Barmouth, a market town and tourist resort of Merionethshire, N. Wales. It stands in beautiful mountain country at the mouth of the Mawddach. Pop. 2,000.

Barnabas, St., a member of the first Christian Brotherhood, a companion of St. Paul's, and characterised in the Acts as "a good man"; stoned to death at Cyprus, where he was born; an epistle extant bears his name, but is not believed to be his work; the Epistle to the Hebrews has by some been ascribed to him. Festival, June 11.

Barnabites, a proselytising order of monks founded at Milan, where Barnabas was reported to have been

bishop, in 1530; bound, as the rest are, by the three monastic vows, and by a vow in addition not to sue for preferment in the Church.

Barnacle, a group of marine crustacea of the order Cirripedia, of which there are many species. The stalked barnacles (*Pendunculata*) attach themselves to the bottoms of ships and to driftwood, as do the common goose-barnacles (*Lepas antifer*). The sessile barnacles (or acorn-shells, *q.v.*) have no peduncle. They are found like incrustations on rocks between high and low tide. *Balanus balanoides* is the commonest English barnacle. Most barnacles are hatched from eggs.

Barnard, *Lady Anne*, daughter of Balcarres, born in Fife; authoress of *Auld Robin Gray*, named after a Balcarres herd. (1750-1825).

Barnard, *Frederick*, artist; illustrator of Dickens' works; contributor to many humorous periodicals. (1846-1896).

Barnard, *George Grey*, American sculptor, born at Bellefonte, Pa.; work includes bronze "Great God Pan" on the green of Columbia University, New York; all sculpture in state capital of Pennsylvania; the much-discussed "Abraham Lincoln" bronze statue, Lytle Park, Cincinnati. (1863-).

Barnard Castle, an old town W. of Darlington, in Durham, England; birthplace of John Balian, and the scene of Scott's *Rokeby*. Pop. 4,000.

Barnardo, *Dr. Thomas John*, founder of the home for waifs named after him; devoted his life to the care of destitute children. (1845-1905).

Barnato, *Barnett Isaacs*, financier, son of a general dealer named Isaacs, was born in Aldgate, London; educated at Jews' Free School, Spitalfields. In 1873 went to S. Africa to join an older brother, an entertainer professionally known as Barnato. Made fortune in diamonds. In 1888, amalgamated with Cecil Rhodes' company. Drowned himself off ship bound for England, near Madeira. (1852-1897).

Barnaul, an Asiatic town of the U.S.S.R. in W. Siberia, the centre of an agricultural and mining district. It stands at the point of confluence of the Barnaul and Ob Rs. Pop. 74,000.

Barnave, *Antoine Pierre Joseph Marie*, French lawyer, born at Grenoble; president of the French Constitutional Assembly in 1780; one of the trio in the Assembly of whom it was said, "Whatever those three have on hand, Dupont thinks it, Barnave speaks it, Lameth does it"; a defender of the monarchy from the day he gained the favour of the queen by his gallant conduct to her on her way back to Paris from her flight with the king to Varennes; convicted by documentary evidence of conspiring with the court against the nation; was guillotined. (1761-1793).

Barn-Burners, name formerly given to an extreme radical party in the United States, as imitating the Dutchman who, to get rid of the rats, burned his barns. ☼

Barnby, *Sir Joseph*, English composer, wrote many popular hymn tunes, part songs, and the oratorio *Rebekah*; conducted Albert Hall Royal Choral Society from 1871 to 1896; principal of Guildhall School of Music. (1838-1920).

Barnes, an urban district of Surrey, England, a residential district of Greater London, on the Thames. Here is Ranelagh Club, housed in the old manor house, and Barnes Common. Pop. 42,000.

Barnes, *Rt. Rev. Ernest William*, British scholar and divine. Educated at Birmingham and Cambridge, where he was a Wrangler, he became Master of the Temple in 1915, Canon of Westminster in 1918, and Bishop of Birmingham in 1924. An F.R.S., he made a name as a modernist, holding that true religion is consistent with the teaching of modern science. (1874-).

Barnes, *Rt. Hon. George Nicoll*, British politician. For ten years Gen. Sec. of the Amalgamated Society of Engineers, he became Labour representative in the War Cabinet in 1916, acting as Minister of Pensions, and in 1919 as Minister without Portfolio. He retired in 1920. (1859-).

Barnes, *William*, a lyric poet, "the Poems of Rural Life in Dorset"; author of *Poems of Rural Life in Dorset*, in three vols.; wrote on subjects of philological interest. (1800-1886).

Barnet, a town in Hertfordshire, England, almost a suburb of London; has a large annual horse and cattle fair; scene of a battle in 1471, at which Warwick, the kingmaker, was slain. Pop. 15,000.

Barnett, *Henrietta*, English social worker, wife of Canon S. A. Barnett. Started the Children's Country Holiday Movement in 1878. In 1880 she founded the London Pupil Teachers' Association, of which she was president, 1891-1907. Worked for years at the formation of the Whitechapel Art Gallery, which was opened eventually in 1901. Co-operated in the foundation of Toynbee Hall. University Settlements both in England and in America owe their origin and development to her and her husband; also the State Children's Association and the Hampstead Garden Suburb. Created D.B.E. in 1924. (1851-1936).

Barnett, *Samuel Augustus*, Canon of Westminster (1906), was born at Bristol. Curate in London from 1867. From 1872, vicar of St. Jude's parish, Whitechapel; where, by his exertions, Toynbee Hall settlement was founded 1884. He was first warden, till 1906. Introduced libraries and picture-galleries to East End. (1814-1913).

Barneveldt, *Jan van Olden*, (Grand Pensionary of Holland, of a distinguished family; fought for the independence of his country against Spain; concluded a truce with Spain, in spite of the Stadtholder Maurice, whose ambition for supreme power he opposed; was arrested and condemned to death as a traitor and heretic, and died on the scaffold at 71 years of age in 1619.

Barnsley, a manufacturing town in the R. Dearne; W. Yorkshire, England, on the R. Dearne; produces textile fabrics, glass and machinery. Pop. 72,000.

Barnstaple, a municipal borough, sea-port, and market town of Devon, England, on the Taw estuary. A trading centre before Norman times, it remained a busy port until the silting-up of the harbour. It has many fine old buildings. Pottery (Barnum Ware) is made, also gloves, lace and furniture. Pop. 15,000.

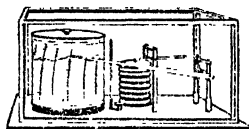
Barnum, *Phineas Taylor*, an American showman; began with the exhibition of George Washington's reputed nurse in 1834; picked up Tom Thumb in 1844; engaged Jenny Lind for 100 concerts in 1849, and realised a fortune, which he lost; started in 1871 with his huge travelling show, and realised another fortune, dying worth five million dollars. (1810-1891).

Baroda, a native state now included in the Gujerat States Agency and Residency of Baroda, India, with a capital of the same name, the ruling chief being called the Gaekwar; has Hindu temples and a considerable trade. Pop. (state) 2,443,000; (town) 113,000.

Barometer, an instrument for measuring the pressure of the air. That the air has weight and can exert a pressure was first surmised by Torricelli, a pupil of the celebrated Galileo, who conceived the experiment of filling a long glass tube, closed at one end, with mercury, and inverting it in a trough of mercury. A column of mercury some 30 in. high remained in the tube, the space above it being a vacuum. The Hon. Robert Boyle and Robert Hooke having just made the first efficient air-pump, Boyle was able to prove Torricelli's assumption beyond question, by attaching the trough to the pump and showing that as the air was exhausted the column simultaneously fell: on re-admitting air it rose again.

Boyle observed that the height of the column varied slightly from day to day, and by noticing how the variations in height were related to the climatic conditions, he discovered that, usually, a diminution in height was followed by rain and a rise in height by fine weather. Modern mercurial barometers are essentially similar to the early instruments of Torricelli and Boyle, improvements being in detail only.

An aneroid barometer consists of a thin, evacuated metal box, which alters in shape according to the pressure of the atmosphere; the alterations are magnified by a mechanical arrangement of levers, and are then indicated on a circular scale by means of a movable pointer. In barographs, the pointer of a barometer—generally aneroid—is inked, and makes a trace upon a cylinder of paper rotated by clockwork at a constant speed. In this way a continuous record of pressure variations is obtained.



BAROGRAPH

Baron, the lowest grade of peer. In very early times "barones" were those churchmen or laymen who held land of the King "per baroniam," but as early as Edward III.'s time the fact of holding "per baroniam" did not confer a right to be summoned by writ to the House of Lords. Baronage does not now depend on tenure. The equivalent title or description in Anglo-Saxon times was "thegn" or "thane," but the Normans either restored or introduced the term "baron," though it is doubtful whether at first "barons by tenure" constituted an order of nobility, some being merely leading citizens. Later, in the time of Simon de Montfort, their order grew to so commanding a position that we find the term "barons" used conventionally for the entire nobility and, as they grew in importance, they were summoned to attend the King's Great Councils, the nucleus of our House of Lords. The dignitaries of the degree who supplanted "barons by tenure" were the "barons by writ," but since 1605 there have ceased to be any new creations by writ, and the only form by which new barons or any other peerages originate now is the patent.

Baron, Bernhard, tobacco magnate and philanthropist. Starting life penniless in America, he emigrated to England at 16, made a fortune, which he largely devoted to hospitals, and died leaving \$4,000,000. (1851-1929).

Baronet, an hereditary title, ranking between the Peerage and the Knightage, instituted in 1611 by James I., who conferred it upon those who supplied funds to keep 30 soldiers at 8d. a day for 3 years for the defence of Ulster. The Baronetage of Nova Scotia (not to exceed 150) was

created by Charles I. as a means of furthering the colonisation of Nova Scotia. The permissible number of creations was never reached, and new appointments ceased in 1707 on the Union of England and Scotland.

Baronius, *Cesar*, a great Catholic ecclesiastic, born near Naples, priest of the Congregation of the Oratory under its founder and ultimately Superior; cardinal and librarian of the Vatican; his great work, *Annales Ecclesiastici*, being a history of the first 12 centuries of the Church. (1538-1607).

Barons' War, a war in England of the barons against Henry III. Fighting commenced in 1261 (the Battle of Lewes) after the King had appealed to Louis IX. of France to arbitrate between him and the Barons. Louis gave a verdict favourable to Henry (The "Mise of Amiens," 1263). At Evesham in 1265 the Barons were defeated and de Montfort killed.

Baroque, ornamentation of a florid, bold, lavish character, reflecting the spirit of the counter-Reformation; much in vogue from the 16th to the 18th Centuries in Central Europe.

Barotse Land, a territory in N. Rhodesia, in the Upper Zambezi, Central Africa, under British protectorate, the paramount tribe being the Barotse.

Barque, a sailing-ship with not less than three masts, and square-rigged on all except the last (the mizzen in a three-masted vessel), which is fore-and-aft rigged. A barquentine is a three-masted vessel square-rigged on the foremast only.

Barra, a small island, one of the Hebrides, 5 m. SW. of S. Uist, the inhabitants of which are engaged in fisheries.

Barrackpur, a town in India on the Hooghly, 15 m. above Calcutta, where the lieutenant-governor of Bengal has a residence; a health resort of the Europeans; was the scene of the outbreak of the Indian Mutiny, in Jan. 1857.

Barracks, permanent buildings for the accommodation of soldiers. The provision of barracks followed the unpopular system of billeting in the early part of the 18th Century. The earliest barracks were built at Portsmouth, but sickness and a high death rate developed there and it was not until 1792 that building was taken in hand on an adequate scale.

Barracks now have quarters for single officers, married officers, single men and married men. The officers' quarters consist of a dining-room, clubroom and billiard-room. Each officer has private rooms, with additional accommodation for married officers. The men have canteens, reading-rooms, billiard-rooms, and gymnasiums. Single soldiers have separate cubicles and the married men frequently have separate houses.

Barracuda, or *Barracouta* (*Sphyræna barracuda*), a tropical fish

of large size and predatory habits, resembling the pike, found in the Atlantic from Brazil to Florida. It has a powerful jaw and strong, sharp teeth, grows as large as 8 ft., and is dangerous to swimmers. The edible Snoek (*Thyrsites atun*) is known in Australia by the same name, but is unrelated.



BARRACUDA
(*Sphyræna barracuda*)

Barrage, a barrier of shell-fire produced and made to precede them when attacking. The term is also applied to a dam across a river erected for the purpose of increasing the depth or regulating the flow.

Barranquilla, capital of the dept. of Atlantico, in the Colombian Republic, S. America. It stands near the mouth of the R. Magdalena, and is now accessible to ocean-going ships. It is a busy centre of manufacture and trade. Pop. 150,000.

Barras, **Paul François**, a member of the Jacobin Club, born in Provence; voted in the National Convention for the execution of the King; took part in the siege of Toulon; put an end to the career of Robespierre and the Reign of Terror; named general-in-chief to oppose the reactionaries; employed Bonaparte to command the artillery; was a member of the Directory till Bonaparte swept it away. (1755-1829).

Barratry, the offence of inciting and stirring up riots and quarrels among the king's subjects. Also a fraud by a ship's captain on the owners of a ship.

Barrel Organ, a mechanical musical instrument which is played by rotating a handle, thus causing the revolution of a wooden barrel whose outside circumference contains pins which raise keys. This operation allows the inflow of wind from bellows to enter musical pipes and so produce the designed melody.

Barrès, **Auguste Maurice**, French author and politician, was born in the Vosges. Educated at Nancy. Became a Paris journalist, 1882. Deputy for Nancy, 1889; for Paris, 1906. Individualist and extreme nationalist. Wrote: *Le Culte du Moi*, 1889-1892; *L'Ennemi des lois*, 1893; *L'Amé Française et la Guerre*, 1915. Edited *Souvenirs d'un Officier de la Grande Armée* (memoirs of his grandfather), 1923. (1862-1923).

Barrett, **Wilson** (William Henry Barrett), actor and playwright. His two great hits were in *The Silver King*, 1882; and his own play *The Sign of the Cross*, 1896. All his acting and playwriting were for broad effect. (1846-1904).

Barrhead, an industrial town of Renfrewshire, Scotland, 7 m. SW. of Glasgow. It has brass and iron foundries, cotton mills, bleaching and dyeing works and calico-printing and shawl-making factories. Pop. 11,000.

Barrie, **Sir James Matthew**, a writer with a rich vein of humour and pathos, born at Kirriemuir ("Thrums") in Forfarshire; began his literary career as a contributor to journals; author of *And Lillie*, *A Window in Thrums*, *The Little Minister*, *Margaret Ogilvy*, etc. As a dramatist was the author of *Peter Pan*, *Quality Street*, *The Admirable Crichton*, etc.; created a baronet in 1913.

Wrote *The Boy David* specially for Elisabeth Bergner, who appeared in the title rôle at Edinburgh and London in 1936. (1860-1937.)

Barrier Reef, **The Great**, a slightly interrupted succession of coral reefs off the coast of Queensland, of 1,200 m. extent, and 100 m. wide at the S., and growing narrower as they go N.; are from 70 to 20 m. off the coast, and protect the intermediate channel from the storms of the Pacific.

Barrington, **John Shute**, first Viscount, gained the favour of the Nonconformists by his *Rights of Dissenters*, and an Irish peerage from George I. for his *Disadvantage from Jacobitism*. (1678-1734).

Barrington, **Rutland** (George Rutland Fleet), actor in comic-opera. First of his many famous

appearances in Gilbert and Sullivan was in *The Sorcerer*, 1877. At his best the personification of Gilbertian humour, preternaturally solemn. (1853-1922).

Barrington, **Hon. Samuel**, admiral, fifth son of first Viscount Barrington, entered Navy 1740, performed many feats of war against French: in Basque Roads Expedition, 1757; at Havre-de-Grâce, 1759; at Belle Isle, 1761; commander-in-chief W. Indies, 1778—took St. Lucia—superseded by Vice-admiral Byron. At taking of Grenada, 1779, and Gibraltar, 1782. Admiral, 1787. (1729-1800).

Barrister, a member of the highest right to practise in the superior courts of England. He must be a member of one of the Inns of Court (Inner Temple, Middle Temple, Lincoln's Inn, Gray's Inn). Students of either sex are admitted as members of Inns on passing preliminary examination or its equivalent. Before being called to the Bar a member must "keep" twelve terms by dining in hall and pass the examination of the Council of Legal Education. A barrister must be instructed in "brief" by a solicitor. He is not punishable for anything said in court which is contained in instructions and relevant to the issue. To take "silk" (i.e., to practice "within the Bar" as a King's Counsel) a barrister must make application to the Lord Chancellor.

Barros, **João de**, a distinguished Portuguese historian; his great work *Asia Portuguesa*, relates, in a pure and simple style, the discoveries and conquests of the Portuguese in the Indies; he did not live to complete it. (1498-1570).

Barrow, an artificial mound or tumulus, of earth and stones, piled up over the remains of the dead; such mounds were often made in ancient times in England and Scotland—in the latter country they are known as "cairns." One of the most notable barrows is that at Silbury Hill, near Marlborough.

Barrow, a river in Ireland (Eire) rising in the Slievevelim Mts.; falls into Waterford harbour, after a course of 114 m.

Barrow, **Isaac**, divine and mathematician, born in London, son of the king's linen draper. At Cambridge, Professor of Greek, 1660; Lucasian Professor of Mathematics, 1664—resigned in favour of Isaac Newton, 1669. Master of Trinity College, 1672. Wrote *Lectiones Opticæ*, *Lectiones Geometricæ*, and expositions of the Creed, Lord's Prayer, Decalogue and Sacraments. (1630-1677).

Barrow, **Sir John**, secretary to the Admiralty for 40 years, distinguished also as a man of letters; one of the founders of the Royal Geographical Society. (1764-1848).

Barrow-in-Furness, a town and seaport in N. Lancashire, England, of rapid growth, when the discovery of extensive deposits of iron in the neighbourhood led to the establishment of smelting works, large manufacture of steel, and a shipbuilding yard. Pop. 66,000.

Barry, a seaport of Glamorganshire, S. Wales, 7 m. SW. of Cardiff. Its excellent docks can accommodate the largest vessels; coal, coke, and cement are exported. Pop. 39,000.

Barry, **Sir Charles**, architect, born at Westminster; architect of the Houses of Parliament at Westminster, besides other public buildings. (1795-1860).

Barry, **Spangr**, Irish actor, who was the friend and, later, rival of David Garrick in London; most successful in emotional parts. (1719-1777).



SIR J. M. BARRIE

Barry Cornwall. See Procter.

Bart, or **Barth, Jean,** a distinguished French seaman, born at Dunkirk, son of a fisherman, served under De Ituyter, entered the French service at 20, purchased a ship of two guns, was subsidised as a privateer, made numerous prizes; defeated the Dutch admiral, De Vries, for which he was ennobled by Louis XIV. (1650-1702).

Barter, the carrying on of trade by the which has been practised by all nations during their growth and is still the practice of primitive peoples. Since the Great War barter agreements for the exchange of commodities have been arranged between some countries in order to avoid the difficulties created by exchange fluctuations.

Barth, Heinrich, a great African explorer, born at Hamburg; author of *Travels and Discoveries in North and Central Africa*, in five volumes. (1821-1865).

Barthélemy, The Abbé, Jean Jacques, a French historian and antiquary, born at Cassis, in Provence; educated by the Jesuits; had great skill in numismatics; wrote several archeological works, in chief, *Voyage du Jeune Anacharsis en Grèce*; long treated as an authority in the history, manners, and customs of Greece. (1716-1795).

Barthez, Paul Joseph, a celebrated encyclopædist, born at Montpellier, where he founded a medical school; suffered greatly during the Revolution; was much esteemed and honoured by Napoleon; is celebrated among physiologists as the advocate of what he called the Vital Principle as a physiological force in the functions of the human organism; his work *Nouveaux Eléments de la Science de l'Homme* has been translated into all the languages of Europe. (1734-1806).

Bartholdi, Frédéric Auguste, a French sculptor, born at Colmar; his principal works, *Lion de Belfort*, and *"Liberté éclairant le Monde,"* the largest bronze statue in the world, being 200 ft. high, presented by the French government to the U.S.A. to commemorate the centenary of the latter's independence, and erected at the entrance of New York harbour. (1834-1904).

Bartholomew, St., an apostle of Christ, and martyr; represented in art with a knife in one hand and his skin in the other; sometimes painted as being flayed alive, also as headless. Festival, Aug. 24.

Bartholomew Fair, an annual at Smithfield, London, and instituted in 1133 by Henry I., to be kept on the saint's day; once the chief cloth fair in England, it was abolished in 1855, when it had ceased to be a market and became an occasion for mere dissipation and riot.

Bartholomew's Day, St., Aug. 24, memorable for the wholesale massacre of the Protestants in France at the instance of Catherine de Medici, then regent of the kingdom for her son, Charles IX., an event cruelly gloried in by the then Pope and the Spanish Court.

Bartholomew's Hospital, St., a hospital in Smithfield, London, founded in 1123, by Rahere, head of an adjoining priory of Augustinian canons; has a medical school attached to it, with which the names of a number of eminent physicians are associated.

Barthou, Jean Louis, French lawyer, public works, 1894 and 1906-1909. Held many other high offices, and was prime minister for a brief period in 1913. A firm

adherent of Poincaré during settlement negotiations after Great War. Foreign Minister when assassinated, together with King Alexander of Yugoslavia, in Marseilles. (1862-1934).

Bartók, Béla, Hungarian composer, born at Nagyszombatniklos, now in Yugoslavia. His *Kossuth*, 1903, performed in Manchester, 1904. (1881-).

Bartolommeo, Fra, a celebrated sacred subjects, born at Florence; an adherent of Savonarola, friend of Raphael; "St. Mark" and "St. Sebastian" are among his best productions. (1475-1517).

Bartolozzi, Francesco, an eminent engraver, born at Florence; wrought at his art both in England and in Portugal, where he died; his chief works "Clytie," after Annibale Caracci, the "Prometheus," after Michelangelo, and "Virgin and Child," after Carlo Dolce. (1727-1815).

Barton, a village and parish of the Isle of Wight, an E. suburb of Newport. Pop. 2,000. "Barton beds" or "Barton series" are the terms derivably given by geologists to a series of beds or strata laid bare in Barton Cliff.

Barton, Bernard, the "Quaker poet," all his days in a bank; his poems, mostly on homely subjects, but instinct with poetic feeling and fancy, gained him the friendship of Southey and Charles Lamb. (1784-1849).

Barton, Sir Edmund, Australian statesman. In New South Wales parliament from 1879; speaker, legislative council, 1883-1887. Attorney-general in government of Sir George Dibbs, 1889. Protectionist. In 1900, in London, head of delegation presenting Commonwealth Constitution Bill. First Prime Minister of Australia, 1901-1903. (G.C.M.G., 1902.) Henceforward senior puisne judge. (1849-1920).

Barton, Elizabeth, "the Maid of Kent," a poor country servant-girl, born in Kent, subject from nervous debility to trances, in which she gave utterances ascribed by Archbishop Warham to divine inspiration, till her communications were taken advantage of by designing people, and she was led by them to pronounce sentence against the divorce of Catharine of Aragon, which involved her and her abettors in a charge of treason, for which they were all executed at Tyburn. (1506-1534).

Barton-upon-Humber, a market town of Lincolnshire, England, SW. of Hull; an ancient port, with two fine old churches. Tanning and malting are carried on, and bricks, pottery, rope, and sailcloth made. Pop. 6,000.

Baruch, (1) the friend of the prophet Jeremiah, and his scribe, who was cast with him into prison, and accompanied him into Egypt; (2) a book in the Apocrypha, instinct with the spirit of Hebrew prophecy, ascribed to him; (3) also a book entitled the Apocalypse of Baruch, affecting to predict the fall of Jerusalem, but obviously written after the event.

Baruch, Bernard Mannes, American war-finance, son of Dr. Simon Baruch. Practised on New York Stock Exchange until 1916. Member of advisory committee of Council of National Defence. Chairman of Committee on Raw Materials, Minerals and Metals; head of commission purchasing for Allies. Chairman of War Industries Board. (1870-).

Baryta, the monoxide of barium, a greyish-white, solid earth occurring in the mineral barytes, or heavy spar, and witherite. It can be formed by burning barium in air or by heating barium nitrate.

Basalt, a common basic rock formed from the solidification of volcanic lava.

Commonly the lava cooled in the shape of columns and such structures are found in the Giant's Causeway in N. Ireland and Fingal's Cave in Staffa I. in the Hebrides.



BASALT COLUMNS AT STAFFA

Baseball, America's national summer sport, bearing a resemblance to both rounders and cricket. Played at fast pace with nine players a side, it abounds in thrills, and is watched by large crowds. High fees are paid for players, of whom the most famous has been "Babe" Ruth.

Basel (Bâle), a town in the NW. of Switzerland, on the Rhine, just before it enters Germany; has a cathedral, university, library and museum; was a centre of influence in Reformation times, and the home for several years of Erasmus; it is now a great money-market, and has manufactures of silks and chemicals; the people are Protestant and German-speaking. Pop. 148,000. The canton of the name is divided into 2 parts, Stadt and Land. Pop. (Basel-Stadt) 155,000; (Basel-Land) 92,000.

Basel, Council of, met in 1431, and laboured for 12 years to effect the reformation of the Church from within. It effected some compromise with the Hussites, but was hampered at every step by the opposition of Pope Eugenius IV. Asserting the authority of a general council over the pope himself, it cited him on two occasions to appear at its bar, on his refusal declared him contumacious, and ultimately endeavoured to suspend him. Failing to effect its purpose, it elected a rival pope, Felix V. Frederick III. supported Eugenius, and the council gradually melted away. At length, in 1449, the pope being dead, Felix resigned, and Nicholas V. was recognised by the whole Church. The decrees of the council were directed against the immorality of the clergy, the papal prerogatives and exactions, and dealt with the election of popes and the procedure of the College of Cardinals. They were all confirmed by Nicholas V., but are not recognised by modern Roman canonists.

Bases, the name given to those chemical substances which neutralise acids to give salts and water; the class includes the hydroxides and normal oxides of metals, as well as ammonium hydroxide and the hydroxides of organic ammonia derivatives (amines). Those bases which are soluble in water and turn red litmus blue are called alkalis. On the modern theory, a base is a substance which can readily combine with protons. The principal bases are sodium and potassium hydroxides, lime, and ammonia.

Bashahr, a native hill state in the Punjab, India, traversed by the Sutlej; tributary to the British Government.

Bashan, a fertile and pastoral district in NE. Palestine, of considerable extent, and at one time densely peopled; famous in Biblical times for its oaks and its cattle. Og, the king, was defeated by the Israelites and the country given to the tribe of Manasseh. Under Roman rule the district flourished but decayed thereafter; to-day only deserted ruins remain.

Bashi-Bazouks, irregular, undisciplined troops in the pay of the Sultan; rendered themselves odious by their brutality in the Bulgarian atrocities of 1876, as well as, to a lesser extent, in the time of the Crimean War.

Bashkir, autonomous Soviet Republic, in European Russia, adjoining the Ural. Ufa is the cap. Area, 40,000 sq. m. Pop. 2,695,000.

Bashkirs, originally a nomad race of E. Russia, professing Mohammedanism; they number some 500,000.

Basil, St., The Great, Bishop of Caesarea, in Cappadocia, his birthplace; studied at Athens; founded a monastic body, whose rules are followed by different monastic communities; a conspicuous opponent of the Arian heresy, and defender of the Nicene Creed; tried in vain to unite the Churches of the East and West. (326-379).

Basil I., the Macedonian, Emperor of the East; though he had raised himself to the throne by a succession of crimes, governed wisely; compiled, with his son Leo, surnamed the Philosopher, a code of laws that were in force till the fall of the empire. (d. 886).

Basilica, the code of laws, in 60 books, compiled by Basil I., and Leo, his son and successor, first published in 887, and named after the former.

Basilica, a spacious roofed hall, twice as long as broad, for public business and the administration of justice, with the judge's bench at the end opposite the entrance, in a circular apse added to it. They were first erected by the Romans, 180 B.C.; afterwards, on the adoption of Christianity, they were converted into churches, the altar being in the apse.

Basilicon Doron (i.e. Royal Gift), a work written by James I. in 1599, before the union of the crowns, for the instruction of his son, Prince Henry, containing a defence of the royal prerogative.

Basilides, a Gnostic of Alexandria, flourished at the commencement of the 2nd Century; appears to have taught the Oriental theory of emanations, which construes the universe as made up of a series of worlds, some 365 it is alleged, each a degree lower than the preceding, till we come to our own world, the lowest and farthest off from the parent source of the series, of which the God of the Jews was the ruler.

Basilisk, an animal fabled to have been of the 2nd Century; hatched by a toad from the egg of an old cock, before whose breath every living thing withered and died, and the glance of whose eye so bewitched one to his ruin that the bravest could confront and overcome it only by looking at the reflection of it in a mirror; seeing itself in a mirror, it burst, it was said, at the sight.

Also a genus of edible lizards of the Iguanidae family, found in Central America, the male of which has a spiny crest on the back. They live in trees, but take to the water when alarmed.



BASILISK

Basingstoke, a market town and parliamentary borough of Hampshire, England. A railway junction and the terminus of the Basingstoke canal; it is an agricultural centre and makes farm implements, clothing, and beer. Pop. 14,000.

Baskerville, John, a printer and type-founder, originally a writing-master in Birmingham; native of Wolverley, Worcestershire; produced editions of classical works prized for their pre-eminent beauty by connoisseurs in the art of the printer. (1706-1775).

Basket, a vessel made of willow, cane, or other materials. Specially grown willows are mostly used, the best being grown in Leicestershire and Nottinghamshire.

BASKET BALL

Basket Ball, a ball game played in an oblong field, not exceeding 3,500 sq. ft., by opposing teams of five. The goal each end consists of a pole 10 ft. high, with ringed net at top, 18 in. in diameter, fixed horizontally. The ball is put into play by the referee tossing it between the centre players. A player is out of bounds when any part of his body touches the boundary line, the floor or any object outside of the boundary line. A goal is made when the ball enters the net. The ball may be passed, rolled, batted, thrown, dribbled, in any direction.

Basking Shark (*Cetorhinus maximus*), a monster fish found in temperate seas. It has been known to grow to a length of more than 40 ft. It has a habit of basking near the surface, and is met off the W. coasts of Scotland and Ireland. It feeds on larval fish, crustaceans, etc., and is usually harmless unless attacked, when its great milk can render it dangerous to small boats.

Basnage, Jacques, a celebrated Protestant, testant divine, born at Rouen; distinguished as a linguist and man of affairs; wrote a *History of the Reformed Churches and on Jewish Antiquities*. (1653-1725).

Basoche, a former guild of clerks of the Paris Parliament.

Basque Provinces, a fertile and mineral district in N. of Spain, embracing the three provinces of Biscaya, Guipuzcoa, and Alava, of which the chief towns are respectively Bilbao, St. Sebastian, and Vittoria; the natives differ considerably from the rest of the Spaniards in race, language and customs.

Basque Roads, an anchorage between the Isle of Oléron and the mainland; famous for a British naval victory gained in 1809 over a French fleet under Vice-Admiral Allemand.

Basques, a people of the W. Pyrennes, in Spain; distinguished from their neighbours by their speech, which is non-Aryan; a superstitious people conservative, irascible, ardent, proud, serious in their religious convictions, and pure in their moral conduct. Their number about 600,000, of which total 120,000 are in French territory. Some 210,000 Basques are to be found as immigrants or descendants of immigrants in Argentine and Mexico.

Basrah, or Bassorah, a town in Iraq, at the mouth of the Euphrates and Tigris, used as a base by the British forces in Mesopotamia in the Great War. Site of an R.A.F. station and aerodrome, and on the England-India air route. Also a liwa (territorial division). Pop. (liwa) 248,000; (town) 90,000.

Bas-Relief, sculptural work, either sunken or projecting a little from the background, as distinguished from complete figure sculpture.

Bass, the name applied to any perch-like fish. The English variety is a sea fish: some are freshwater fish. All are valued as food.

Bass, or Base, a musical term. In the base voice the compass is usually from F below the B clef to D above it. The base is the lowest part in the harmony of a composition, and the lowest pitched of a class of musical instrument.

Bass Rock, a steep basaltic rock, at Forth, 350 ft. high, tenanted by solan geese; once used as a prison, especially in Covenanting times.



BLACK BASS

BASTIAT

Bass Strait, strait between Australia and Tasmania, about 150 m. broad, named after George Bass, explorer, who accompanied Matthew Flinders on his voyage to Australia (1798).

Bassano, a town in Italy, on the Brenta, 30 m. NW. of Padua; formerly had a flourishing printing industry. Scene of a French victory under Napoleon over the Austrians (1796). Pop. 20,000.

Bassano, or Jacopo da Ponte, an eminent Italian painter, chiefly of country scenes, though the "Nativity" at his native town, Bassano, shows his ability in the treatment of higher themes. (1510-1592).

Bassein, a district in Lower Burma on the E. of the Irrawaddy delta; also the capital of the district. Rice is produced. Pop. 42,000.

Basses-Pyrénées, a dept. in the which forms the boundary with Spain; among the mountain peaks passes to the number of over twenty lead from one country to the other, including the Pass of Roncaveaux (Roncesvalles) associated with Roland the paladin. Pop. 423,000.

Basset-Horn, a musical instrument, family, having more than three octaves in the compass, extending upwards from F below the bass stave. It differs from the shape of the clarinet in having a wider bell-mouth.

Bassompierre, François de, a marshal in Lorraine; entered military life under Henry IV., was a gallant soldier, and one of the most brilliant wits of his time; took part in the siege of Rochelle; incurred the displeasure of Richelieu; was imprisoned by his order twelve years in the Bastille; wrote his *Memoirs* there; was liberated on the death of Richelieu. (1579-1646).

Bassoon, a wood-wind musical instrument. It is a hollow, tapering cone some 8 ft. long, composed of five pieces called the crook, wing, butt, joint, and bell. The mouth-piece is a double reed of $\frac{1}{4}$ in. The wing joint and the butt joint each contain three holes for the first three fingers, and the butt joint contains also a single hole on the back for the thumb, and the long joint a series of keys.

Bastard, a person born out of lawful wedlock. Such a child can become legitimate in England on the subsequent marriage of the parents, provided at the time of birth both were free to marry. The father of a legitimated child must, at the time of the legitimating marriage, be domiciled in England or Wales. The Act legitimating natural issue operates as from Dec. 15, 1926, and the rights of succession to property acquired by legitimation are confined to dispositions made after legitimation took place.

Bastia, a town in NE. Corsica, the most commercial in the island, and once the capital; exports oil, fruits, etc. Pop. 35,000.

Bastian, Adolf, German anthropologist, born at Bremen, and educated as a physician. Between 1851 and 1903 travelled in Central Asia, Loango (W. Africa), Equatorial Africa, Australasia, Central and S. America, Farther India, India and Ceylon. Professor of Ethnology, Berlin, and administrator of Ethnological Museum there, from 1868. Most important work: *Peoples of Eastern Asia*, 1866-1867. (1826-1905).

Bastiat, Frédéric, an eminent political economist, born at Bayonne; a disciple of Cobden; a great advocate of Free Trade; wrote on behalf of it and against Protection, *Sophismes Economiques*; a zealous anti-Socialist. (1801-1850).

Bastide, Jules, French Radical writer, born in Paris; took part in the Revolution of 1830, and later became Minister for Foreign Affairs. (1800-1879).

Bastien-Lepage, Jules, an eminent French painter of the realistic school; also painted portraits of King Edward VII., when Prince of Wales, and Sarah Bernhardt. (1848-1884).

Bastille (*the Building*), a State prison in Paris, built originally as a fortress of defence to the city, by order of Charles V., between 1369 and 1382, but used as a place of imprisonment from the first; a square structure, with towers and dungeons for the incarceration of the prisoners, the whole surrounded by a moat and accessible only by drawbridges; "tyranny's stronghold"; attacked by a mob on July 14, 1789; demolished, and the key of it sent to Washington; the taking of it was the first event in the Revolution.

Bastinado, a European name for an Eastern method of punishment. It is given by beating, generally the soles of the feet, with a thin lath.

Basutoland, a fertile, healthy, grain-inhabited by the Basutos, an intelligent and industrious race and under protection of the British Crown; yields great quantities of maize; the natives keep large herds of cattle. The soil suffers from erosion through overstocking of cattle.

The territory came under the British Crown in 1868, when Moshesh, the chief, sought British protection against the Orange Free State burghers. It is one of the three High Commission territories which the S. African Govt. has frequently asked should be incorporated in the Union of South Africa. Pop. 560,000. There are 1,600 whites.

Bat, related to the hedgehog and shrew, and able to fly. Its senses are well developed, especially that of sight. Between the long fingers is a skin which is joined to the hind legs and tail, forming wings, and there is a remarkably sensitive nerve structure in the membrane of the nose and the wings. The ears of bats are very large and movable.



They live everywhere except in very cold areas, are nocturnal and are classified according to the food they eat, into *Megachiroptera* (fruit-eating) and *Microchiroptera* (insect-eating). The Pipistrelle is the largest of the English bats. There are three blood-sucking species, which attack men and animals in their sleep, though none occurs in England.

Batangas, a port in the island of Luzon, one of the Philippine Is., which has a considerable trade. Pop. 40,000.

Batavia, coast, and of the Dutch possessions in the Eastern Archipelago; the emporium, with a large trade, of the Far East; has a very mixed population. Also the ancient name of Holland; *insula Bata-vorum*, it was called—that is, island of the Batavi, the name of the native tribes inhabiting it. Terminus of the Dutch air line to the East. Pop. (prov.) 2,780,000, (town) 290,000.

"Love and Life," considered his masterpiece, Queen Victoria statue at Dundee, and Lord Roberts statue at Calcutta. (1850-1899).

Bates, Henry Walter, a naturalist and traveller, born at Leicester; friend of, and a fellow-labourer with, Alfred R. Wallace; author of *The Naturalist on the Amazons*. (1825-1892).

Bath, the largest town in Somerset, England, on the Avon; a cathedral city; a place of fashionable resort from the time of the Romans, on account of its hot baths and mineral waters, of which there are six springs; it was from 1701 to 1750 the scene of Beau Nash's triumphs; has a number of educational and other institutions and a fine public park. Pop. 69,000. Also a town in Maine, U.S.A. Pop. 9,000.

Bath, Order of the, an English order of Henry IV., consisting of three classes; the first, Knights Grand Cross (G.C.B.); the second, Knights Commanders (K.C.B.), and the third, Companions (C.B.); initiation into the order originally preceded by immersion in a bath, whence the name, in token of the purity required of the members by the laws of chivalry. It was originally a military order, and it is only since 1847 that civil Knights, Knights Commanders, and Companions have been admitted. The motto of the order is *Tria juncta in uno* (Three united in one), and the ribbon is crimson.



ORDER OF THE BATH
(GRAND CROSS)

Bath, Thomas Thynne, first Marquess of, whom he succeeded 1751. Disappointed. Lord-Lieutenant of Ireland, 1765; never went there. Secretary of State, N. dept., 1768; acted vigorously in suppressing Wilkes's agitation. Transferred to S. dept.; resigned, 1770, after nearly precipitating war with Spain. Again Secretary for S. dept., 1775-1779—for N. dept. also, 1779. Created Marquess of Bath, 1789. (1734-1796).

Bath, William Pulteney, Earl of, son of for Hedon, 1705-1734. Secretary for War, 1714. Broke with Walpole, 1725, and formed "the patriots" party. Struck off list of P.O.'s by George II., 1731; restored, 1742. M.P., Middlesex, 1734-1742. Earl of Bath, 1742. In 1746, Prime Minister for 2 days. (1684-1764).

Bathgate, largest town in Linlithgowshire, shire, Scotland; a mining centre. Pop. 10,000.

Bathori, Elizabeth, a Polish princess, a woman of infamous memory, caused some 650 young girls to be put to death, in order, by bathing in their blood, to renew her beauty; immured in a fortress for life on the discovery of the crime, while her accomplices were burnt alive; d. 1614.

Bathsheba, a woman of great beauty, wife of Uriah the Hittite (2 Sam.), who became wife of David after he had secured the death of Uriah in battle; the mother of Solomon.

Bathurst, (1) the principal town on the western slopes of New South Wales, with gold mines in the neighbourhood, and in a fertile wheat-growing district. Pop. 10,000.

(2) The capital of British Gambia, at the mouth of the R. Gambia, in W. Africa; inhabited chiefly by negroes; chief export ground-nuts (for manufacture of margarine). The town is being greatly improved by a reclamation scheme. Pop. 9,000.

athybius (*i.e.*, living matter in the deep), substance of a slimy nature found at great sea depth, over-hastily presumed by Huxley to be organic; proved by recent investigation to be inorganic and of no avail to the evolutionist.

atley, a manufacturing town in the W. Riding of Yorkshire, England, m. SW. of Leeds; a centre of the textile trade. Pop. 35,000.

aton-Rouge, a city on the E. bank of the Mississippi, U.S.A., 130 m. above New Orleans, and capital of the state of Louisiana; originally a French settlement. Scene of Breckenridge's defeat in the Civil War. Pop. 31,000.

Baton-Sinister, a bend-sinister like a marshal's baton, an indication of illegitimacy.

Batoum (*Batum*), a town in Georgia, Transcaucasia, on the E. of the Black Sea; capital of the autonomous Russian republic of Adjara, a place of some antiquity; has an excellent harbour, and is the terminus of the railway from Baku and Tiflis. Also connected with Baku by a petroleum oil-line. Pop. 41,000.

Batrachians, another name in zoology for the Amphibians (*q.v.*) the group of vertebrates which includes the frogs, toads, newts, etc.

Battalion, a military unit numbering 1,000 men at war strength and 860 at colonial garrison strength. It is formed of four or five companies, one of which is a machine-gun company. Battalions in other countries number 500 to 1,000 men. A British battalion is commanded by a lieutenant-colonel. The development of mechanisation is tending to reduce the numerical strength of a battalion even on active service.

Battas, a Malay race, native to Sumatra, now much reduced in numbers and driven into the interior. They are tillers of the soil, and have a written language. Cannibalism, practised until recent times, has been suppressed by the Dutch, under whose rule they are.

Batten, *Jean Gardner*, C.B.E., New Zealand aviator. First woman to fly non-stop solo, England to Rome. Flew alone, England to India, 1933. In 1936 she flew from Lympne, England, starting on Oct. 5, and landing at Auckland in New Zealand, Oct. 16, thus completing in 11 days 56 min. the first direct flight from England to New Zealand and being the first woman to fly the Tasman Sea. In 1937 she flew from Australia to England in 5 days 18 hrs. 15 mins. (1910-).

Battenberg, name of a town in Hesse-Nassau; conferred, 1858, as a princely title on the wife and issue of the morganatic marriage of Prince Alexander of Hesse with the Polish Countess Julia Theresa von Hauke. There were four sons and one daughter of the marriage. Louis Alexander, eldest son, became a British admiral and Marquess of Milford-Haven. He married Victoria, daughter of Prince Louis IV. of Hesse, and granddaughter of Queen Victoria, and in 1917 renounced his German title in favour of the surname Mountbatten (*q.v.*). (1834-1921). Henry Maurice, third son, married Queen Victoria's daughter Beatrice, and died returning from Ashanti (1858-1896); his daughter Victoria Eugénie married Alfonso XIII. of Spain. The oldest son, Alexander, bears the title Marquess of Carisbrooke.

Battering Ram, an engine of war preceding the cannon. It was constructed of a long wooden beam or spar with metal head and was designed for breaking through walls, etc. The operators were protected by a screen. It was put into motion by means of pulleys.

Battersea, a suburb of London, England, on the Surrey side of the Thames, opposite Chelsea, and connected with it by three bridges; with a park 185 acres in extent. Has a large electric power station. Pop. 160,000.

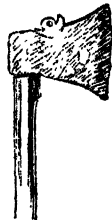
Battery (military), the basic unit of field artillery, normally consisting of six guns and gun-carriages, ammunition and stores, horses, mules and motors; the personnel includes a major, with a captain second in command, other officers, non-commissioned officers and men.

Battery, a chemical generator of electricity consisting of two metallic plates immersed in certain solutions. The chemical action taking place inside the cell causes a current to flow if the two plates are connected by a wire. The simplest battery consists of two plates, one copper, one zinc, dipping into dilute sulphuric acid; such a cell ceases to act after a time owing to bubbles of hydrogen collecting on the plate, and the batteries in general use contain some substance which will remove the hydrogen as it is formed, *e.g.*, nitric acid or potassium bichromate. Dry cell batteries in general use contain a paste of sal-ammoniac and manganese dioxide.

Batthyani, *Count Louis*, a Hungarian patriot, who fought hard but in vain to see his country reinstated in its ancient administrative independence; was arrested by the Austrians, tried by court-martial, and shot. (1806-1849).

Battle, a market town in Sussex, England, near Hastings, so called from the Battle of Senlac, in which William the Conqueror defeated Harold in 1066. It is famous for its abbey, which is now a girls' school. Pop. 3,500.

Battle-Axe, an instrument of warfare, in use from the earliest times. It was a cleaving weapon, the head being of stone in most primitive times, of bronze during the Bronze Age, and later of iron and steel. In the Middle Ages it was frequently attached to the wrist by an iron chain. It was with such a weapon that Robert the Bruce killed Henry de Bohun with a single blow at the Battle of Bannockburn.



Battle Creek, a city of Michigan, U.S.A., centre of an agricultural district; prepared foods are manufactured and there are extensive engineering works. Pop. 43,000.

Battle Honours, the name usually of campaigns, sieges, etc., worked on the regimental colours or standards of infantry and cavalry regiments and to regimental mottoes, badges, or other devices. All battle honours are granted by the King in Army Orders, and will be found recorded in the Army List. The names mostly begin about the end of the 17th Century. The nomenclature of battles of the Great War was settled by a departmental committee set up after the War.

Instances of distinctive badges, etc., are those of the Gloucestershire Regiment worn both in front and at the back of the cap to commemorate their defeat of the invincible Legion of Napoleon at Alexandria, which attacked them both in front and in the rear; the "flash" of the Royal Welch Fusiliers, etc. The honours of Artillery units are given in the form of special titles of batteries.

Battlement, a protective parapet on a wall with breaks or low intervening spaces (called crenelles) at regular

intervals through which a soldier could shoot whilst remaining protected by the uprights or merlons.

Battle of the Books.

Battle of the Spurs, an engagement at Courtrai in 1302 where the burghers of the town beat the knighthood of France, and the spurs of 4,000 knights were collected after the battle; (2) an engagement at Guinegate, 1513, in which Henry VIII. made the French forces take to their spurs.

Battleship, the heaviest class of warship, often referred to as capital ships, a term which includes battle-cruisers, which are nominally faster boats, the extra speed being achieved at some slight sacrifice of armour. Armour plate was first used to protect warships by the French after Russian shore batteries had done some considerable damage to wooden ships in the Crimea. These true "Ironclads" were still built of wood, but were successfully protected with 4-in. wrought-iron plates.

England did not follow suit until 1859, when the building of an iron warship, the *Warrior*, was commenced. This ship was of 9,000 tons displacement, and was protected with 4½-in. plates. Revolving turrets were introduced in the *Royal Sovereign* in 1862, and shortly became the standard main armament of a battleship, the type ship being the *Devastation*, with armour varying from 8 in. to 12 in. and two 2-gun turrets protected by 14-in. armour, a type which was followed, with improvements, for some 20 years.

Increase in gun-power has accounted for most subsequent developments. Larger vessels had to be built to carry the heavy armament. Heavier armour and improved substitutes for wrought-iron plates, with greater resisting power, were introduced to withstand the heavier fire. The *Dreadnought*, completed and commissioned in 1906, has been called the forerunner of the modern Navy. She was 490 ft. long, displaced 17,900 tons, carried ten 12-in. guns in five turrets and a number of smaller guns and had a speed of 21 knots.

To-day there are 15 capital ships in the British navy (three, including the *Hood*, the most powerful ship afloat, classifying officially as battle-cruisers) and five authorised in estimates. The Washington Conference attempted to limit the size and armaments of battleships, and a Treaty, signed there in 1922, prescribed a limit of 35,000 tons and 16-in. guns for battleships. At the London Naval Conference of 1935 it was hoped to devise means to continue the benefits of the Washington Treaty which, in the meantime, had become unacceptable to many of its signatories, especially the United States and Japan. But this hope proved ill-founded and Great Britain has been, in effect, compelled to follow the United States and Japan in notifying the other signatories of their intention to abrogate the Washington Treaty limits. The London Naval Treaty of 1936, however, provides for the interchange between signatories of information regarding their intended building programmes.

Battue, method of killing game after beating them towards the sportsmen.

Bauchi, an upland province of N. Nigeria, W. Africa, having an area of about 20,000 sq. m. Formerly a slave-trading centre, it was brought under British control in 1902. Its capital bears the same name.

Baudelaire, **Charles Pierre**, French poet of the romantic school, born in Paris; distinguished among his contemporaries for his originality and his influence on others of his class; was a charming writer of prose and verse. (1821-1867).

Bauer, **Bruno**, a daring Biblical critic, and violent polemic on political as well as theological subjects; born at Saxe-Altenburg; regarded the Christian religion as overlaid and obscured by accretions foreign to it; denied the historical truth of the Gospels, and, like a true disciple of Hegel, ascribed the troubles of the 19th Century to the overmastering influence of the "Enlightenment" or the "Aufklärung" that characterised the 18th Century. (1809-1882).

Baumgarten, **Alexander Gottlieb**, professor of Philosophy at Frankfurt-on-the-Oder; disciple of Wolff; born at Berlin; the founder of Esthetics as a department of philosophy, and inventor of the name. (1714-1762).

Baur, **Ferdinand Christian**, head of the Tübingen school of rationalist divines, born near Stuttgart; distinguished by his scholarship and his labours in Biblical criticism and dogmatic theology; his dogmatic treatises were on the Christian Gnosis, the Atonement, the Trinity, and the Incarnation, while his Biblical treatises were on certain epistles of Paul and the canonical Gospels, which he regarded as the product of the 2nd Century; regarded Christianity of the Church as Judaic in its origin, and Paul as the first apostle of pure Christianity. (1792-1860).

Bautzen, old town of Saxony, on the Prussians and Russians in 1813; manufactures textiles, tobacco, etc. Pop. 42,000.

Bauxite, a hydrated oxide of aluminium and ferric oxide occurring as a mineral in most parts of the world and used in the manufacture of aluminium, alum, and cement.

Bavaria, next to Prussia the largest of the German States; separated by mountain ranges from Czechoslovakia on the E. and the Tyrol on the S.; Würtemberg, Baden, and Hesse lie on the W., Prussia, Thuringia, and Saxony on the N. The country is a tableland crossed by mountains, and lies chiefly in the basin of the Danube. It is a busy agricultural state; a third of the soil is tilled; the rest is under grass, planted with vineyards, or forest land. Salt, coal, and iron are widely distributed and wrought.

The chief manufactures are beer, coarse linen, and woollen fabrics. There are universities at Munich, Würzburg, and Erlangen. Munich, on the Isar, is the capital; Nuremberg, where watches were invented, and Augsburg, a banking centre, are the other chief towns. Formerly a dukedom, the palatinate, on the banks of the Rhine, was added to it in 1216. Napoleon I. raised the duke to the title of king in 1805.

Bavaria fought on the side of Austria in 1866, but joined Prussia in 1870-1871. On Nov. 22, 1918, it became a republic, but popular government was abolished in 1935 by the Nazis, and a governor (Statthalter) with absolute power appointed. Pop. 7,700,000.

Bax, **Arnold Edward Trevor**, composer; first composition performed at St. James's Hall, 1903. Published *A Celtic Song-Cycle*, choral works, symphonic poems, piano pieces, and songs; orchestral music, including *The Garden of Fand*, etc. (1883-).

Bax, **Ernest Belfort**, English socialist writer, born at Leamington, studied in Germany. In 1885, with William Morris, founded the Socialist League. Afterwards joined the Social Democratic Federation. Called to Bar, 1894. Wrote books on philosophy, essays on socialism, a Life of Marat, other works on revolutionary movements in France and Germany, and fierce anti-feminist diatribes. (1851-1926).

Baxter, **Richard**, an eminent Nonconformist divine, native of Shropshire, at first a conformist, and parish minister of Kidderminster for 19 years; sympathised

h the Puritans, yet stopped short of going full length with them; acted as chaplain one of their regiments, and returned to Westminster; became, at the Restoration, one of the king's chaplains; driven out of the arch by the Act of Uniformity, was thrown in prison at 70, released, spent the rest of his life in peace; his voluminous popular works include *The Saints' Everlasting Rest*, and his *Life of the Unconverted*. (1615-1691).

ayadere, a dancing-girl in India, a girl, dressed in loose Eastern costume; of two classes, one attached to temples and associated with religious rites, the other (Nautch girls) travelling about the country.

ayard, a horse of remarkable swiftness, belonging to the four sons of Adam, which they sometimes rode all at once; also a horse of Amadis de Gaula, better known under the Italian form, Bayardo.

ayard, *Chevalier de*, an illustrious French knight, born in the 14th century, near Grenoble; covered himself with glory in the wars of Charles VIII., Louis XII., and Francis I.; his bravery and generosity procured for him the cognomen of *"le Knight sans peur et sans reproche"*; his most brilliant feat was his defence, single-handed, of the bridge over the Garigliano, the face of a large body of Spaniards; mortally wounded defending a pass at Blategrasso. (1476-1524).

ay City, a place of trade, and of importance, as a great railway centre in Michigan, U.S.A.; the third city in the State. Industries include chemicals and beet-sugar. Pop. 47,000.

ayeux, an ancient Norman city in the dept. of Calvados, France; manufactures lace, hosiery, etc.; is a bishop's see; has a very old Gothic cathedral of the 12th century. Pop. 7,000.

ayeux Tapestry, representations in tapestry of events connected with the Norman invasion of England, commencing with Harold's visit to a Norman court, and ending with his death at the Battle of Hastings; still preserved in a public library of Bayeux; is so called because originally found there; it is 230 ft. long by 20 in. wide, divided into 72 scenes, and contains a variety of figures. Whose work the tapestry was is unknown; its first historical mention was in an inventory of 69; its later discovery due to Bernard Montfaucon, who published reproductions 1729-1733.

ayle, *Pierre*, a native of Languedoc; a first Protestant, then Catholic, an sceptic; professor of Philosophy at Sedan, then at Rotterdam, known chiefly as the author of the famous *Dictionnaire historique et Critique*, which became the fountain-head of the sceptical philosophy that reigned in France on the eve of the Revolution. 1647-1706.

aylis, *Lillian Mary*, manager of Old Vic London, niece of Emma Cons, whom she succeeded at the Old Vic, 1912. Introduced makespools as a permanent programme, 1914. Co-operated Sadler's Wells, 1931. Was violinist in the Philharmonia, 1937. (1874-1937).

ayonet, a short, spear-like weapon which can be attached to a belt and used for hand-to-hand fighting. It is supposed to have been first devised at Avonnes in France, whence the name. They were first introduced into the British army in the 17th century. Recently the bayonet fixed in the British army has been shortened and lightened.

ayonne, a fortified French town, trading port, and manufacturing, in the dept. of Basses-Pyrénées, at the confluence of the Adour and Nive, 4 m. from the Bay of

Biscay; noted for its strong citadel, constructed by Vauban and one of his *chefs-d'œuvre*, and its 12th-century cathedral church; it belonged to the English from 1152 to 1451. Pop. 31,000. Also a town in New Jersey. Pop. 90,000.

Bayreuth, the capital of Upper Franconia, in Bavaria, with a large theatre erected by the King for the performance of Wagner's musical compositions, and with a monument, simple but massive, to the memory of Jean Paul Richter, who died there. Liszt was also buried here. Has a large textile industry. Pop. 37,000.

Bay Rum, an aromatic liquid composed of oil of bay, alcohol, water, oil of orange peel, etc., and used for hair-dressing.

Bay Tree, a species of laurel, growing in Italy, Greece, and other Mediterranean countries. Its leaves are dried and used as flavouring for fish dishes and soups.

Bazaar, an Eastern name of a market where goods are displayed for sale. The bazaars of Egypt and Turkey attract all visitors. The name has been adopted by shopkeepers in the W., and sales of goods by religious organisations are commonly called bazaars.

Bazaine, *François Achille*, a marshal of France, born at Versailles; distinguished himself in Algiers, the Crimea, and Mexico; did good service, as commander of the army of the Rhine, in the Franco-German War, but after the surrender at Sedan was shut up in Metz, surrounded by the Germans, and obliged to surrender, with all his generals, officers, and men; was tried by court-martial, and condemned to death, but was imprisoned instead and made his escape to Madrid. (1811-1888).

Bazalgette, *Sir Joseph William*, Civil Engineer, born at Enfield. With William Haywood, projected reform of London drainage. Appointed chief engineer to Metropolitan Board of Works, 1855. Carried out his drainage plan, 1858-1875. Formed Thames Embankments, 1862-1874. Knighted, 1874. (1819-1891).

Bazard, *Saint-Amand*, a French socialist, founder of the *Charbonnerie Française*; a zealous but unsuccessful propagator of St. Simonianism, in association with Etienne Cabet, from whom he at last separated. (1791-1832).

Bdellium, a gum-resin product, mentioned in Genesis, to which manna was likened; generally identified with the Greek *bdellion*, a transparent, yellow, wax-like substance exuded by a tree found in the Middle East, particularly Arabia.

Beaches, *Raised*, elevated lands, formerly sea beaches, the result of upheaval, or left high by the recession of the sea, their origin being shown by the shells found in them and the nature of the debris.

Beachy Head, a chalk cliff in Sussex, 375 ft. high, projecting into the English Channel; famous for a naval engagement in 1690 between the allied English and Dutch fleets and that of France, in which the latter was successful.

Beacon, originally a fire lighted on a high eminence as a sign, usually one of warning. Warning is now given on rivers and at sea by illuminated beacons on rocks, sandbanks, and to denote channels. These beacons are made of concrete or iron, and are illuminated by oil or gas. Electrically illuminated beacons serve to denote air routes and by Act of 1934 beacons may be erected to show road crossings for pedestrians. Great numbers, yellow in colour and popularly known as Belisha beacons, have now been put up throughout the country. The name

Beacon has been given to some hills where beacons formerly burned, as Dunkery Beacon, Exmoor.

Beaconsfield, capital of the gold-mining district in Tasmania; also a town in Buckinghamshire, 10 m. N. of Windsor, from which Benjamin Disraeli took his title on his elevation to the peerage. Pop. 4,800.

Beaconsfield, **Benjamin Disraeli**, Earl of, British politician and novelist, born in London; son of Isaac D'Israeli, litterateur, and thus of Jewish parentage; educated under a Unitarian minister; studied law, but did not qualify for practice. His first novel, *Vivian Grey*, appeared in 1826, and thereafter, whenever the business of politics left him leisure, he devoted it to fiction. *Contarini Fleming*, *Coningsby*, *Tancred*, *Lothair*, and *Endymion* are the most important of a brilliant and witty series, in which many prominent personages are represented and satirised.

His first seat in Parliament was for Maidstone in 1837; thereafter he represented Shrewsbury and Buckinghamshire. For 9 years he was a free-lance in the House, hating the Whigs, and after 1842 leading the Young England party; his onslaught on the Corn Law repeal policy of 1846 made him leader of the Tory Protectionists. He was for a short time Chancellor of the Exchequer under Lord Derby in 1852, and abandoned Protection.

Returning to power with his chief 6 years later, he introduced a Franchise Bill, the defeat of which threw out the Government. In office a third time in 1866, he carried a democratic Reform Bill.

In 1874 he entered his second premiership. The securing of the half of the Suez Canal shares for Britain; the proclamation of the Queen as Empress of India; the support of Constantinople against Russia, afterwards stultified by the Berlin Congress; the annexation of Cyprus; the Afghan and Zulu Wars, were its salient features. Defeated at the polls in 1880 he resigned, and died next year. (1804-1881).

Beadle, now a parish constable, but in Saxon times he was a messenger who summoned householders to the moot. From the time of the Norman Conquest he was an orderly officer of the church and manor. In the Scottish church he waits on the minister.

Beagle, a small English hound largely employed in the hunt. It is only 11 to 17 in. in height, with wide shoulders and deep chest. The coat is thick and variously coloured. Beagles have great staying power.

Beale, **Dorothea**, a pioneer in higher education for girls. In 1858 appointed first principal of the Ladies' College, Cheltenham, which she developed on new lines; her work served as a model for the many girls' high schools which followed. (1831-1906).

Beam Transmission, a system of short-wave wireless transmission whereby the waves sent out are confined to a beam in the direction of the receiving station, instead of being radiated equally in all directions.

Bean, the seed of many plants which in different varieties form a valuable article of food. The pods of the French bean, the scarlet runner, and of some others are eaten as green vegetable. The broad bean

has many varieties and the seed is eaten. The soya bean, eaten in Japan, also makes green fodder, and oil is extracted from the seed. The green gram and black gram are valuable horse feed. Beans are much valued because of their proteid content and fattening properties.

Bear, a mammal of the Ursidae order, of clumsy and strong appearance, and covered with thick fur, with a short neck, round head, pointed muzzle, and small eyes. It is "plantigrade," i.e., walks flat-footed like man and the toes have long, curved claws. It is equipped with canine and molar teeth, being a flesh- and vegetable-eater.

The wild bear hibernates for from 2 to 6 months during the winter, and different species are found throughout Europe, Asia, America and N. Africa. The N. American bear includes the black bear, grizzly bear, Alaskan bear, and Polar bear. Other varieties include the Himalayan bear and the Malayan or Sun bear.

Bear. See **Bulls and Bears**.

Bear, Great. See **Ursa Major**.

Bear-Baiting, a form of sport at one time popular in many countries and common in Roman times. It was brought to England in the 11th Century and flourished until the 18th Century. Dogs were employed to worry the animal, and wagers on "favourites" were common at public bear-gardens on Sundays and Thursdays.

Beard Moss, a botanical name for a lichen (*Usnea barbata*); the name is suggested by the fact that the lichen creeps over stems to branches of trees; hanging down in thick spliths.

Beardsley, **Aubrey Vincent**, a distinguished black-and-white artist with a high sense of the decorative; illustrated many notable volumes, including the *Morte d'Arthur*, and was art editor of the *Yellow Book*. (1872-1898).

Bearn, an ancient province of France, fell to the crown with the accession of Henry IV. in 1589; formed a great part of the dept. of Basses-Pyrénées; cap. Pau.

Beatification, religious honour allowed by the Pope to certain who are not so eminent in sainthood as to entitle them to canonisation.

Beating the Bounds is carried out on Ascension Day in some parishes by ministers and officers of the church and choir-boys walking in procession to the parish boundaries, and there beating with a willow as a remembrance of the location. Sometimes the boys take the beating and money compensation.

Beatitudes, in theology, the nine intimations in the Sermon on the Mount, each of which commences with the words "Blessed are . . ." (Matt. v).

Beaton, or **Bethune**, **David**, cardinal, Archbishop of St. Andrews, and primate of the kingdom, born in Fife; an adviser of James V., twice over ambassador to France; on the death of James secured to himself the chief power in Church and State as Lord High Chancellor and Papal Legate; opposed alliance with England; persecuted the Reformers; condemned the preacher, George Wishart, to the stake, witnessed his sufferings from a window of his castle in St. Andrews, and was assassinated within its walls shortly after. (1494-1546).

Beaton, **James**, Archbishop of Glasgow and St. Andrews, uncle of the preceding, a prominent figure in the reign of James V.; was partial to affiliation with France, and a persecutor of the Reformers; d. 1539.



LORD BEACONSFIELD

Beatrice, a beautiful Florentine maiden of the family of Portinari, for whom Dante conceived an undying affection, and whose image abode with him to the end of his days. She is the heroine of his *Vita Nuova* and *Divina Commedia*.

Beattie, James, a poet and essayist, born at Laurencekirk; became professor of Logic and Moral Philosophy at Marischal College, Aberdeen; wrote an *Essay on Truth* against Hume; his chief poem, *The Minstrel*, a didactic piece, tracing the progress of poetic genius. (1735-1803).

Beatty, David, Earl, Admiral of the British Fleet; commanded the Battle Cruiser Squadron from 1912 to 1916, when he succeeded Lord Jellicoe as commander of the whole fleet after the Battle of Jutland. From 1919 to 1927 he was First Sea Lord; was raised to the peerage in 1919 and granted £100,000 by the nation. (1871-1930).

Beau Brummell (George Bryan Brummell), a notable leader of fashion in the Regency; an intimate friend of George IV.; owing to losses in gambling died in poverty. (1778-1840).

Beaucaire, a French town near Avignon, on the Rhone, which it spans with a magnificent bridge; once a great centre of trade, and famous for its annual fair.

Beaufort, Henry, cardinal, Bishop of Winchester, son of John of Gaunt, learned in canon law, was several times chancellor; took a prominent part in all the political movements of the time, lent immense sums to Henry V. and Henry VI., also left bequests for charitable uses, and founded the hospital of St. Cross at Winchester. (1377-1447).

Beaufort Scale, a table consisting of 12, to signify the strength of winds. It was evolved in 1806 by Admiral Beaufort, and classified winds at sea according to their variation from calm to a hurricane. The International Meteorological Committee adopted the scale in 1874 as a part of the code employed in communicating weather conditions. The numbers include 0 calm; 1-3 light breeze; 4-5 moderate; 8-9 gale; 12 hurricane.

Beauharnais, Alexandre, Vicomte de, born at Martinique, where he married a lady who afterwards, as wife of Napoleon, became the Empress Josephine; was secretary of the National Assembly and its president when Louis XVI. fled from the capital; was convicted of treachery to the cause of the Revolution and put to death. (1760-1794).

Beauharnais, Eugène de, son of the phine, born at Paris, step-son of Napoleon, therefore was made viceroy of Italy; took an active part in the wars of the empire; died at Munich, whither he retired after the fall of Napoleon. (1781-1824).

Beaulieu, a village of Hants, England, in the New Forest, on the little Beaulieu R. Here are the ruins of an abbey founded by King John. Pop. 1,000.

Beaumarchais, Pierre Augustin Caron de, a dramatist and pleader of the most versatile, brilliant gifts, and French to the core, born in Paris, son of a watchmaker at Caen; ranks as a comic dramatist next to Molière; author of *Le Barbier de Séville* and *Le Mariage de Figaro*, his masterpiece. He was a zealous supporter of the Revolution, and made sacrifices on its behalf but narrowly escaped the guillotine; died in distress and poverty. (1732-1799).

Beaumaris, principal town in Anglesea, Wales, on the Menai Strait, near Bangor, a favourite watering-

place, with remains of a castle erected by Edward I. Pop. 1,700.

Beaumont, a lumbering and petroleum town of Texas, U.S.A. Pop. 57,000.

Beaumont, Francis, dramatic poet, born in Leicestershire of a family of good standing; bred for the Bar, but devoted to literature; was a friend of Ben Jonson; in conjunction with his friend Fletcher the composer of a number of plays, about the separate authorship of which there has been much discussion; buried in Westminster Abbey. Their masterpieces were *Philastre*; *The Knight of the Burning Pestle*, and *The Maid's Tragedy*. (1584-1616).

Beaumont Hamel, a village in France, 6 m. N. of Albert, near the R. Ancre. It was the scene of heavy fighting in the battles of the Somme and the Ancre, 1916. Beaumont Hamel was held by the Germans, who were afforded efficient protection for their forces by the large quarries. It was attacked July 1 (the Battle of the Somme) by British troops, which, after most severe fighting and little progress, were compelled to retire to their original positions. At the Battle of the Ancre, Nov. 1916, the 51st Highlanders (Territorial) Div. and the Royal Naval Div. (Infantry) stormed Beaumont Hamel, capturing 1,500 men and many machine-guns.

Beau Nash (Richard Nash), a Welshman who superintended the social activities of Bath; died in beggary. (1674-1762).

Beaune, a town in the dept. of Côte burgundy wine. Pop. 12,000.

Beausobre, Isaac, a Huguenot divine, born at Poitou; fled to Holland on the revocation of the Edict of Nantes, settled in Berlin, and became a notability in high quarters there; attracted the notice of the young Frederick, the Great that was to be; author of a *History of Manichæism*, praised by Gibbon, and of other books famous in their day, including a translation of the New Testament. (1659-1738).

Beauvais, capital of the dept. of Oise, in France, 34 m. SW. of Amiens, an ancient town, noted for its cathedral, its tapestry-weaving, and the feat of Jeanne Hachette and her female following when the town was besieged by Charles the Bold in 1472. Near by the British airship *R. 101* crashed in flames in Oct., 1930 with the loss of all on board. Pop. 19,000.

Beaver, an amphibious rodent related to squirrels and prairie dogs. There are two species, the European and N. American. They are chiefly valued for their fur, but also for castoreum, an extract from their glands used in medicine. Beavers grow from 1 to 2 ft. long in the body, with broad, flat tails and webbed feet. They burrow the banks of streams, where they build their homes of timber, twigs, and mud. To get timber to their homes they fell trees by gnawing at their base and float them, afterwards constructing dams. The bark forms their food.



BEAVER

Beaverbrook, Lord (W. M. Alden), son of a New Brunswick minister, he was active in the organisation of the Canadian forces in France. From 1910 to 1917 he was Conservative M.P. for Ashton-under-Lyne, was knighted in 1911, and raised to the peerage in 1916. He acquired control of the *Daily Express* group of papers, and in 1918 served

for a short time as Chancellor of the Duchy of Lancaster. Advocated an Empire Free Trade policy. (1879-)

Bebek Bay, a fashionable resort on the Bosphorus, near Constantinople (Istanbul), and at one time the site of a palace of the sultan.

Bebington, urban district of Cheshire, England, on the Mersey, 3 m. S. of Birkenhead, a residential district for Liverpool. Pop. 35,000.

Bec, Abbey of, a Benedictine abbey of Normandy, near Bernay, which in the 11th Century, under Lanfranc and St. Anselm, was a famed seat of learning; now in ruins.

Beccaria, Cesare Bonesana, Marquis of, an Italian publicist, author of a celebrated *Treatise on Crimes and Punishments*, which has been widely translated and contributed much to lessen the severity of sentences in criminal cases. He was a utilitarian in philosophy and a disciple of Rousseau in politics. (1735-1794).

Beccles, a market town of Suffolk, England, on the Waveney. Printing, corn-milling, market-gardening, and the manufacture of farm implements are carried on. Pop. 7,000.

Bêche-de-Mer, or **Trepang**, a species of *echinoderm*, also known as sea-cucumbers, extensively used in the far East by the Chinese and Malay peoples in gelatinous soups.

Becher, Johann Joachim, chemist, born at Spire; distinguished as a pioneer in the scientific study of chemistry; wrote *Physica Subterranea* and originated the Phlogiston Theory (q.v.). (1635-1682).

Bechstein, Karl, pianoforte-maker, born at Gotha, Germany, founder in Berlin of the piano-factory that has become world-famous. (1826-1900).

Bechuanaland (British Bechuanaland Protectorate), an inland tract in S. Africa, extends from the Orange R. to the Zambezi. On a plateau 4,000 ft. above sea-level. The soil is fertile; extensive tracts are suitable for corn; sheep and cattle thrive; rains fall in summer; in winter there are frosts, sometimes snow. The whole country came under British protection in 1885. A Resident Commissioner was appointed in 1890. In 1895 that part S. of the Molopo R. which had already been declared a Crown Colony in 1885 was annexed to the Cape of Good Hope as British Bechuanaland.

The Northern part is at present administered by a Resident Commissioner under the title Bechuanaland Protectorate. It is one of the High Commission territories which under the South Africa Act 1909 seems destined to become incorporated in the Union of South Africa. The acting-chief (during the minority of Seretse), Tshekedi, of the leading tribe (Bamangwato), has proved a bitter opponent of this policy, besides resisting attempts to undermine his real or imaginary authority as the son of King Khama, who died in 1923. Pop. (1936) 266,000 (1,900 Europeans).

Bechuanas, a widespread S. African race, totemists, rearers of cattle, and growers of maize; are among the most intelligent of the Bantu peoples, and show considerable capacity for self-government.

Beck, Adolf, Norwegian, victim of a judicial mistake; sentenced in 1896 to 7 years' penal servitude for thefts from women. Released 1901, again convicted in 1904; but, upon discovery of the person he had been mistaken for, released and granted £5,000. Result: establishment of Court of Criminal Appeal. (1841-1909).

Beckenham, an urban district and residential district of Greater London. Pop. 44,000.

Becket, St. Thomas à, Archbishop of Canterbury, born in London, of Norman parentage; entered the Church; was made Lord Chancellor; had a large and splendid retinue, but on becoming archbishop cast all pomp aside and became an ascetic, and devoted himself to the vigorous discharge of the duties of his high office; declared for the independence of the Church, and at first refused to adhere to the Constitutions of Clarendon (q.v.); King Henry II. grew restive under his assumption of authority, and got rid of him by the hands of four knights, who, to please the king, shed his blood on the steps of the altar of Canterbury Cathedral, for which outrage the king did penance four years afterwards at his tomb. The struggle was one affecting the relative rights of Church and king, and the chief combatants in the fray were both high-minded men, each inflexible in the assertion of his claims; he was canonised in 1172, his festival being the day of his martyrdom, Dec. 29. (1118-1170).

Beckford, William, author of *Vathek*, son of a rich alderman of London, who bequeathed him property to the value of £100,000 per annum; kept spending his fortune on extravagancies and vagaries; is alleged to have written *Vathek*, an Arabian tale, when a youth of 22 at a sitting of three days and two nights, a work on which his fame rests and which established his reputation as one of the first of the imaginative writers of his country; the story of its inception is now discredited. (1760-1844).

Becquerel, Antoine César, a French physicist; served as engineer in the French army in 1808-1814, but retired in 1815, devoting himself to science, and obtained high distinction in electro-chemistry, working with Ampère, Biot, and other eminent scientists. (1788-1878).

Becquerel, Antoine Henri, grandson of the preceding. He discovered that uranium gives off rays which affect a photographic plate, and carried out researches on magnetism and phosphorescence. His work on radioactivity won him a Nobel Prize in 1903. (1852-1908).

Bedchamber, Lords or Ladies of the, officers or ladies of the royal household whose duty it is to wait upon the sovereign—the chief of the former called Groom of the Stole, and of the latter Mistress of the Robes. There are also Grooms in Waiting and Women of the Bedchamber.

Bedchamber Question, arose in 1839. It had been the custom at Court for the personal attendants of the sovereign to represent the opinions of the Government and, in the event of a change of Government, for the old attendants to give way to new. When Lord Melbourne's Ministry resigned in consequence of his failure to secure the passage of a Bill to suspend the Constitution of Jamaica by more than five votes, Sir Robert Peel attempted to form a Ministry, and wished for the Ladies of the Bedchamber to be changed in accordance with the usual practice. Queen Victoria refused, and he gave up the attempt. Melbourne returned to office with a weakened party behind him, and although the Jamaica Bill was reintroduced in a modified form, it was rejected.

Beddgelert, a village and tourist centre of Caernarvonshire, Wales, at the foot of Snowdon. Slate and copper are worked. It is named "grave of Gelert" after the legendary hound of King Llewellyn. Pop. 1,000.

Beddington, a parish and village of Surrey, England, now a residential district of Greater London. It was formerly the seat of the Carew family. Pop. 10,000.

Beddoes, Thomas Lovell, born at Clifton, studied first in medicine; an enthusiastic student of science; a dramatic poet, author of *The Bride's Tragedy*; got into trouble for his Radical opinions; his principal work, *Death's Jest-Book, or the Fool's Tragedy*, highly esteemed by Barry Cornwall. (1803-1849).

Bede, or **Beda**, surnamed "The Venerable," an English monk and ecclesiastical historian, born at Wearmouth, in the abbey of which, together with that of Jarrow, he spent his life, devoted to quiet study and learning; his writings numerous and encyclopedic, in the shape of commentaries, biographies, and scientific and philosophical treatises; his most important work, the *Ecclesiastical History of England*, written in Latin, and translated by Alfred the Great; completed a translation of St. John's Gospel the day he died. (c. 672-675).

Bedesman, or **Beadsman**, a pensioner or, whose duty it was, to pray for the soul or spiritual welfare of his benefactor. Bedesmen were attached to the churches. In Scotland they were public almsmen corresponding in number to the age of the King, by whom they were maintained.

Bedford, a midland agricultural county of England, generally level, with some flat fen-land; also the county town, on the Great Ouse, with a fine park and excellent educational institutions, famous in connection with the life of John Bunyan, where relics of him are preserved, and where a bronze statue of him by Boehm was erected to his memory by the Duke of Bedford. Manufactures agricultural implements, lace, and straw plaiting; Elstow, Bunyan's birth-place, is a mile distant. Pop. (county) 221,000; (town) 40,500.

Bedford College, a school of the University of London, founded in 1849 to provide a liberal education for women. Students are prepared for all examinations of the University of London in Arts and Science and in general courses of study.

Bedford, Dukedom of, was bestowed: first on John, third son of Henry IV., later on George Neville, son of the Earl of Northumberland (c. 1457-1480); and again in 1485 on Jasper Tudor, son of Sir Owen Tudor. An earldom of Bedford (the second) was bestowed, 1550, on John Russell (descended from one Stephen Russell, a Dorset landowner of Richard II.'s time), who had been made Baron Russell in 1539 (c. 1485-1555). His lineal descendant, the fifth earl, was made duke 1694 (1616-1700). The Duke of Bedford to-day is one of the largest landowners in London.

Bedford, John, Duke of, brother of the kingdom and regent of France during the minority of Henry VI., whom, on the death of the French king, he proclaimed King of France, taking up arms thereafter and fighting for a time victoriously on his behalf, till the enthusiasm created by Joan of Arc turned the tide against him and hastened his death, previous to which, however, he prevailed over the Dauphin and burnt Joan at the stake. (1389-1435).

Bedford Level, a flat, marshy district, comprising part of six counties, to the S. and W. of the Wash, about 40 m. in extent each way, caused originally by incursions of the sea and the overflowing of rivers; received its name from the Earl of Bedford, who, in the 17th Century, undertook to drain it.

Bedlam, a lunatic asylum in Lambeth, London, so named from the priory "Bethlehem" in Bishopsgate, first

appropriated to the purpose, Bedlam being a corruption of the name Bethlehem. It was founded in 1247, transferred to Moorfields in 1676, and moved to Lambeth in 1815. It has been moved to the country, and the building is now occupied by the Imperial War Museum.

Bedlingtonshire, or **Bedlington**, an urban district of Northumberland, England, on the Elyth. It has collieries and glass and iron works, and gives its name (Bedlington) to a breed of terrier. Pop. 27,000.

Bedlington Terrier, a rough, stiff-coated game terrier. It is commonly grey-blue in colour, about 14 in. high and weighs 20-25 lb. The muzzle is long. It was first bred in Bedlington, Northumberland, England.



BEDLINGTON
TERRIER

Bedloe's Island, a small island at the entrance to New York harbour, on which stands the Statue of Liberty.

Bedmar, **Marquis de**, Cardinal and Bishop of Oviedo, and a Spanish diplomatist, notorious for a part he played in a daring conspiracy in 1618 aimed at the destruction of Venice, but which, being betrayed, was defeated, for concern in which several people were executed, though the arch-delinquent got off; he is the subject of Otway's *Venice Preserved*; it was after this that he was made Cardinal and Governor of the Netherlands, where he was detested and obliged to retire. (1572-1655).

Bed of Justice, a formal session of the Parlement of Paris, under the presidency of the King, for the compulsory registration of the royal edicts, the last session being in 1788, under Louis XVI., at Versailles, whither the whole body, now "refractory," rolled out, in wheeled vehicles, to receive the order of the king.

Bedouins, Arabs who lead a nomadic life in the desert and subsist by the pasture of cattle and the rearing of horses, the one element that binds them into a unity being community of language, the Arabic, namely, which they all speak with great purity and without variations of dialect; they are generally of small stature, of wiry constitution, and dark complexion, and are divided into tribes, each under an independent chief. Their earliest place of settlement was probably in the Hejaz or in the Nejd, whence they migrated into Egypt, Mesopotamia (Iraq), and Syria.

Bedsore, sores which are liable to develop on all prominent parts of the body on any patient who is confined to bed for a considerable length of time and whose vitality is low.

Bedstead, a term employed to denote the early Egyptian bedstead was a low, wooden framework across which rushes were spread. Excavations at Pompeii have revealed bronze posts which supported wooden frames for bedsteads. The 12th Century introduced a slope in the bedsteads from head to foot, and the 16th Century the four-poster bedsteads with their elaborate carving. The tester bedstead, with canopy and side curtains, of the 15th Century was reintroduced in the 17th Century. Bedsteads of various woods are the present vogue, to the exclusion of the brass and iron bedsteads of the 19th Century.

Bedstraw, or *Galium*, a genus of annual or perennial herbaceous plants of the order Rubiaceae, comprising some 200 species, of which 10 are found in Great Britain. The flowers are white, yellow, or red, in terminal panicles, sometimes in small clusters. *G. verum* (popular name, *cheese rennet*) may be used to curdle milk. *G. aparine* is the English goose-grass or cleavers.

Bedwellty, an urban district and Monmouthshire, parliamentary division of Monmouthshire, England, 7 m. W. of Pontypool. Here are coalmines and iron works. Pop. 30,000.

Bedworth, town of Warwickshire, England, on the Coventry Canal, 3½ m. S. of Nuneaton, with coal and iron mines, iron works and brick-fields. Pop. 12,000.

Bee, insect belonging to the order Hymenoptera. A colony of bees comprises three types of bees, the queen, drones and workers, and may number in all from 1,000 to 100,000. The queen is the only female in the colony, and she is produced from the worker egg by special feeding carried out by the young workers. The queen produces all the eggs for the maintenance of the colony.

She mates at from 3 to 10 days after emergence from the cell in which she is fed during her development from the egg. Mating takes place while in flight, and during the act the drone dies. The number of eggs deposited by the queen varies from a few hundred to 5,000 in 24 hours. The only function of the male individual drones is the fertilisation of the young queens, and the drones are allowed to exist only in times of prosperity. Anatomically the drone is not so fully developed as either the queen or the worker.

The worker bees collect the pollen and nectar required for the development of the colony and the winter stores, provide the wax for comb-building, and keep order in the hive. The worker is an undeveloped female, the egg-organs being atrophied. The hind legs of the workers are adapted for the purpose of carrying pollen and propolis. They possess wax-forming glands, and the mouth-parts enable them to knead wax and build combs.

Young bees take their first flight at the age of 5-8 days, and at the age of 14-21 days they assist in the collection of food. The life of a worker is 6-7 weeks in the summer working time; in winter they may live as long as 6 months.

Beech, the name of several species of in all parts of Europe. The common beech grows to about 100 ft., but its timber is not durable and serves only inferior uses. Beeches bloom periodically. The male flowers are catkins, and the female flowers develop a cupule with two nuts. Stunted beeches serve as hedgerows. Other varieties of beeches are copper, purple, red, evergreen, and weeping.

Beecham, *Sir Thomas*, British conductor and composer. Educated at Rossall and Oxford, he came to the fore in 1910 during the Covent Garden opera season, and founded in 1915 the Albert Hall promenade. Associated with the London Symphony Orchestra, the Royal Philharmonic Society, and the British Broadcasting Corporation, he strove to popularise opera. Knighted 1916; succeeded to baronetcy the same year. (1879-).

Beecher, *Henry Ward*, a celebrated American preacher, born at Litchfield, Connecticut; pastor of a large Congregational church, Brooklyn; a vigorous thinker and eloquent orator; denied the eternity of punishment, considered a great heresy by some then, and his opinions led to his secession from the Congregational body. (1813-1887).

Beecher Stowe, *Harriet Elizabeth*. See *Stowe*, *Harriet Elizabeth Beecher*.

Beechey, *Rear-Admiral*, born in London, son of the following; accompanied Franklin in 1818 and Parry in 1819 to the Arctic regions; commanded the *Blossom* in the third expedition of 1825-1828 to the same regions; has given his name to Beechey Island in the Arctic Archipelago. (1790-1856).

Beechey, *Sir William*, portrait-painter, born in Oxfordshire; among his portraits were those of Lord Nelson, John Kemble and Mrs. Siddons. (1753-1839).

Beeching, *James*, of Great Yarmouth; from his designs, which won the Duke of Northumberland's prize of 100 guineas in 1851, was built the first self-righting lifeboat, taken as a model for the boats of the National Lifeboat Institution. (1788-1858).

Bee-eater, or *Gnat-Snapper*, a bird of the genus *Mecrops*, common

in Africa and in some parts of Europe, and occasionally a visitor to Britain. It is insectivorous. The adult is about 10 in. in length.



BEE-EATER

The male is of particularly bright plumage. It nests in holes in river banks.

Beefeaters, yeoman of the royal guard, whose institution dates from the reign of Henry VII., and whose office it is to wait upon royalty on high occasions; the name is also given to the warders of the Tower, though they are a separate body and of more recent origin; the name simply means (royal) dependant, a corruption of the French word *buffetier*, one who attends the sideboard.

Beefsteak Clubs, social clubs which have been established in London where steak, beer, and wine comprise the only refreshment. The first was formed in 1709, with the actor Richard Estcourt as providore. John Rich, then manager of the Covent Garden Theatre, formed the "Sublime Society of Steaks" in 1785, and many famous men were members. The Beefsteak Club, 9 Green Street, W.C., was founded by A. J. Stuart-Wortley at Toole's Theatre.

Beehive Houses, small stone structures, of ancient date, remains of which are found sometimes in clusters in Ireland and the W. of Scotland, with a conical roof formed of stones overlapping one another, undressed and without mortar; some of them appear to have been monks' cells.

Beelzebub, the god of flies, protector of the Phœnicians; being a heathen deity, transformed by the Jews into a chief of the devils; sometimes identified with Satan, and sometimes his aide-de-camp, as in Milton's *Paradise Lost*.

Beerbohm, *Max*, caricaturist and author. Educated at Charterhouse and Oxford, he first became prominent as a writer and later as a caricaturist, Socialists and modern art enthusiasts forming many of his subjects. (1872-).

Beerbohm Tree, *Sir Herbert*. See *Beerbohm*, *Tree*, *Sir Herbert*.

Beersheba, a village in the S. of southernly, 27 m. from Hebron; associated with Dan, in the N., to denote the limit of the land and what lies between; lies in a pastoral country abounding in wells, and is frequently

mentioned in patriarchal history; means "the Well of the Oath." Captured by the British forces during the Great War on Oct. 31, 1917.

Beeston, town of Nottinghamshire, England, 3 m. SW. of Nottingham, with Stapleford an urban district pop. 28,000. It has telephone works, and ace-making; malting, and iron-founding are carried on. Pop. 16,000.

Beeswing, a gauze-like film which forms on the sides of a bottle of good port.

Beet (*Beta*), a genus of plants of the order Chenopodiaceae, comprising some six species one of which *B. vulgaris* or *B. maritima* (sea-beet) is found in England. From this is derived the variety *Rapa*, the sugar-beet, and also the mangold-wurzel. The production of beet sugar on a large scale has been carried out for many years in the U.S.A., Germany, and elsewhere, and efforts have been made in recent years to stimulate the industry in Great Britain. With this end in view, a Government subsidy was granted after the Great War, and has been renewed recently. About a half of the world's supply of sugar is now produced from beetroot.

Beethoven, Ludwig van, one of the greatest musical composers, born in Bonn, of Dutch extraction; the author of symphonies and sonatas that are known over all the world; showed early a most precocious genius for music, commencing his education as a musician at five; trained at first by a companion named Pfeiffer, to whom he confessed he owed more than all his teachers; trained at length under the tuition of the most illustrious of his predecessors, Bach and Handel; revealed wonderful musical talent; quitted Bonn and settled in Vienna; attracted the attention of Mozart; at the age of 40 was attacked with deafness that became total and lasted for life; continued to compose despite his affliction, to the admiration of thousands; during his last days was a prey to melancholy; died during a thunderstorm. (1770-1827).

Beetle, insects of the order Coleoptera of world-wide distribution; the

species numbers over 150,000. They are four-winged insects which undergo complete metamorphosis, the larvæ being as a rule grubs with soft bodies. The body, the antennæ, and the jointed limbs of the adult beetles are all invested in a coating of horny substance called chitin. The front, horny pair of wings, called elytra, are not used in flight, but serve as shields to protect the hinder pair when these are not in use. The mouth is always provided with biting jaws. The antennæ may be either thread-like, clubbed, fan-like, or comb-like. Some beetles are carnivorous, others vegetarian, and many eat decaying substances.

Befana, an Italian female Santa Claus, who on Twelfth Night fills the stockings of good children with good things and those of bad with ashes.

Beghards, a religious order that arose in Belgium in the 13th century, connected with the Beguines, a mystic and socialistic sect of women.

Begonia, a genus of tropical plants of S. America and India with fleshy, and sometimes richly coloured leaves and crimson stems. The flowers are pink. There are some 160 species.

U.E.

Beguines, a sisterhood confined now to France and Germany, who, without taking any monastic vow, devote themselves to works of piety and benevolence.

Begum, the Hindustani name given to the E. Indies to a princess, mother, sister, or wife of a native ruler.

Behaim, Martin, a geographer and cartographer, born in Nuremberg; accompanied Diego Cam on a voyage of discovery along W. coast of Africa; constructed and left behind him a famous terrestrial globe; some would make him out to be the discoverer of America. (1459-1506).

Behaviourism, the name given to the mental processes of man were like those of animals, though they were more intricate. It is the belief of behaviourists that man's actions are automatic responses to stimuli, and not dictated by will, sensation, perception, or consciousness, and that all action, animal or human, is in response to stimulus.

Beheira, an administrative division of Egypt, part of the delta of the Nile. Area 1,700 sq. m. Pop. 392,000.

Behemoth, a large animal mentioned in Job, understood to be the hippopotamus.

Behistun, a mountain in Persia on which there are rocks covered with cuneiform inscriptions, the principal relating to Darius Hystaspes (d. 485 B.C.), bearing on his genealogy, domains, and victories.

Behn, Aphra (or Aphra), a licentious writer, born in Kent, for whom, for her free-and-easy ways, Charles II. took a liking; sent by him as a spy to Holland, and instrumental in discovering the intention of the Dutch to burn the shipping in the Thames. She wrote plays and novels. (1640-1689).

Behring Sea Question, the a question of fishing rights in the Behring Sea. The U.S.A. purchased Alaska from Russia in 1867, and assumed the right formerly claimed by Russia to close the sea to foreign fishing. In support of their claim, the U.S.A. seized Canadian scalers fishing beyond the 3-m. limit. The British Government having claimed the right to fish outside the 3-m. limit, the dispute was referred to arbitration in 1892. The arbitrators met in Paris in 1893, and the award was favourable to Great Britain.

Behring Strait, a strait about 50 m. wide between Asia and N. America, which connects the Arctic Ocean with the Pacific; discovered by the Danish navigator Vitus Behring in 1728, sent out on a voyage of discovery by Peter the Great.

Beilby, Sir George, British scientist notable for researches in low-temperature carbonisation of coal. Chairman of Fuel Research Board during Great War. Originator of the therm system as basis of gas charges. (1854-1924).

Beira, (1) a central province of Portugal, comprising five administrative districts, mountains and pastoral. Pop. 1,730,000; (2) a seaport town in Portuguese E. Africa (Mozambique) connected by rail with Mashonaland (Southern Rhodesia). Terminus of trans-continental Benguela-Beira railway and an important airport. Pop. 12,000.

Beirut, the most flourishing commercial city on the coast of Syria, French Mandated Territory and the port of Damascus, from which it is distant 55 m.; a very ancient place. Has a French and an American University. Pop. 135,000.

Beisan, Old Testament, Beth-shan; New Testament, Scythgrolls. A town of Palestine in Northern District on the plain of Esdraelon.

Beit, Alfred, S. African financier and philanthropist, born in Hamburg; became a diamond merchant in Kimberley in 1879; was a warm friend of Cecil Rhodes, with whom he collaborated in the amalgamation of the Kimberley into the De Beers' Consolidated Mines, and made a fortune. Left large sums to charities and founded chairs in colonial history at Oxford. (1853-1906).

Beit, Sir Otto John, Bart., connoisseur and philanthropist, brother of Alfred Beit, b. in Hamburg, entered service of Wernher, Beit & Co., diamond merchants, London. Went to S. Africa, 1890. Returned to England and became a stockbroker; retired 1906. Gave buildings for University of the Cape of Good Hope. Founded Beit Memorial Fellowship for Medical Research. K.C.M.G., 1920; baronet, 1924. (1865-1930).

Beith, a market town of Ayrshire, Scotland, 18 m. SW. of Glasgow. Coal is mined and there are works for making linen, leather, thread, rope, upholstery and furniture. Pop. 5,000.

Beith, John Hay. See Hay, Ian.

Bek, Antony, Bishop of Durham from 1283; assisted Edward I.'s Scottish expeditions; had long dispute with the Prior of Durham, and lost favour and possessions to Edward by making journeys to Rome about it. Edward II. made him sovereign of the Isle of Man, 1307. (d. 1310).

Beke, Dr. Charles Tiltstone, born in London; travelled in Abyssinia and Palestine; author of *Origines Biblicae* or researches into primeval history, as shown not to be in keeping with the orthodox belief. (1800-1874).

Bel, in Babylonian myth, the son of Aa and Damkina, the lord, who in time created mankind. The elder Bel was Enlil of Nippur and the younger Merodach of Babylon. According to Damaedus, the elder Bel came into existence before Aa.

Bela I., King of Hungary from 1060 to 1063; an able ruler; introduced a great many measures for the permanent benefit of the country, affecting both religion and social organisation.

Bela IV., King of Hungary, son of Andreas II., who had in 1222 been compelled to sign the Golden Bull, the *Magna Charta* of Hungarian liberty; reigned 1235-1241.

Bel and the Dragon, History of, one of the books of the Apocrypha, a spurious addition to the Book of Daniel, relates how David persuaded Cyrus of the vanity of idol-worship, and is intended to show its absurdity.

Belcher, Sir Edward, Admiral, was engaged in several exploring and surveying expeditions; sailed round the world, and took part in the operations in China. (1799-1877).

Belcher, James, prize-fighter, born at great fights, 1799-1803. Beaten by: Hen Pearce (the Game Chicken), 1805; Cribb, 1807 and 1809. (1781-1811).

Belfast, capital and seat of the Parliament, ment of Northern Ireland and county town of Antrim; stands on the Lagan, at the head of Belfast Lough, 112 m. N. of Dublin; is a bright and pleasant city, with some fine streets and handsome buildings, Presbyterian, Catholic, and Methodist colleges. It is the centre of the Irish linen and cotton manufacturers, the most important ship-building centre, and has also rope-making, whisky, and aerated-water industries. It is the headquarters of Presbyterianism in Ireland. Pop. 420,000.

Belfort, a fortified town in dept. of Belfort, France, and its capital, 35 m. W. by N. of Basel; capitulated to the

Germans in 1871; restored to France; its fortifications now greatly strengthened. The citadel was by Vauban. Pop. of the dept. is 99,000.

Belfry, the portion of a steeple or tower in which the bell is hung. Belfries were first watch-towers and a means of giving warning. They later became bell-towers of churches, and were sometimes separate campaniles, as at Evesham and other places in Great Britain and in Italy, where there are many.

Belga, a Belgian silver coin of the value of 5 Belgian francs. It was created in 1926 in connection with the Government's endeavour to stabilise the currency.

Belgae, Caesar's name for the tribes of the Celtic family in Gaul N. of the Seine and Marne; mistakenly rated as Germans by Caesar.

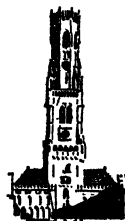
Belgium, a small European State bordering on the North Sea, with Holland to the N., France to the S., and Rhenish Prussia and Luxemburg on the E.; is less than a third the size of Ireland, but the most densely populated country on the Continent. The people are of mixed stock, comprising Flemings, of Teutonic origin; Walloons of Celtic origin; Germans, Dutch, and French. Roman Catholicism is the predominant religion. Education is excellent; there are universities at Ghent, Liège, Brussels, and Louvain. French is the language of educated circles and of the State; but the prevalence of dialects hinders the growth of a national literature.

The land is low and level in the N. and W., undulating in the middle, rocky and hilly in the S. and E. Along the coast are lines of sand-dunes strengthened by artificial embankments. To drain the lowlands there are gaps in the dunes and embankments, Nieuport, where the Yser enters the sea at the W. gap, Ostend at the central gap, and Zeebrugge, with its famous Mole, at the E. gap. The central plains are fertile, and intensive methods of farming are used, since the bulk of the people are small-holders. The Meuse and Scheldt are the chief rivers, the basin of the latter embracing most of the country.

Climate is similar to the English, with greater extremes. Rye, wheat, oats, beet, and flax are the principal crops. Agriculture is the most painstaking and productive of the world. The hilly country is rich in coal, iron, zinc, and lead. After mining, the chief industries are textile manufactures and making of machinery. The trade is enormous; France, Germany, and Britain are the best customers. Exports are coal to France; farm products, eggs, etc., to England; and raw material imported from across seas to France and the basin of the Rhine.

It is a small country of large cities. The capital is Brussels, in the centre of the kingdom, but communicating with the ocean by a ship canal. The most important towns after Brussels are Antwerp (seaport and trading centre), Liège (machinery, ordnance and steel goods), Ghent (at the tidal limit of the Scheldt, cotton and linen goods), Malines (Mechlin) (lace), Courtrai and Tournai (flax), Mons and Charleroi (coal), Namur (cutlery), Louvain, Bruges, etc.

By a convention concluded in 1921 an economic union was concluded between Belgium and Luxemburg, and the customs frontier was abolished in 1922. Belgium has long been a "buffer state" between France and Germany, and its corridor, the lowland plain and the Sambre-Meuse Valley, the meeting-ground of invading armies. Thus it



BRUGES
BELFRIE

has become known as the "cockpit of Europe." Belgium possesses an important colony in Africa, the Belgian Congo. The railways, canals, and river navigation are very highly developed. Water traffic on the canalised rivers and canals is more extensive than railway traffic. Artificial waterways connect Antwerp and Ghent with the Seine, the North Sea and the S.E., and the Meuse and Scheldt are linked up with the chief towns by canals, while canals also connect the Meuse, Rhine, and Seine.

The government is a limited monarchy; the King, Senate, and House of Representatives form the constitution. There is a conscript army of 50,000 men, but no navy.

Belgrade, the capital of Yugoslavia, on the confluence of the Save and Danube; a fortified city in an important strategic position, and the scene of many conflicts; a commercial centre; once Turkish in appearance, now becoming more European. Has a university, founded 1838. Headquarters of Yugoslav Air Service. Taken by the Austrians, Nov. 1914, re-taken by the Serbs Dec. 1914, taken by the Germans late in 1915, and held by them until the end of the War. Pop. 289,000.

Belial, properly a good-for-nothing, a carnation of iniquity and son of perdition, and the name in the Bible for the children of such.

Belisarius, a general under the Emperor Justinian, born in Illyria; defeated the Persians, the Vandals, and the Ostrogoths; was falsely accused of conspiracy, and imprisoned, but later restored to his dignities by the Emperor. (505-565).

Belize, the capital of British Honduras, in Central America; trade in mahogany, rosewood, etc. Largely destroyed by a hurricane in 1926, it is now gradually being rebuilt. Pan-American airways make this a regular daily (over-night) stop, on the way from Miami to Panama. Pop. 17,000.

Bell and Bell Founding. A bell is a hollow, metal, cup-shaped body containing a swinging hammer or bell suspended by its apex. Bells are cast of a mixture of copper and tin named bell-metal. Bells discovered in the palace of Nimrod on the site of the city of Nineveh were made of the same metal. The proportion of the metals has altered since that time, and is now approximately $\frac{1}{4}$ copper to 1 tin. The earliest known bells were made of riveted sheets of hammered iron. The tone of bells depends both on their shape and composition. Approximate standard proportions are, thickness $\times 12 =$ height; thickness of edge $\times 10 =$ diameter.

Bell, Alexander Graham, inventor. Born in Edinburgh, he emigrated to America and became professor of vocal physiology at Boston. He invented the telephone and phonograph and devised improvements in the phonograph. (1817-1922).

Bell, Alexander Melville, an educationist, born in Edinburgh, lectured at Edinburgh University and in Canada and U.S.A.; devised the system of "visible speech"; for teaching deafmutes. (1819-1905).

Bell, Andrew, noted educationist, born at St. Andrews; founder of the monitorial system of education, which he had adopted, for want of qualified assistants, when in India as superintendent of an orphanage in Madras, hence called "the Madras system"; bequeathed £120,000 for the endowment of education in Scotland. (1753-1832).

Bell, Sir Charles, Scottish surgeon and anatomist, carried out research on the nervous system. He was the first to make clear the distinction between the motor and sensory nerves, publishing his discoveries in *The Anatomy of Expression and The Nervous System of the Human Body*. (1774-1842).

Bell, Gertrude Margaret Lowthian, traveller and Arabian scholar, daughter of Sir Hugh Bell, Bart. Joined her uncle, Sir Frank Lascelles, Minister in Persia. With a single servant, crossed Arabia, 1913. Invaluable as an administrative coadjutor of Sir Percy Cox in Iraq after expulsion of the Turks. A brilliant archaeologist, her works include *The Desert and the Town*, *The Thousand and One Churches*, *Review of the Civil Administration of Mesopotamia*. C.B.E., 1917. Died in Baghdad. (1868-1926).

Bell, Henry, brod a millwright, born in applied steam to navigation in Europe, demonstrating it in a small steamboat called the *Comet*, driven by a three horse-power engine. (1767-1930).



THE COMET

Bell, Robert Anning, a painter, stained-glass artist, and illustrator, son of Robert George Bell, F.G.S. Prize works: Mosaics in Houses of Parliament; tympanum, Westminster Cathedral. For 7 years professor, Liverpool University. Professor of decorative art at Glasgow School of Art. R.A., 1922. (1863-1933).

Belladonna (*Atropa B.*, deadly nightshade), a perennial plant, order Solanaceae.

It grows wild in Europe and Asia, but it is also cultivated. Hyoscyamine and atropine are prepared from it, both drugs being used as anodynes; an overdose, however, paralyses the heart. Atropine is used in ophthalmics; applied to the eye, it dilates the pupil.



BELLADONNA

Bellamy, Edward, American author and socialist; wrote *Looking Backward* in 1883, a provision of social conditions in the year 2000. (1850-1898).

Bellarmino, Robert, Cardinal, born in Jesuit, controversial theologian, and a valiant defender at all points of Roman Catholic dogma; the greatest champion of the Church in his time, and regarded as such by the Protestant theologians. (1542-1621).

Bellary, a district and town of Madras, India. Formerly an important military station, the town is built about a huge fort on a 450-ft. crag. Cotton is made and iron ore worked. Pop., district 862,000; town 40,000.

Bellay, Joachim du, French poet; author of sonnets, entitled *Regrets*; wrote the *Antiquités de Rome*; was called the Apollo of the Pléiade. (1524-1560).

Bell, Book and Candle, a ceremony at one time attending the greater excommunication in the Roman Catholic Church, when after sentence was read from the "book," a "bell" was rung, and the "candle" extinguished.

Belleau Wood, NW. of Château of Aisne on the Marne in France. In the Great War in May and June 1918 fierce fighting took place here between the American Expeditionary Force and the Germans, resulting in the capture of the wood by the Americans, and also the neighbouring town of Vaux.

Belle Isle, two British islands: one, Labrador, at the entrance of Belle Isle Strait, has two lighthouses and a wireless station; the other, off the SE. coast of Newfoundland, rich in iron ore. Also the name of an island on the W. coast of France, near which Sir Edward Hawke gained a brilliant naval victory over the French, under Marshal Conflans, in 1759. Pop. 6,600.

Belle-Isle, Charles Louis Auguste of France; distinguished in the War of the Spanish Succession; an ambitious schemer mainly to blame for the Austrian Succession War; concluded a fast-and-loose treaty with Frederick the Great binding to neither party; found himself blocked up in Prague with his forces; had to force his way out and retreat. Was made War Minister after, and wrought important reforms in the army. (1684-1761).

Bellerophon, a mythical hero, son of Sisyphus; having unwittingly caused the death of his brother, withdrew from his country and sought retreat with Proetus, King of Argos, who, jealous of his guest, had him sent to Iobates, king of Lycia, with instructions to put him to death. Iobates, in consequence, imposed upon him the task of slaying the Chimera. Bellerophon, mounted on Pegasus, the winged horse given him by Pallas, slew the monster, and on his return received the daughter of Iobates to wife.

Belles-Lettres, that department of literature which implies literary culture and belongs to the domain of art, whatever the subject may be or the special form; it includes poetry, the drama, fiction, and criticism.

Belligerent Rights, in international law, mean the rights of those in a condition of legally recognised warfare. Such rights cannot be recognised before a formal declaration of war. The Second Hague Peace Conference (1907) made this provision, and also provided that combatants should be placed under a responsible command, that the two or more sides should wear distinguishing emblems, and that operations should be carried out in accordance with the laws of war.

In a civil war belligerent rights may or may not be accorded to the insurgent forces by the Government of the country or by foreign Governments. In the Spanish Civil War (q.v.) such rights were withheld from the insurgent forces by the European Powers, except Germany and Italy, following their recognition of the rebel Government as the Government of Spain. Foreign volunteers who take part in a civil war have no claim to these rights, unless the volunteer force forms a definite part of the military organisation of the State, as, for instance, the French Foreign Legion.

Bellingham, a village of Northumberland, on a land, England, on the R. Tyne. It has an old church, and there are prehistoric remains in the neighbourhood. Coal and ironstone are found. Pop. 1,500. Also a city of Washington State, U.S.A., has saw-mills and paper-mills and a canning industry. Pop. 39,000.

Bellini, Gentile, the son of Jacopo Bellini, was distinguished as a portrait-painter; decorated with his brother, the council-chamber of the ducal palace; his finest picture the "Preaching of St. Mark." (c. 1421-1508).

Bellini, Giovanni, brother of the painter, produced a great many works; the subjects religious, all nobly treated; had Giorgione and Titian for pupils; among his best works, the "Circumcision," "Feast of the Gods," "Blood of the Redeemer." (c. 1428-1510).

Bellini, Jacopo, a painter from Florence who settled in Venice, the father and founder of the family; d. 1470.

Bellini, Vincenzo, a musical composer, born at Catania, Sicily; his works, operas, more distinguished for their melody than their dramatic power; the best are *Il Pirat*, *La Sonnambula*, *Norma*, and *I Puritani*. (1802-1835).

Bell-Metal. See Bell and Bell Founding.

Belloc, Joseph Hilaire Pierre, British author, with G. K. Chesterton a champion of the Catholic position. His best-known book is *The Path to Rome*, and he has written several volumes of essays and novels satirising political life, of which he had four years' taste as M.P., from 1896 to 1910, as a Liberal. (1870-).

Bellona, the goddess of fury in war among the Romans, related by the poets to Mars as sister, wife, or daughter; inspirer of the war-spirit, and represented as armed with a bloody scourge in one hand and a torch in the other.

Bellot, Joseph René, a naval officer, born in Paris, distinguished in the expedition of 1845 to Madagascar, and one of those who went in quest of Sir John Franklin; drowned while crossing the ice. Bellot Strait in the Canadian Arctic is named after him. (1826-1853).

Bell Rock, or Inchcape Rock, a dangerous reef of sandstone rocks in the North Sea, 12 m. SE. of Arbroath, on which a lighthouse 120 ft. high was erected in 1807-1810; so called from a bell rung by the sway of the waves, which the Abbot of Arbroath erected on it at one time as a warning to seamen; celebrated in a ballad by Southey.

Bells (nautical). Duty on board ship is divided into 6 four-hour watches, a period beginning at 12 o'clock; and a bell is rung at the end of each half-hour during each watch. At the end of the first half-hour the bell is rung once, at the end of the first hour twice, and so on, 8 bells marking the conclusion of the watch.

Belmont, a town of Cape Province, South Africa, 50 m. S. of Kimberley. Here was fought the first engagement of the Boer War.

Below, Otto von, German general, was born in Danzig. Commanded: 8th Army in Masurian battle, Feb. 1915; army of the Niemen, summer 1915; at the Macedonian front, 1916; at the victory over the Italians at Caporetto, 1917; 17th Army at battle of the Somme, 1918. Retired 1919. (1857-).

Belper, a market town of Derbyshire, England, on the Derwent. It has large cotton works, silk and hosiery are made, and coal and lead are mined. Pop. 13,000.

Belshazzar, the last Chaldean king of Babylon, slain, according to the Scripture account, at the capture of the city by Cyrus in 538 B.C.

Belt, Great and Little, gateways of the Baltic; the Great between Zealand and Fünen, 15 m. broad; the Little between Fünen and Jutland, half as broad; both 70 m. long, the former of great depth.

Beltane, or Beltain, an ancient Celtic festival, connected with the sun-worship, and supposed to have marked the beginning of summer, observed about May 1, during which time fires were kindled on the tops of hills and various ceremonies gone through. In early days human sacrifices attended the festival.

Belting, a mechanical means of transmitting power from a power-driven shaft to shafts of the machines to be driven. Endless belts pass over pulleys or wheels on the driving-shaft and thence over

other pulleys on the machines. The advantage of belting is that power can be generated in a central power-house of a factory and used in any part of the building as required, without the loss and complexity of the older, cogwheel, system. Belting is itself, however, obsolescent, since the transmission of power can be so conveniently, cheaply, and efficiently achieved by the use of electrical energy.

Belt of Calms, the region in the Atlantic and Pacific, 4° or 5° latitude broad, where the trade-winds meet and neutralise each other, in which, however, torrents of rain and thunderstorms occur almost daily.

Beluga, the white whale, allied to the dolphins. It inhabits the seas off Greenland

and in the Arctic and is found in herds. It measures some 10 or 15 ft. in length.

BELUGA (WHITE WHALE)

The name is also applied to the white sturgeon, from the roe of which caviare is made.

Belvedere, name given to a gallery of the Vatican at Rome, especially that containing the famous statue of Apollo, and applied to any room or gallery commanding a fine view.

Belzoni, *Giovanni Battista*, a famous traveller and explorer in Egypt, born at Padua, of poor parents; a man of great stature; figured as an athlete in Astley's Circus, London, and elsewhere, first of all in London streets; applied himself to the study of mechanics; visited Egypt as a mechanic and engineer at the instance of Mehemet Ali; commenced explorations among its antiquities, sent to the British Museum trophies of his achievements; published a narrative of his operations; opened an exhibition of his collection of antiquities in London and Paris; undertook a journey to Timbuctoo, was attacked with dysentery, and died at Gato. (1778-1823).

Bemba, Lake. See *Bangweolo*.

Bembo, *Pietro*, cardinal, an erudite man of letters and patron of literature and the arts, born at Venice; secretary to Pope Leo X.; historiographer of Venice, and librarian of St. Mark's; made cardinal by Paul III., and Bishop of Bergamo; a fastidious stylist and a stickler for purity in language. (1470-1547).

Bembridge, a village of Hants., of the I. of Wight. A seaplane station during the Great War. It gives its name to a geological formation, the Bembridge Beds. Pop. 1,500.

Bemersyde, an estate and castle of Berwickshire, Scotland, on the Tweed. For 8 centuries it has been the home of the Haigs, and from it Field-Marshal Earl Haig took his title.

Ben, Gaelic for mountain, occurring else-where in Great Britain in the Cymric form "pen."

Benares, the most sacred city of the town of the state of Benares in the United Provinces, India, on the Ganges, 420 m. by rail NW. of Calcutta. It presents an amazing array of 1,700 temples and mosques, with innumerable towers and domes and minarets. The bank of the river is laid with continuous flights of steps, whence the pilgrims bathe. The city itself is narrow, crooked, crowded, and dirty. Many thousand pilgrims visit it annually.

It is a seat of Hindu learning, with a Hindu University college (constituted in 1916). There is an Agricultural College, founded in 1920. The river is spanned here by a magnifi-

cent railway bridge. There is a large trade in country produce, English goods, jewellery, and gems; while its brasswork, "Benares ware," is famous. Pop. 205,000 (of the state c. 365,000).

Benavente y Martinez, *Jacinto*, Spanish playwright, born in Madrid, studied law in university there. Travelled, managed a Russian circus, appeared on stage. Has written about 100 plays; among them: *Gente Conocida*, *Lo Cursi*, *El Hombre ciego*, *Rosas de Otoño*, *La Malquerida*, *Por ser Todos Leal ser para Todos Traidor*. Nobel prize for literature, 1922. (1860-).

Benbecula, an island of the Outer Hebrides, S. of N. Uist, and separated from S. Uist by Benbecula Sound; belongs to Inverness-shire. Pop. 1,200.

Benbow, *John*, English admiral, born at Shrewsbury; distinguished himself in an action with a Barbary pirate; rose to the highest rank in the navy; gained fame in an engagement with a French fleet in the W. Indies, in which he lost a leg, and at this crisis some of his captains disobeyed orders and the enemy escaped. The captains were tried by court-martial, and two of them shot; the wound he received and his vexation caused his death. (1653-1702).

Bencoolen, a town and a Dutch residency in SW. of Sumatra; exports pepper and camphor. Pop. 250,000.

Bend, in heraldry, is one of the nine ordinaries, and crosses the field from dexter chief to the sinister base point of the escutcheon. Bend-sinister crosses from sinister chief to dexter base.

Bender (*Benderi*), a town in Bessarabia, Rumania, on the Dniester. Pop. 40,000.

Bendigo, a town in Australia, the centre of a large gold-mining and agricultural district; the gold-field discovered in 1851. Pop. 29,000.

Benedek, *Ludwig von*, an Austrian general, born in Hungary; distinguished himself in the campaigns of 1848-1849; was defeated by the Prussians at Sadowa; superseded and tried, but acquitted; retired to Graz, where he died. (1804-1881).

Benedicite ("Benedicite, omnia opera"), the first word of a Latin canticle, and the name by which it is known. Taken originally from the Latin Bible, where it appears as the *Song of Three* in the Book of Daniel, it has been sung at Divine Service since the 4th Century A.D. An English version (*O all ye works of the Lord, bless ye the Lord*) is included in the Book of Common Prayer.

Benedict, the name of 15 popes; **B. I.**, from 574 to 578; **B. II.**, from 684 to 685; **B. III.**, from 855 to 858; **B. IV.**, from 900 to 903; **B. V.**, from 964 to 965; **B. VI.**, from 972 to 974; **B. VII.**, from 974 to 983; **B. VIII.**, from 1012 to 1024; extended the territory of the Church by conquest, and effected certain clerical reforms; **B. IX.**, from 1033 to 1048, a licentious man, and deposed; **B. X.**, from 1058 to 1059; **B. XI.**, from 1303 to 1304; **B. XII.**, from 1334 to 1342; **B. XIII.**, from 1374 to 1380; **B. XIV.**, from 1740 to 1758, a native of Bologna, a man of marked scholarship and ability; a patron of science and literature, who did much to purify the morals and elevate the character of the clergy and reform abuses in the Church; **B. XV.**, from 1814 to 1822. Also **B. XIII.** (*Pedro de Luna*), elected anti-pope 1394 and died in conflict with the bulk of the Church in 1422.



BEND

Benedict Biscop, an Anglo-Saxon monk, born in Northumbria; made two pilgrimages to Rome; assumed the tonsure as a Benedictine monk in Provence; returned to England and founded two monasteries on the Tyne, one at Wearmouth and another at Jarrow, making them seats of learning. (628-690).

Benedict, *Sc.*, the founder of Western monachism, born near Spoleto; left home at 14; passed three years as a hermit, in a cavern near Subiaco, to prepare himself for God's service; attracted many to his retreat; appointed to an abbey, but left it; founded 12 monasteries of his own; though possessed of no scholarship, composed his *Regula Monachorum*, which formed the rule of his order. (480-543). See *Benedictines*.

Benedict, *Sir Julius*, musician and composer native of Stuttgart; removed to London in 1835; author of, among other pieces, *The Gipsy's Warning*, *The Lily of Killarney*, *The Bride of Venice* and *The Crusaders*; conducted the performance of *Etchah* in which Jenny Lind made her first appearance before a London audience. (1804-1885).

Benedictines, the order of monks and following his rule, the cradle of which was the celebrated monastery of Monte Casino, near Naples, an institution which reckoned among its members a large body of eminent men, who in their day rendered immense service to both literature and science, and were, in fact, the only learned class of the Middle Ages; spent their time in diligently transcribing manuscripts, and thus preserving for posterity the classic literature of Greece and Rome; the order has given 40 popes to the Church of Rome.

Benedictio, Latin for benediction or blessing. The term is usually applied to a blessing of a formal character, e.g., that uttered by the priest at the end of a religious service.

Benedictus, part of the musical service at Mass in the Roman Catholic Church; has been introduced into the morning service of the English Church. It is the song of Zacharias, who was filled with the Holy Ghost and prophesied. (Luke i. 68 *et. seq.*).

Benefice, a term applied to a provision for an ecclesiastical person, sometimes called temporalities, or livings in the modern sense. Benefices are *regular* in communities like monasteries and *secular* to those outside them. Generally applied to vicars and perpetual curates.

Beneficiary, in English law generally entitled to the beneficial interest in property, though he may not have the legal estate. The interests of beneficiaries are generally protected by a trustee or trustees appointed under a will or deed *inter vivos*.

Benefit of Clergy, the system under which the clergy were immune from trial in a civil court, not finally abolished till 1779, though inoperative for a century before. In practice it was not confined to priests, and Ben Jonson was one to benefit by it.

Beneke, *Friedrich Eduard*, a German philosopher and professor in Berlin of the so-called empirical school—that is, the Baconian; an opponent of the methods and systems of Kant and Hegel; confined his studies to psychology and the phenomena of consciousness. (1798-1854).

Benes, *Eduard*, Czechoslovakian statesman. Son of a Bohemian farmer, he became a professor at Prague. He worked in Paris during the Great War for the liberation of his country, and in 1918 became

Minister of Foreign Affairs in its first cabinet. From 1921 to 1922 he was Premier, and he also represented his country on the League of Nations. He succeeded Masaryk in office as President of the Czechoslovak Republic in 1935. (1884-).

Benetier, the vessel for holding the churches.

Benevento, a cathedral town 33 m. N.E. of Naples, Italy, built out of and amid the ruins of an ancient one; capital of the province of the same name. Pop. 37,000.

Benevolence, the name given to a tax by certain kings of England, and which, under Charles I., became so obnoxious as to occasion the demand in the Petition of Right (*q.v.*), that no tax should be levied without consent of Parliament; first enforced in 1473, declared illegal in 1689.

Benfleet, an urban district of Essex, England, recently formed from the villages of S. Benfleet (7 m. W. of Southend, Pop. 12,000), Thundersleigh and Hadleigh. N. Benfleet is 10 m. NW. of Southend. Pop. 600.

Bengal, an autonomous province of the Lower Ganges and the delta of the Ganges-Brahmaputra, with the Himalayas on the N. The climate is hot and humid, and passing through every gradation up to the snowline. The people are engaged in agriculture, raising indigo, jute, opium, rice, tea, cotton and sugar. Coal, iron and copper mines are worked in Burdwan. The manufactures are of cotton and jute.

Education is further advanced than elsewhere; there are five colleges affiliated to Calcutta University, and many other scholastic institutions. Its area is 82,277 sq. m. Pop. 50,000,000. Low-lying alluvial plains are found by the Ganges and Brahmaputra. There is a remarkable network of waterways formed by the deltas of the two great rivers.

The lower half of the province, Sunderband, consists of half-submerged mangrove swamps with dense forests. The ports are all up stream on the two main river estuaries, the Hughli in the W., and the Padma in the E. Bengal is one of the most productive and populous parts of the world. Four-fifths of its area produces rice, and there are modern jute factories at Howrah. The forests are under scientific supervision. The population is made up of 53% Mohammedan, and 43% Hindu, the prevailing language being Bengali. Calcutta is the capital with a pop. of 1,132,000. Exports consist chiefly of jute and cotton.

Bengal, *Bay of*, part of the Indian Ocean, lying between India and Burma. The Ganges, Brahmaputra, Irrawadi, Godavari, and Kistna Rts. all empty into it.

Benghazi (*Bengasi*), the capital of the province of Benghazi, Italian Libya, on the Gulf of Sidra, in N. Africa, a caravan terminus from Egypt with a considerable trade. Pop. 44,000.

Benguella, a fertile Portuguese territory in Angola, W. Africa, with considerable mineral wealth; has sunk in importance since the suppression of the slave-trade. The town of the same name is the terminus of the railway to Beira on the opposite coast. Pop. 7,000.

Benicia, the former capital of California, 25 m. N.E. of San Francisco; has a commodious harbour and a U.S. arsenal.

Beni-Hassan, a village in Middle Egypt, on the right bank of the Nile, with remarkable catacombs that have been excavated.

Beni-Israel (i.e., Sons of Israel), a remarkable people, few in number, of Jewish type and customs, in the Bombay Presidency, who have existed there quite isolatedly for at least 1,000 years, with a language of their own, and even some literature; they do not mingle with the Jews, but they practise similar religious observances.

Benin, a densely populated and fertile country of Nigeria, W. Africa, between the Niger and Dahomey, with a city and river of the name; forms part of what was once a powerful kingdom; was captured by the British in 1897, who found in the city human remains in every direction, pits filled with bodies in various stages of decomposition, and altars dripping with fresh human blood. A second expedition went out in 1899, resulting in the capture of the town, the deposition of the king, and the execution of the chief responsible for the attack on the British mission in 1897. Yields palm-oil, rice, maize, sugar, cotton and tobacco.



BRONZE
HEAD OF A
GIRL FROM
BENIN

Beni-Suêf, a town in Middle Egypt, on the W. bank of the Nile, 70 m. from Cairo; capital of an administrative division of the same name and a centre of trade, with cotton-mills and quarries of alabaster. Pop. (admin. district) 500,000, (town) 40,000.

Benjamin, Jacob's youngest son, by Rachel, who gave his name to one of the 12 tribes, settled in a small fertile territory between Ephraim and Judah; the tribe to which St. Paul belonged.

Ben Lawers, a mountain in Perthshire, Scotland, 3,984 ft. high, on the W. of Loch Tay.

Ben Ledi, a mountain in Perthshire, Scotland, 2,873 ft. high, 4½ m. NW. of Callander.

Ben Lomond, a mountain in Stirlingshire, Scotland, 3,192 ft. high, on the E. of Loch Lomond.

Ben Macdhui, the second highest mountain in Britain, is in Aberdeenshire, Scotland, 4,296 ft. high.

Ben More, a mountain in Perthshire, Scotland, is a mountain 3,843 ft. high.

Benn, Rt. Hon. William Wedgwood, soldier and politician, second son of Sir John Williams Benn, Bart. Entered Parliament 1906 as Liberal member for St. George's division of Tower Hamlets. Junior Lord of the Treasury 1910-1915. In yeomanry and air-force, D.S.O.; Flying Cross for night work. M.P., Leith, 1918-1927. Joined Labour Party 1927. M.P., N. Aberdeen, 1928-1931. Secretary of State for India, 1929-1931. P.O. 1929. (1877-).

Bennett, Enoch Arnold, British novelist and playwright. Born near Hanley, he made the Potteries the scene of a number of his books, which he started to write after studying law. *Anna of the Five Towns* was his first success, in 1902; his *Old Wives Tale*, *Hilda Lessways*, *Clayhanger* and *Riceyman Steps* are among his best novels. Wrote the play *Milestones* in collaboration with Edward Knoblock. For some years he lived in France, and the period obviously influenced his style. (1867-1931).

Bennett, James Gordon, an American journalist, born in Banffshire, Scotland; trained for the Catholic priesthood; emigrated, a poor lad, in 1819 to America; got employment in a printing-office in Boston as proof-reader; started the *New York Herald* in 1835, at a low price, as both proprietor and editor, an enterprise which brought him great wealth and the success he aimed at. (1795-1872).

Bennett, James Gordon, son of preceding, proprietor of the *Herald*; sent Stanley out to Africa, and supplied the funds. He founded the balloon race named after him in 1899. (1841-1918).

Bennett, Rt. Hon. Richard Bedford, barrister, leader of Conservative party in Canada since 1927. Member of legislative assemblies, of NW. Territories and of Alberta, between 1898 and 1911. M.P. for Calgary in Dominion parliament, 1911-1917. Returned again for Calgary, 1925. Minister of Justice, 1921. Finance Minister, 1926. Presided, Ottawa Conference, 1932. Attended World Economic Conference 1933. Prime Minister of Canada, Minister of Finance and of External Affairs 1930-1935, when his party was heavily defeated. (1870-).

Bennett, Sir William Sterndale, an pianist, born at Sheffield, whose musical genius recommended him to Mendelssohn and Schumann; became professor of Music in Cambridge, and conductor of the Philharmonic Concerts; was president of the Royal Academy of Music. (1816-1875).

Ben Nevis, the highest mountain in Great Britain, in SW. Inverness-shire, 4,406 ft. high, a sheer precipice on the NE. 1,500 ft. high, and with an observatory on the summit supported by the Scottish Meteorological Society.

Ben Rhydding, a village in the W. England, 15 m. NW. of Leeds, with a thoroughly equipped hydropathic establishment, once much resorted to.

Benson, Arthur Christopher, British author. Son of Archbishop Benson; he was educated at Eton and Cambridge, returned to the former to teach, and later to Cambridge as a don and Master of Magdalene. He published literary criticism, biographies, essays, novels, and poems. (1862-1925).

Benson, Edward Frederic, British novelist, brother of the preceding. Educated at Marlborough and Cambridge, he achieved fame with his *Dodo* in 1893. Has since published many other works. (1867-).

Benson, Edward White, Archbishop of Canterbury. After leaving Cambridge he became a master at Rugby and the headmaster of Wellington; was made Bishop of Truro in 1877, where he started the building of the present cathedral; succeeded Tait as Archbishop of Canterbury, and took a prominent part in the trial of Dr. King, Bishop of Lincoln, on a charge of using certain ceremonies. (1829-1896).

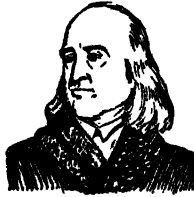
Benson, Sir Frank Robert, actor-manager, educated at Winchester and Oxford; founded repertoire company bearing his name; directed many Shakespearean Festivals at Stratford-on-Avon. Awarded civil list pension, 1934. (1858-).

Bent, James Theodore, African traveller and author; explored the ruins of Zimbabwe; later visited Arabia and Abyssinia. (1852-1897).

Bent Grass, a name given to various species of *Agrostis* which creep and take root by their wiry stems, whence it becomes very difficult to remove them from the soil. Four of the 125 species are found in England; one of them, the *Agrostis alba* (white bent or florin grass), makes valuable pasturage. *Apera* (*Agrostis*) *Spica-Venti* is the British silky bent-grass.

Bentham, George, botanist, born near Jeremy Bentham and editor of his works; an authority on the British flora. His greatest work was *Genera Plantarum*, which took 20 years to write, in conjunction with Sir Joseph Hooker. (1800-1884).

Bentham, Jeremy, a writer on as the jurisprudence and ethics, born in London; trained for the legal profession but never practised; spent his life in the study of the theory of law and government, his leading principle on both these subjects being utilitarianism, or what is called the greatest happiness principle (hedonism), as the advocate of which he is chiefly remembered—a principle against which Carlyle never ceased to protest. (1748–1832).



JEREMY BENTHAM

Bentinck, Lord George (William George Frederick Cavendish), statesman and sportsman, a member of the Portland family; entered Parliament as a Whig, turned Conservative on the passing of the Reform Bill of 1832; served under Sir Robert Peel; assumed the leadership of the Party as a Protectionist when Peel became a Free-trader; the memory of him owes something to his life by Lord Beaconsfield. (1802–1848).

Bentinck, Lord William Henry Cavendish, Indian statesman, Governor of Madras in 1803, but recalled for an error which led to the mutiny at Vellore; was in 1827 appointed Governor General of India, which he governed wisely, abolishing many evils, such as Thuggism and Sottee. Macaulay held office under him. He returned to England in 1835, became member for Glasgow in 1837. (1774–1839).

Bentinck, William, a distinguished statesman, first Earl of Portland, born in Holland; a favourite, friend, and adviser of William III., whom he accompanied to England, and who bestowed on him for his services great honours and large domains, which provoked ill-will against him; retired for a time to Holland after the King's death. (1649–1709).

Bentley, urban district (Bentley-with-Arkesey), Arkesey of Yorkshire, England, in W. Riding, 1½ m. W. of Doncaster. It has collieries. Pop. 16,000.

Bentley, Richard, scholar and philologist, born in Yorkshire; from the first devoted to ancient, especially classical, learning; rose to eminence as an authority on literary criticism, his *Dissertation upon the Epistles of Phalaris*, which he proved to be a forgery, commending him to all European scholars. (1662–1742).

Benué, an affluent of the Niger, 800 m. long, falling into it 230 m. from the mouth, described by Dr. Barth and explored by Dr. Baikie; it offers great facilities for the prosecution of commerce.

Ben Wyvis, a mountain of Scotland in Ross and Cromarty, 3,429 ft. high.

Benz, Karl, German engineer, built a motor-car in 1885 driven by benzine, which attained a speed of 15 m. an hour. His work formed the basis of many later improvements in internal combustion engines. (1844–1929).

Benzaldehyde, an aromatic compound prepared from bitter almonds, to which it gives the characteristic smell. It can be prepared from benzene or toluene on the industrial scale, and is used as a flavouring essence for "almond paste."

Benzene, a colourless, volatile, inflammable liquid discovered by Faraday in 1825. It occurs abundantly in coal-tar, which is its principal source, and from which it is obtained by fractional

distillation. It is of chemical importance as the parent substance of those compounds known as aromatic (*q.v.*), and in practice forms the starting-point in the manufacture of very large numbers of valuable compounds—dyes, drugs, perfumes, explosives, photographic chemicals, and so on. It is also employed as a fuel for internal-combustion engines, and is then known as benzol.

Benzine, should not be confused with benzene (*q.v.*). It is a mixture of low-boiling-point paraffins (*q.v.*), and forms a colourless, volatile, inflammable liquid used as a motor fuel and as a solvent. Alternatively it is known as benzoline, gasoline, or light petroleum.

Benzoic Acid, a white crystalline solid, melting at 121° C., usually obtained by the oxidation of toluene, but may also be prepared by heating the natural product gum benzoin. It has some use in medicine, and certain of its derivatives are employed as flavouring essences and perfumes.

Benzoin, a corruption of the Arabic *kubān jawat*, Javanese resin, is a gum ("gum benzoin") obtained from the Eastern tree *Styrax benzoin*. It is used in medicine and perfumery and as an incense. On heating it yields benzoic acid. Benzoin is also the name of a chemical substance, prepared by the action of potassium cyanide upon benzaldehyde.

Benzoline. See **Benzine**.

Benzyl Chloride, a liquid with an irritating smell obtained by passing chlorine through boiling toluene. It was used in the Great War in tear shells.

Beowulf, an old Anglo-Saxon romance in verse, consisting of 6,356 short alliterative lines, and the oldest extant in the language, recording the exploits of a mythical hero of the name, who wrestled Hercules-wisely, at the cost of his life, with first a formidable monster and then a dragon that had to be exterminated or tamed into submission before the race to which the champion belonged could live with safety on the soil.

Béranger, Pierre Jean de, a celebrated French song-writer, born at Paris, of the lower section of the middle class. Lucien Bonaparte took him up, and under royal patronage a career was opened up for him; in 1815 appeared as an author, and the sensation created was immense, for his songs were in stirring accord with, and helped to influence, the great passion of the nation at the time; was, as a Republican, a great admirer of Napoleon as an incarnation of the national spirit, and contributed not a little to the elevation of his nephew to the throne. (1780–1857).

Berar, a district of India, E. of Bombay, formerly one of the Hyderabad Assigned Districts; transferred to Great Britain as such in 1853. It occupies a fertile, well-watered valley, and yields large quantities of grain and cotton. In 1902 a perpetual lease of Berar to the Government of India took the place of the Assignment, and since 1936 Berar and the Central Provinces (*q.v.*) have been administered as one under the Nizam of Hyderabad and Berar.

Berber, a town in the Anglo-Egyptian Sudan on the Nile, an important stopping-place on the Wady Halfa-Khartoum railway and formerly starting-point of Caravans for Suakin on the Red Sea. Pop. 5,000.

Berberah, the seaport of the British Somaliland Protectorate on the Gulf of Aden, with an annual fair lasting several months that brings together at times as many as 30,000 people.

Berbers, a race aboriginal to Barbary and N. Africa, predominant in Algeria and Morocco, and including the Kabyles and Tuaregs of the Sahara; of a proud and unruly temper; though different from the Arab race, are of the same religion.

Berbice, the eastern division of British Guiana; produces sugar, cocoa, tobacco, and timber.

Berchem (or *Berghem*), a celebrated landscape-painter of the Dutch school, born at Haarlem. (1624-1683).

Berchta, a German female bogey, the "white lady," name signifying "the white lady," supposed to have dominion over enchantresses, elves, dwarfs, and held up as a terror before bad children. See *Bertha*.

Berchtesgaden, a town in the SE. Herr Hitler has a retreat and where important conferences have been held. Chief industry is toy-making. It is also a health resort. There are rock salt mines in the vicinity and several lakes including the Königssee.

Berchtold, Count Leopold von, Austro-Hungarian diplomat, successor to Aehrenthal as Foreign Minister in 1912, in which capacity he served until 1915, being responsible for foreign policy at the outbreak of the Great War. In face of threatened Serbian expansion, he favoured a final settlement with Serbia after the assassination of the Archduke Francis Ferdinand, even if it involved war with Russia and France. (1863-).

Bercy, a commune on the right bank of the Seine, outside Paris, included in it since 1860; is the great mart for wines and brandies.

Berdichev, a town of Russia, in the Ukraine, an important trade centre, with 4 great annual fairs. Its predominantly Jewish population gave it the name of Jerusalem of Volhynia. Pop. 56,000.

Bereans, a sect formed by John Barclay in 1778, who regard the Bible as the one exclusive revelation of God.

Berenger, or *Berengar* of Tours, a celebrated theologian, born at Tours; held an ecclesiastical office there, and was made afterwards Archdeacon of Angers; for denying the doctrine of transubstantiation he was condemned by successive councils of the Church and compelled publicly to retract, though he so often and openly recalled his retraction that the pope, Gregory VII., deemed it prudent at length to let him alone. After this he retired to an island on the Loire, where he gave himself up to meditation and prayer. (998-1088).

Berenger I., King of Italy, grandson of Louis the Débonnaire, and therefore of the Carolingian family, an able general; originally Marquis of Friuli; provoked the jealousy of the nobles, who dreaded the abridgment of their rights, which led to his assassination at their hands in 924. S. II., King of Italy, grandson of the preceding, was de throne twice by the German Emperor Otto, who sent him a prisoner to Bamberg, where he died, 966.

Berenice, a Jewish widow, daughter of Herod Agrippa, with whom Titus was fascinated, and whom he would have taken to wife, had not the Roman populace protested, from their anti-Jewish prejudice, against it. The name was a common one among Egyptian as well as Jewish princesses, a famous Berenice being the queen of Ptolemy III., who, from a legend concerning the dedication of her hair to the war-gods, has given her name to the constellation "Coma Berenices," the seven stars near the tail of Leo.

Beresford (of Metammore and Curraghmore), Charles William de la Peer Beresford, Baron (best known as Lord

Charles Beresford), second son of the fourth Marquess of Waterford, British admiral and parliamentarian. In 1832, as captain, assisted at reduction of Alexandria. Was with naval brigade at Abu Klea, etc., 1885. At different times represented in parliament: Marylebone, York, Woolwich, Portsmouth. A lord of the admiralty, 1886-1888. Rear-admiral, 1897. Commanded Mediterranean and Channel squadrons. At variance with Fisher's naval reforms, addressed, 1909, controversial document to Prime Minister Asquith. Baron, 1910. (1846-1919).



LORD C. BERESFORD

Beresford, William Carr, Viscount, an English general, natural son of the first Marquis of Waterford; distinguished himself in many a military enterprise, and particularly in the Peninsular War, for which he was made a peer; he was a member of the Wellington administration, and master-general of the ordnance. (1768-1854).

Beresina, a Russian river, affluent of the Dnieper, into which it falls after a course of 350 m.; it is serviceable as a water conveyance for large rafts of timber to the open sea, and is memorable for the disastrous passage of the French in their retreat from Moscow in 1812.

Berg, Alban, Austrian musical composer, born in Vienna, and trained by Schönböck. His acknowledged masterpiece was the opera *Wozzeck*, which was produced in Berlin in 1925—a work unfamiliar in style, for he had abandoned traditional formality, but yet admirably adapted to the theme of the opera. (1885-1935).

Berg, Duchy of, on right bank of the Rhine, between Düsseldorf and Cologne, now part of Prussia; Murat was grand-duke of it by Napoleon's appointment when previously it had been ceded to France.

Bergamo, a Lombard town and episcopal see, in a province of the same name, and 34 m. NE. of Milan, with a large annual fair in August, the largest in Italy. Textiles are manufactured. Pop. (prov.) 585,000, (town) 85,000.

Bergamot, a variety (Bergamia) of *aurantium*, from the rind of which oil of bergamot is obtained.

Bergen, the old capital of Norway, on the Gulf Stream, and never frozen; the town, consisting of wooden houses, is built on a slope on which the streets reach down to the sea, and has a picturesque appearance; the trade, which is considerable, is in fish and fish products; manufactures gloves, porcelain, leather, etc.; the seat of a bishop, and has a cathedral; the birthplace of Ole Bull, the violinist, and Grieg, the composer. Pop. 98,000.

Bergen-op-Zoom, a town in N. Holland, once a strongly fortified place, and much coveted and frequently contested for by reason of its commanding situation; has a large trade in anchovies; sugar-beet manufactured. Pop. 24,000.

Bergerac, a manufacturing town in France, 60 m. E. of Bordeaux, celebrated for its wines; it was a Huguenot centre, and suffered greatly in consequence. Pop. 17,000.

Bergerac, Savinien Cyrano de, an eccentric man with comic power, a Gascon by birth; wrote a tragedy and a comedy; his best work a fiction entitled *Histoire Comique des États et Empires de la Lune et du Soleil*; a good swordsman, fought many duels in vindication, it is said, of his preposterously large nose, and is thereby the subject of a play by Rostand, the French dramatist. (1619-1635).

Bergner, Elisabeth, Austrian actress, born in Vienna, married to Dr. Paul Czinner; studied for stage at Vienna Conservatory, 1915-1919. First appearance City Theatre, Zurich, 1919; soon acted Ophelia in *Hamlet* and other Shakespearean heroines, Nora in *A Doll's House*, and St. Joan in Shaw's play—an international success. In Britain, first at Manchester and then London (Apollo), 1933 in *Escape Me Never*. 1936 played the title-role in *Barrie's The Boy David*. Has also appeared in films. (1900-).

Bergson, Henri Louis, French philosopher, of Jewish descent, he early studied metaphysics and became professor of Philosophy at the College of France. His system regards life as the ultimate reality, and his ideas of creative evolution are reflected in the writings of Bernard Shaw. (1859-).

Beri-beri, a disease common in the East due to a diet deficient in certain vitamins (q.v.). It is often due to an absence of fresh vegetables or to a diet mainly composed of rice with the husks removed. The discoverer of the cause was the late Sir Thomas Stanton (d. 1938), the expert in tropical medicine and medical adviser to the Secretary of State for the Colonies.

Berkeley, a town in Gloucestershire, England, in the Vale of Berkeley, a valuable pasture district. Pop. 800. Also a town in California, U.S.A., in which is located the University of California. Pop. 81,000.

Berkeley, George, Bishop of Cloyne, an anthropomorphic man, who conducted in a self-sacrificing spirit practical schemes for the good of humanity, which failed, but the interest in whom has for long centred, and still centres, in his philosophic teaching, his own interest in which was that it contributed to clear up our idea of God and consolidate our faith in Him; it is known in philosophy as Idealism, but it must be understood that his idealism is not, as it was absurdly conceived to be, a denial of the existence of matter, but is an assertion of the doctrine that the universe, with every particular in it, as *man sees it and knows it*, is not the creation of matter, but the creation of mind, and a reflex of the Eternal Reason that creates and dwells in both it and him. The outer, as regards our knowledge of it, is within; such is Berkeley's fundamental philosophical principle. (1685-1753).

Berkhamstead, a market town of Hertfordshire, England; straw-plaiting the chief industry. Pop. 8,000.

Berkshire, a midland county of England, with a fertile, well-cultivated soil on a chalk bottom, in the upper valley of the Thames, one of the smallest but most beautiful counties in the country. In the E. part of it is Windsor Forest, and in the SE. Bagshot Heath. It is famous for its breed of pigs. Pop. 311,000.

Berkshire Hills, a mountainous district of W. Massachusetts, U.S.A., famed for its great natural beauty and a great holiday resort.

Berlichingen, Goetz von, nicknamed "Of the Iron Hand," a brave but turbulent noble of Germany, of

the 15th and 16th Centuries, the story of whose life was dramatised by Goethe, "to save," as he said, "the memory of a brave man from darkness," and translated from the German by Sir Walter Scott.

Berlin, capital of Prussia and Germany; stands on the Spree, in a flat, sandy plain. It is linked by canal to the Rs. Elbe and Oder and is the centre of the Great Prussian State railway system. Recent suburban expansion includes Potsdam, Charlottenburg and Spandau. The old royal and imperial palaces, the great library, which contains over 5,000,000 volumes, the university, national gallery and museums, and the arsenal are all near the centre of the city.

Its position between the Baltic and North Seas, the Spree and the numerous canals and railways which converge on it, renders it a most important commercial centre; its staple trade is in grain, cattle, spirits, and wool. Manufactures are extensive and very varied; the chief are woollens, machinery, bronze ware, drapery goods, and beer. Practically rebuilt since 1878, it is probably the most highly organised and best-administered city in the world. The pop. is 4,246,500, ranking next to London in European cities. Berlin is the seat of the Republican Parliament, the Reichstag, and the Prussian local administration.

Berlin Congress, held in 1878 of the Treaty of San Stefano which ended the Russo-Turkish War, and which appeared to give Russia sole control of the Balkan Peninsula. The President was Prince Bismarck, and the English plenipotentiaries were Lords Salisbury and Beaconsfield. Other countries represented were Austria-Hungary and Turkey. One of the results was the occupation of Bosnia and Herzegovina by Austria-Hungary, while Batoum was held by Russia.

Berlin Decree, a decree of Napoleon declaring Britain in a state of blockade and vessels trading with it liable to capture.

Berlioz, Hector, a celebrated musical composer and critic, born near Grenoble, in the dept. of Isère, France; sent to study medicine in Paris; abandoned it for music, to which he devoted his life. His best-known works are the *Symphonic Fantastique*, *Romeo and Juliet*, and the *Damnation of Faust*; the *Symphonie*, which he produced while he was a student at the Conservatoire in Paris, so struck Paganini that the violinist presented him with 20,000 francs. (1803-1869).

Bermondsey, a busy SE. suburb of London, on the S. bank of the Thames, well known for its tanneries and its civic park. Pop. 111,500.

Bermuda Cedar

(*Juniperus Bermudiana*), a species of cedar which covers large parts of the Bermudas; the timber is useful for making boats and pencils.

Bermuda Grass

(*Cynodon dactylon*, dog's-tooth grass), a perennial grass found in Europe (including England), Asia and Africa. It has a creeping stem and erect flowering branches. It grows in sandy soil, and is useful for binding against wind and erosion. Also can be used for pasturage.

Bermudas, or Somers Islands, a

group of 400 coral islands (20 inhabited) in mid-Atlantic, 677 m. SE. of New York; have a



BERMUDA GRASS

delightful temperate climate and are a popular health resort for Americans. They produce a fine arrowroot and export onions. They are held by Britain as a crown colony, have a naval station, and are provided with docks and fortifications. Of the population (27,800) more than two-thirds are negroes, survivors of the old slave days. The islands are in direct steamer and air communication with New York, and are likely to play an important part in the England-America winter air-route.

Bern (or *Berne*), a fine Swiss town on the Aar, which almost surrounds it, in a populous canton of the same name; since 1848 the capital of the Swiss Confederation; commands a magnificent view of the Bernese Alps; a busy trading and manufacturing city. It is famous for its bear-pit. Bern was founded in 1191, and became a free imperial city in 1218. Pop. 689,000.

Bernadotte, Jean Baptiste Jules, a marshal of France, born at Pau; rose from the ranks; distinguished himself in the wars of the Revolution and the Empire, though between him and Napoleon there was constant distrust; adopted by Charles XIII., King of Sweden; joined the Allies as a naturalised Swede in the war against France in alliance with Russia; became King of Sweden himself under the title of Charles XIV. (1763-1844).

Bernard, Claude, a distinguished French physiologist, born at St. Julien; he studied at Paris; was Majendie's assistant and successor in the College of France; discovered that the function of the pancreas is the digestion of ingested fats, that of the liver the transformation into sugar of certain elements in the blood, and that there are nervous centres in the body which act independently of the great cerebrospinal centre. (1813-1878).

Bernard, St., Abbot of Clairvaux, born at Fontaines, in Burgundy; pronounced one of the grandest figures in the Church militant; studied in Paris, entered the monastery of Cîteaux, founded in 1115 a monastery at Clairvaux, in Champagne; drew around him disciples who rose to eminence as soldiers of the Cross; prepared the statutes for the Knights-Templar; defeated Abelard in public debate, and procured his condemnation; founded 160 monasteries; awoke Europe to a second crusade. (1090-1153). Festival, Aug. 20.

Bernardin de Saint-Pierre.

See *Saint-Pierre*.

Bernardine, St., of Siena, born at Massa Carrara in Italy, of noble family; founder of the Observantines, a branch, and restoration on strict lines, of the Franciscan order; established 300 monasteries of the said branch; his works, written in a mystical vein, fill five folio volumes. (1380-1444).

Bernburg, a town in Anhalt, Germany, on the R. Saale; chief industries, chemicals and machinery-making. Pop. 34,000.

Berners, John Bouchier, Lord, writer or translator of romance; was Chancellor of the Exchequer in 1516, and Governor of Calais from 1520; translated Froissart's *Chronicles*, and *Huon of Bordeaux*. (1467-1533).

Bernese Alps, a chain in the Middle, Alps, of which the E. half is called the Bernese Oberland; they form the watershed between the Aar and the Rhône, are a popular tourist district, and include such high peaks as the Jungfrau (13,669 ft.) and the Wetterhorn (12,166 ft.).

Bernhard, Duke of Saxe-Weimar, a great German general; distinguished himself on the Protestant side in the Thirty Years War; fought under the

standard of Gustavus Adolphus; held command of the left wing at the Battle of Lützen, and completed the victory after the fall of Gustavus; died, as alleged without sufficient proof, by poison and was buried at Breisach. (1604-1639).

Bernhardi, Friedrich von, Prussian general, and apostle of nationalism and war, born at St. Petersburg (Leningrad), son of the diplomat Theodor von Bernhardi, became corps-commander in Great War; before which he attained fame, 1913, with his book *Germany and the Next War*. He wrote also: *The War of the Future*, and *Germany's Heroic Fight*. (1849-1930).

Bernhardt, Sarah, a dramatic artiste, born in Paris; of Jewish descent, but baptised as a Christian; distinguished specially as a tragedienne, her most famous parts having been in *La Dame aux Camélias*, *Hernani*, *La Tosca*, and *L'Aiglon*; displayed abilities qualifying her to shine in other departments of the profession and of art, such as painting and sculpture. (1844-1923).



SARAH BERNHARDT

Berni, Francesco, an Italian poet, born in Tuscany, who excelled in burlesque, and to whom Italian as a literary language owes much; remodelled Boiardo's *Orlando Innamorato* in a style surpassing that of the original; gave his name to the type of poetry called Bernesque. (1497-1535).

Bernicia, an ancient British kingdom, afterwards included in Northumbria; founded by King Ida (547-559), it extended from the Tees to the S. to the borders of Strathclyde in Scotland.

Bernina, *Piz*, a mountain in the Rhaetian Alps in the Swiss canton of Grisons, 13,290 ft. high, remarkable for its extensive glaciers. Also a pass between the Upper Engadine and the Adula Valley.

Bernini, Giovanni Lorenzo, an Italian painter, sculptor, and architect, born at Naples; produced his "Apollo and Daphne" at 18, his masterpiece, was architect to the Pope, and designed the colonnade of St. Peter's; he died wealthy. (1598-1680).

Bernoulli, name of a Swiss family of mathematicians, born at Basel, though of Dutch origin. The most celebrated is *Jean* (1667-1748), professor at Basel, who discovered the exponential calculus and the method of integrating rational functions, as well as the line of swiftest descent. *Jacques* (1654-1705) is remembered for his applications of the calculus to various problems. Several other members of the family were distinguished mathematicians.

Bernstein, Henry, eminent modern French dramatist, born in Paris. Chief plays include *La Rafale*, *Le Voleur*, *Samson*, *Après moi*, *Le Secret*, *Judith*. (1876-).

Bernstorff, Count Johann Heinrich, German ambassador to the U.S.A. from 1908 until the entry of the U.S.A. into the Great War in 1917, when he went to Constantinople. As ambassador he received President Wilson's protests against submarine outrages and had to deliver his country's apologies though the outrages continued. (1862-).

Berri, an ancient province of France, forms dept. of Indre and Cher, which became crown property in 1100 under Philippe I., and a duchy in 1639, giving title to a succession of French princes.

Berri, Duc de, second son of Charles X. and father of Comte de Chambord, a benevolent man; assassinated by a fanatic, Louvel, as he was leaving the Opera House. (1778-1820).

Berri, Caroline Louise, Duchesse de, dowager of preceding, distinguished herself by her futile efforts to restore the Bourbon dynasty in the reign of Louis Philippe. The attempt failed and she was imprisoned, but released when the discovery of her secret marriage to the Italian Count Lucchesi-Palli deprived her of sympathy and support. (1798-1890).

Berry, a fleshy fruit, the only hard part of which is the seeds (e.g., the drupe), See Fruit.

Bersaglieri, the Italian name for a corps of riflemen or sharpshooters formed originally in Sardinia during the reign of Victor Emmanuel. They fought conspicuously in the Crimean War and the Italian War of 1859, and were later employed in suppressing brigandage in Sicily; distinguished themselves on the Piave during the Great War.

Berserker, a Norse warrior who went into battle unharnessed, whence his name (which means bare of sark or shirt of mail), and was said to have been inspired with such fury as to render him invulnerable and irresistible.

Bertha, goddess in the S. German wheel principally, and of the household as dependent on it, on behalf of which and its economical management she is often harsh to idle spinners.

Bertha, Big, the nickname of a long-range gun which shelled Paris from Concy, 76 m. away, in March 1918, named after Frau Bertha von Böhlen, a proprietor of Krupp's arsenal. Its bore was 21 cm. and the trajectory 21 m. 256 people were killed.

Bertha, St., a British princess, wife of Ethelbert, King of Kent; converted him to Christianity.

Berthe, "au Grand Pied," (i.e., Long Foot), wife of Pépin the Short, and mother of Charlemagne, so called from her club foot.

Berthelot, Marcellin Pierre Eugène, a French chemist, born at Paris; professor in the College of France; distinguished for his researches in organic chemistry and his attempt to produce organic compounds; the dyeing trade owes much to his discoveries in the extraction of dyes from coal-tar; he laid the foundation of thermochemistry. (1827-1907).

Berthelot, Philippe Joseph Louis, French diplomat, born at Sèvres, son of a celebrated chemist. Entered service 1889. In 1920 became Secretary-General of Foreign Office. In 1922, after an inquiry into affairs of the Industrial Bank of China, suspended for ten years, but re-appointed 1925 by Herriot. (1866-1934).

Berthier, Pierre Alexandre, Prince of France, born at Versailles; served with Lafayette in the American war, and rose to distinction in the Revolution; became head of Napoleon's staff, and his companion in all his expeditions; swore fealty to the Bourbons at the restoration of 1814; on Napoleon's return retired with his family to Bamberg; threw himself from a window, maddened at the sight of Russian troops marching to the French frontier. (1753-1815).

Berthollet, Claude Louis, Count, a Savoy, to whom we owe the discovery of the bleaching properties of chlorine, the employment of carbon in purifying water, and many improvements in manufactures. (1748-1822).

Berthon, Rev. Edward Lyon, inventor of the two-bladed marine propeller and of canvas collapsible boats for use in shipwreck. (1813-1899).

Bertillon Method, for identification of criminals; introduced by and named after Alphonse Bertillon, of Paris; comprises measurements of head and body, of the fingers, feet, and ears in particular.

Bertrand de Born. See Born.

Bertrand du Guesclin. See Du Guesclin.

Bertrand, Henri Gratien, Comte, a French general, and faithful adherent of Napoleon, accompanied him in all his campaigns, to and from Elba, as well as in his exile at St. Helena; conducted his remains back to France in 1840. (1773-1844).

Bervie, or Inverbervie, a seaport and market town of Kincardineshire, Scotland, with an ancient castle. Pop. 1,000.

Berwick, James Fitz-James, Duke of, a natural son of James II., a naturalised Frenchman; defended the rights of his father; was present with him at the Battle of the Boyne; distinguished himself in Spain, where he gained the victory of Almanza; was made marshal of France; fell at the siege of Philippsburg. (1670-1734).

Berwickshire, a fertile Scottish Lammermuirs, inclusive, and the Tweed; is divided into the Merse, a richly fertile plain in the S., the Lammermuirs, hilly and pastoral, dividing the Merse from Mid and East Lothian, and Lauderdale, of hill and dale, along the banks of the Leader; Greenlaw the county town. Pop. 26,600.

Berwick-upon-Tweed, a town on the Scottish side of the Tweed, at its mouth, reckoned since 1885 in Northumberland, though at one time treated as a separate county; of interest from its connection with the Border wars, during which it frequently changed hands, till in 1482 the English became masters of it. Pop. 12,300.

Beryl, a silicate of aluminium and beryllium which crystallises in the hexagonal system. The clear varieties are classed as gems and include the emerald and aquamarine. The best come from Siberia.

Beryllium, or Glucinum, a rare metal prepared by heating beryllium potassium fluoride with metallic sodium and excess of sodium chloride. Crystals of pure beryllium are obtained after treatment with water. It is a silver-white, stable metal, and occurs in nature as a silicate in beryl, helvite, and gascolinite. It was discovered by Vauquelin in 1798. Its symbol is Be, and its atomic weight 9.1.

Berzelius, Johan Jakob, Baron, a celebrated Swedish chemist, one of the creators of modern chemistry; instituted the chemical notation by symbols based on the notion of equivalents; determined the equivalents of a great number of simple bodies, such as cerium and selenium; discovered selenium, thorium and zirconium; shared with Davy the honour of propounding the electro-chemical theory. (1779-1848).

Besançon, Doubs, in France; the capital of the dept. of a very strong place fortified by Vauban; seat of an archbishopric; abounds in relics of Roman and mediæval times; watchmaking a staple industry, employing some 15,000 of the inhabitants; manufactures also porcelain and carpets. Pop. 60,000.

Besant, Mrs. Annie, *née* Wood, born in London; of Irish descent; married to an English clergyman, from whom she was legally separated; took a keen interest in social questions and secularism; drifted into theosophy, of which she became an active propagandist. (1847-1933).

Besant, Sir Walter, a man of letters, born at Portsmouth; eminent chiefly as a novelist of a healthily realistic type; wrote a number of novels, some jointly with James Rice, of which *The Golden Butterfly*, *Ready-Money Mortiboy*, and *Dorothy Forster* are best known. One of his books, *All Sorts and Conditions of Men*, Utopian in character, was the cause of the People's Palace being built in the East End of London. He produced several valuable volumes on the history of London, and was the author of *French Humorists*. As champion of the cause of Authors versus Publishers he founded the Society of Authors in 1884. (1836-1901).

Besier, Rudolf, English playwright, but born in Java of Dutch parents. First play *The Virgin Goddess*. Wrote about a dozen other plays before becoming famous with *The Barretts of Wimpole Street*, founded on the history of Elizabeth Barrett Browning. (1878-).

Bessarabia, a province of Rumania to the SW. of Russia, between the Dniester and the Pruth; a cattle-breeding province; exports cattle, wool, and tallow. In 1918 it was added to Rumania. Pop. 3,042,000.

Bessarion, John, Greek cardinal, b. at Trebizond; contributed by his zeal in Greek literature to the fall of scholasticism and the revival of letters; tried hard to unite the Churches of the East and the West; joined the latter, and was made cardinal; too much of a student of Plato to recommend himself to the popehood, to which he was twice nearly elevated. (1395-1472).

Bessborough, Sir Vere Brabazon Ponsonby, ninth earl of; called to Bar, 1903. L.C.C. member for Marylebone E., 1907-1910. M.P. (Conservative), Cheltenham 1910; Dover 1913-1920. Served in Gallipoli with Imperial Yeomanry, 1915; in France on Staff, 1916-1918. Succeeded to title, 1920. P.C., 1931. Governor-General of Canada, 1931-1935. (1880-).

Bessel, Friedrich Wilhelm, Prussian astronomer, born at Minden; professor of Mathematics at Königsberg, and director of the Observatory; discovered the parallax of the fixed star 61 Cygni; his greatest work, *Fundamenta Astronomiae*, on which he spent ten years, a marvel of toil and accuracy. (1784-1846).

Bessemer, Sir Henry, civil engineer and inventor, born at Charlton, Herts; of his many inventions the chief is the process, named after him, of converting pig-iron into steel at once by blowing a blast of air through the iron while in fusion till everything extraneous is expelled and only a definite quantity of carbon is left in combination, a process which revolutionised the iron and steel trade. (1813-1898).

Bessus, a satrap of Bactria under Darius, who assassinated his master after the battle of Arbela, but was delivered over by Alexander to Darius's brother, by whom he was put to death, 328 B.C.

Bestiary, a name given to a class of animals, medieval books treating of animals, viewed allegorically.

Beta Particles, electrons (*q.v.*) emitted during certain radioactive changes. They are lighter, faster, and more penetrating than the alpha particles (*q.v.*); some beta particles have a velocity closely approaching that of light. See *Radioactivity*.

Betelgeuse, a variable giant star of the constellation Orion, on the fringe of the Milky Way.

Betel Nut, the fruit of the Areca palm (*Areca catechu*), cultivated in India and the E. Indies. Is universally chewed by the native population. Has a disagreeable astringent flavour, and stains the saliva a brilliant red.

Bethany, village on E. of Olives, abode of Lazarus and his sisters; the scene of the ascension of Christ.

Bethel (*i.e.*, house of God), a place 11 m. N. of Jerusalem, scene of Jacob's dream, and famous in the history of the patriarchs.

Bethesda, a town of Shire, Wales, 5 m. S.E. of Bangor, named from its Non-conformist chapel. The Penrhyn slate quarries are near by. Pop. 4,000.

Bethesda, Pool of, the public bathing-place in ancient Jerusalem, a public reservoir with five porches, where Christ healed the impotent man. Its exact position is unknown, though various possible sites have been identified.

Beth-Horon, two adjacent villages of the main route from Jerusalem to the coast. Here Judas Maccabeus defeated the Syrians. They are now known as Upper and Lower Beit-ur.

Bethlehem, a village 6 m. S. of Jerusalem, the birthplace of Jesus Christ and King David, with a convent containing the Church of the Nativity; near it is the grotto where St. Jerome translated the Bible into Latin. Pop. 7,000. Also a town in Pennsylvania, founded by the Moravian Brotherhood. In S. Bethlehem are located the works of the great Bethlehem Steel Corporation. Pop. 57,500. Also a town of the Orange Free State. Pop. 6,300 (whites).

Bethlehemites, a name given to the Catholic Church. (1) Dominican Friars at Cambridge who wore a red star; (2) a Knight-hood order established by Pius XI. in 1459, and (3) a nursing community in Central America, Mexico, and Lima.

Bethlen, Stephen, Count Bethlen von, Hungarian statesman. Entered Hungarian parliament as Liberal, 1901. In 1919 led counter-revolution that overthrew Béla Kún. Prime Minister, 1921-1931; obtained many benefits for Hungary from Powers and League of Nations. Since 1931 has been severe critic of succeeding governments. (1874-).

Bethmann-Hollweg. See *Hollweg*.

Bethnal Green, an eastern parliamentary borough and populous district. Pop. 108,000.

Bethsaida, two villages of ancient Galilee. One, on the W. shore of the lake, was the birthplace of Peter, Andrew and Philip; the other, N.E. of the lake, was the scene of Christ's feeding of the five thousand.

Béthune, a town in the dept. of Pas-de-Calais, France, which served as a railway centre for the Allies in the Great War. Twice the Germans tried unsuccessfully to capture it, in Jan. 1915, and April 1918. Pop. 20,000.



ARECA PALM

Betony, *Betonica* (*Stachys betonica* or *Stachys officinalis*), a herbal plant the young shoots of which, when cooked, are edible. Many varieties thrive in England.

Betting, or wagering by staking something to be lost or won on certain conditions, usually connected with sporting events, and especially horse-racing. There are many forms, from placing bets on races, etc., with a bookmaker or commission agent to football betting by means of "football pools," the latest variation of the hazard, and lotteries, which are as popular on the continent, where they are legalised, as they are in this country, where they are not. Betting has been well known as a practice in all times, and before horse-racing took the form of gambling upon the risks of card-playing.

Severe laws operate against illegal betting, particularly street-betting, lotteries, gaming in a public place, and keeping a common gaming house. Race-course betting is controlled by the Board of Control, and must take place in Tattersall's Ring. Under the gaming laws, bets are not recoverable by law from persons who refuse to carry out the terms of a wager.

The Finance Act of 1926 authorised a duty on bets and betting, and a certificate costing £10 must be held by a bookmaker. Totalisators were legalised in 1928. They are electrically worked machines for recording bets made, and show the amount of the stake money. In France the *pari-mutuel* is a device of a similar nature, except that it is manipulated by officials.

Betting Tax, a tax on bookmakers' turnover included in Winston Churchill's budget of 1926 and abolished by him in 1929, as it failed to produce the anticipated revenue.

Bettws-y-Coed, an urban district of Caernarvonshire, Wales, the centre for a beautiful district attracting many tourists and artists. There are trout and salmon fisheries. Pop. 900.

Betty, **W. Henry**, a boy actor, known as a fortune; the House of Commons once adjourned to see him act *Hamlet*. (1791-1874).

Beule, **Charles Ernest**, a French statesman and archaeologist; superintended excavations on the Acropolis of Athens; held office in the National Assembly under Macmahon. (1826-1874).

Beuthen, a manufacturing town in a Prussian Silesia, in the centre of a mining district. Pop. 101,000.

Beveridge, **Sir William Henry**, London School of Economics, 1919-1937. Was born at Rangpur, Bengal. Educated Charterhouse and Balliol College, Oxford. Sub-warden, Toynbee Hall, 1903-1905. First director, Labour Exchanges, 1909-1916. During war, in Ministries of Munitions and of Food. K.C.B. 1919, when he became a senator of London University; vice-chancellor 1928-1928. (1879-).

Beverley, a Yorkshire manufacturing town, 8 m. NW. of Hull, England, with a Gothic minster, which contains the tombs of the Percys. Pop. 14,000.

Beverley, **John**, a learned man, tutor to the Venerable Bede, Archbishop of York, and founder of a college for secular priests at Beverley; was one of the most learned men of his time; d. 721.



BETONY

Bevis of Southampton, or **Sir Bevis**, a famous knight of English medieval romance, which was founded on an old Italian tale of chivalry; a man of gigantic stature.

Bewdley, a municipal borough and ancient market town of Worcestershire, England, on the Severn. Tanning and malting are carried on, and combs, rope, bricks, and brass are made. It has an old grammar school. Pop. 3,000.

Bewick, **Thomas**, a distinguished wood-engraver, born in Northumberland, apprenticed to the trade in Newcastle; showed his art first in woodcuts for his *History of Quadrupeds*, the success of which led to the publication of his *History of British Birds*, in which he established his reputation both as a naturalist, in the truest sense, and as an artist. (1753-1828).

Bexhill, a municipal borough and seaside resort of Sussex, England, 5 m. W. of Hastings. The old town lies inland. Pop. 21,000.

Bexley, a village and, with Bexley Heath, E. Wickham, and Wellington, urban district of Kent, England, 4 m. W. of Dartford. Pop. (urban district) 33,000.

Bey, **Nazim**, leader of the "Young Turks." Tried to impose a Turkish education on Macedonian schools, and Arabic script on the Albanians. Organised massacre of Armenians, 1925. For conspiring against Mustapha Kemal, hanged at Angora 1926.

Beyle, **Marie Henri**, French critic and novelist, usually known by his pseudonym "De Stendhal" or "Stendhal"; born at Grenoble; wrote in criticism *De l'Amour*, and in fiction *La Chartreuse de Parme* and *Le Rouge et le Noir*; an ambitious writer and a cynic. (1788-1842).

Beza, **Théodore**, a French Protestant theologian, born in Burgundy, of good birth; professor of Greek at Lausanne; deputed from Germany to intercede for the Huguenots in France, persuaded the King of Navarre to favour the Protestants; settled in Geneva, became the friend and successor of Calvin; wrote a book, *De Hereticis a Civili Magistratu Puniendis*, in which he justified the burning of Servetus, and a *History of the Reformed Churches in France*. (1519-1605).

Bezants, Byzantine gold and silver coins, introduced by the Crusaders into England, where they were current till the time of Edward III.

Béziers, a manufacturing town in the dept. of Hérault, France, 49 m. SW. of Montpellier; manufactures silk fabrics and confectionery. Pop. 71,000.

Bezique, a game played with two packs of cards without the twos, threes, fours, fives, and sixes, and used as one. Usually two players. Chief objects to hold various combinations, to win aces and tens (called brisques) and win last trick. Cards are alternately played and drawn from stock.

Bezwa, a town of Madras, India, at the head of the delta of the Kistna, a centre of traffic; there are rice-mills, etc. Pop. 44,000.

Bhagalpur, a town in the province of Bihar, India, on the right bank of the Ganges, 265 m. NW. of Calcutta; chief product of district indigo. Pop. 68,900.

Bhagavad Gita, a poem introduced into the Mahābhārata, divided into three sections, and each section into six chapters, called Upanishads; being a series of mystical lectures addressed by Krishna to his royal pupil Arjuna on the eve of a battle, from which he shrank, as it was with his own kindred;

the whole conceived from the point of view or belief, calculated to allay the scruples of Arjuna, which regards the extinction of existence as absorption in the Deity.

Bhamo, a town in Burma, on the R. Irrawadi, the chief centre of trade with China, conducted mainly by Chinese, and a military station, only 40 m. from the Chinese frontier.

Bhang, an intoxicating drink which contains narcotic properties, prepared from the hemp plant. The drink is consumed by Eastern peoples.

Bharatpur, a town in a native state of India, the name in Rajputana, India, yielding wheat, maize, cotton, sugar, with quarries of building stone; 30 m. W. of Agra; carries on an industry in the manufacture of chowries. Pop. (state) 500,000; (town) 35,000.

Bhavnagar (**Bhaunagar**), one of the W. India States on the E. side of the Gulf of Cambay, in political relation with the Agent to the Governor-General. Area 2,980 sq. m. Pop. 500,000. The capital is a seaport of the same name with an extensive cotton trade. Pop. 59,000.

Bhils, an aboriginal pre-Aryan race of India, Central India, living in the hilly districts and still untrained to settled life; number 750,000; still noted as archers.

Bhiwani, a town in the Hissar district, Punjab, India, an important trading centre. Pop. 33,000.

Bhopal, a well-governed native state in Central India, under British protection, with a capital of the same name; under a government that has been always friendly to Britain. Pop. (state) 730,000; (town) 45,000.

Bhutan, an independent state in the E. Himalayas, with magnificent scenery; subsidised by Britain; until 1907 had a government like that of Tibet, viz., a dual control by clergy and laity. In 1907 the temporal head resigned and an hereditary Maharajah was elected. Religion the same as in Tibet (viz. Buddhism) though the people are at a low stage of civilisation; the country exports horses, musk, salt, and chowries. Pop. (est.) 300,000.

Biafra, **Bight of**, a large bay in the Gulf of Guinea in W. Africa; includes several islands, and receives into it the waters of the Calabar R.

Bialystok (or **Bielostok**), capital of a large county of the name in Poland. It fell to the Germans in 1915 after much fighting. Pop. (county) 1,640,000; (town) 91,000.

Biarritz, a bathing-place on the Bay of Biscay, in the dept. of Basses-Pyrénées, France, 6 m. SW. of Bayonne; became a place of fashionable resort following the visits of the Empress Eugénie. Pop. 21,000.

Bias, one of the seven wise men of Greece, born at Priene, in Ionia; lived in the 6th Century B.C.; many wise sayings are ascribed to him; was distinguished for his indifference to possessions.

Bias Bay, a bay off the coast of China, infested with pirates.

Bible, The (i.e., the Book *par excellence*, and not so much a book as a library of books), a collection of sacred writings divided into 2 parts, the Old Testament and the New; the Old, written in Hebrew, comprehending 3 groups of books, the Pentateuch,

the Prophets, and the Hagiographa, bearing on the religion, the history, the institutions, and the manners of the Jews; and the New, written in Greek, comprising the four Gospels, the Acts of the Apostles, and the Epistles. The Old Testament was translated into Greek at Alexandria by 72 Jews, 280 B.C., and is known as the Septuagint; and the whole book, Old and New, was translated into Latin in a grotto near Bethlehem by St. Jerome, A.D. 385-404, and is known as the Vulgate, after which the two came to be regarded by the Church as of equal divine authority and as sections of one book.

No complete translation was made in England in Saxon times, though portions were rendered into Anglo-Saxon by Bede, the historian. Although printing was brought to England in 1474, no English Bible was printed till 1538, and that by a foreign press. William Tyndale translated a large portion, being assisted by Luther; and he completed the New Testament in 1526. Miles Coverdale produced a completely translated Bible in 1535. The Great Bible of Cranmer appeared in English churches in 1539. The Geneva Bible (a Breeches Bible) was produced in 1560 at Geneva by ministers exiled by Mary Queen of Scots. The authorised Bible of the Catholic church is the Douay Bible, consisting of a version of the Old Testament taken from the Vulgate and published at Douay in 1610, a version of the New Testament published at Rheims in 1582.

The uniform English Bible was prepared by ministers of James I. during 1607-1610, and is the first authorised version. Changes in the English language and the discovery of further information in hitherto unknown documents by eminent scholars led to formation of a committee in 1870 at the instigation of the Bishop of Winchester to revise the Authorised Version, for the elimination of errors. To avoid sectarian bias, experts of the Presbyterian and Nonconformist churches were invited, as well as representatives of the American Churches. The revised version was completed in 1885. The style of the language of the authorised version was left unchanged, and only errors rising from inaccurate translations of Greek words were removed.

At the present time the Christian Church is divided as far as the Old Testament is concerned, the Catholic Church retaining and the Protestant Church excluding the Apocrypha. It may be permitted to note that the Bible is written throughout, not in a speculative or a scientific, but in a spiritual interest, and that its final aim is to guide men in the way of life. The spirit in which it is composed is the spirit of conviction; its essence, both in the root of it and the fruit of it, is faith, and that primarily in a moral power above, and ultimately a moral principle within, both equally divine. The one principle of the book is that loyalty to the divine commands is the one foundation of all well-being, individual and social.

Bible Christians, a sect of Methodism founded in 1815 in Devon by William O'Bryan, and merged in 1907 with the United Methodists.

Bible Society, **The British and Foreign**, founded in 1804, with George Borrow (q.v.) as one of its agents. Has circulated the bible or portions of the bible in some hundreds of different languages. Millions of copies of the Scriptures are distributed every year.

Biblia Pauperum (i.e., Bible of the Poor), a book consisting of some 50 leaves, with pictures of scenes in the Life of Christ, and explanatory inscriptions in Latin verse, printed, from wooden blocks, in the 15th Century, before the invention of printing by movable types.



BHIL ARCHER

Bibliography (a term whose present use dates only from the 19th Century) means, as a system, "the description and history of books, their authorship, printing, publication, editions, etc." In practice now, a bibliography—i.e., a work containing such details—deals only with the literature of some one subject, period, locality, or author; or else it is a Bibliography of Bibliographies, a guide to works where the bibliography of each class will be found. The merest list of books of any class is sometimes called a bibliography.

Bibliomancy, a method of divination in which a book (*e.g.*, the Bible) is opened at random and a chance passage interpreted as an omen applicable to present circumstances.

Bibury, a picturesque old village of Gloucester, England, in the Cotswolds, 7 m. N. of Cirencester. It has a church dating from Saxon times. Pop. 600.

Bi-carbonate, a salt of carbonic acid (H_2CO_3), is used as an antacid, and effervescing liquors are usually produced by mixing it with acids such as tartaric acid. It is also the chief ingredient in baking-powder.

Biceps, a two-headed muscle of the upper arm, the function of which is (on contraction) to flex the fore-arm and supine the hand. The shorter of the two heads is attached to the coracoid process of the scapula, the longer to the edge of the glenoid cavity.

Bicester, a market town in Oxfordshire, England, 12 m. N.E. of Oxford. Cattle fairs are held there. There are remains of a 12th-Century abbey. Pop. 3,000.

Bichât, *Marie Francois Xavier*, an eminent French anatomist and physiologist; physician to the Hôtel-Dieu, Paris; one of the first to classify the structure of the human body into "cellular, vascular and muscular tissues"; his great work *Anatomie Générale appliquée à la Physiologie et à la Médecine*. (1771-1802).

Bickerstaff, *Isaac*, the pen-name adopted by Swift and Steele in many of their writings.

Bicycles, first used about 1800, feet pushed against the ground to propel them. The "bone-shaker" came in 1865, and the "penny-farthing" about 1880, types which were followed by the "safety bicycle" with two wheels of the same size. Pneumatic tyres and free wheels were later improvements.

Biddery Ware,

ware of tin, copper, lead and zinc, made at Bidar in Hyderabad, India.

Bidding Prayer, an exhortation to special reference, followed by the Lord's Prayer, in which the congregation joins.

Biddle, *John*, a Socinian writer in the Commonwealth; time of Charles I. and the Commonwealth; much persecuted for his belief, and was imprisoned, but released by Cromwell; regarded as the founder of English Unitarianism; wrote a *Confession of Faith touching the Holy Trinity*. (1615-1682).

Bideford, a municipal borough, sea-port and market town of N. Devon, England, on the Torridge, here crossed by a fine old bridge. Once an important port, it figures largely in Kingsley's *Westward Ho!* Pop. 2,000.

Bidpai, or *Pilpai*, the presumed author of a collection of Hindu fables of ancient date, in extensive circulation over the East, and widely translated.

Biel (or *Biennne*), a town of Switzerland in the canton of Bern standing at the E. end of the Lake of Biel (or *Biennne*). Watchos are made. Pop. 37,000.

Biel (or *Biennne*), Lake of, in the Swiss canton of Bern; the Aar is led into it when in flood, so as to prevent inundation below; on the shores of it are remains of lake-dwellings, and an island in it, St. Pierre, the retreat of Rousseau in 1765.

Biela's Comet, discovered in 1826 by Biela, an Austrian officer, was found to have a period of 6½ years. On its appearance in Jan. 1846, it was found to have divided into two parts, which were farther apart when the comet was next observed in 1852. It was not visible in 1859 or 1866, but in 1872, at the time when the comet was expected (Nov. 10), an unprecedented shower of meteors fell upon the earth. Biela's comet had disintegrated and the earth had passed through the remains.

Bielefeld, a manufacturing town in Westphalia, Germany, with a large trade in linen. Pop. 121,000.

Biene, *Auguste van*, actor and violinist, born in Holland, but in London from childhood, became manager of companies touring with burlesques. A sentimental play by Herbert Koen and James T. Tanner, *The Broken Melody*, produced at the Prince of Wales's in 1892, with van Biene as musician playing his violincello in it, was performed more than 6,000 times. He died suddenly while playing in *The Master Musician*, at Brighton. (1850-1913).

Biennne. See *Biel*.

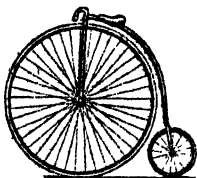
Biennials, the name applied to plants during their "life-circle," first in laying up a store of food, and second in flowering. Variations in climatic conditions cause delay, and the period is not fixed.

Bierce, *Ambrose*, short-story writer, born in Ohio, U.S.A., went to Mexico in 1913 during a civil war there, and disappeared. Rumour has it that he was shot by Villa. Chief work *Tales of Soldiers and Citizens*. (b. 1842).

Bier's Congestion Treatment.

It has long been known that, when unusually large demands are made upon an organ of the body, an increased amount of blood is delivered to it; this state is called hyperæmia. Bier conceived the idea of producing hyperæmia artificially in regions of the body affected by disease, and thus helping nature in her curative efforts. Two methods are employed, viz., the application of hot air (see *Aerotherapeutics*) to the appropriate region, which causes local congestion by increasing the flow of blood thither, and a more passive method which consists in lightly constricting the veins carrying the blood from the affected part, thus impeding its flow and giving it a longer time in which to perform its work. Under properly supervised conditions the Bier treatment has proved very successful.

Bigamy, the act of one who, being married, goes through the ceremony of marriage again during the life of the former husband or wife. Bigamy is an offence under the laws of most states. In England bigamy is a felony, punishable under the Offences against the Person Act of 1861 with penal servitude for any term not exceeding 7 years and not less than 3 years, or imprisonment with or without hard labour, not exceeding 2 years.



BICYCLE OF 1884

If the party's wife or husband shall have been absent continuously for 7 years, and is not known to be alive, no penalty is incurred, but the second marriage is void. Strict proof must be given of the first marriage; and the first wife or husband is not admissible as a witness for the prosecution, although the second is. It is not necessary to prove the second marriage would have been binding but for the first.

In Scotland the punishment is less severe, being usually a short term of imprisonment. Bigamy is punishable on the continent of Europe and in the United States, the French "code pénal" providing the punishment of "travaux forcés à temps."

Big-Endians, a name given to the Catholics, as Little-endians is the name given to the Protestants, in the imaginary kingdom of Lilliput, in Swift's *Gulliver's Travels*, the former being regarded as heretics by the latter because they break their eggs at the big end.

Biggleswade, a market town of Bedfordshire, England; manufactures bicycles and farm implements; market-gardening is an important industry. Pop. 6,000.

Biglow, imaginary author of poems in James Russell Lowell.

Bihar (Behar) and **Orissa**, formerly a province of British India, composed of Behar in the Ganges Valley, Orissa, rich delta lands, and between them the mountainous region of Chota-Nagpur. The native states of Chota, Nagpur, and Orissa were separated from the province in 1933. Under the Government of India Act, 1935, Bihar became a separate province from Orissa. Patna is the capital. Bihar is known as the "garden of India," and rice, wheat, barley, jute, and sugar-cane are the chief crops. Densely populated. The Cradle of Buddhism. Coal, iron, and mica are mined, and there are large iron and steel works and tobacco factories. Area (Bihar), 69,034 sq. m. Pop. 342,000,000, mostly Hindus.

Bijapur, city in the presidency of Bombay, India, once the capital of an extensive kingdom, and with remains of its former greatness. Pop. 33,000.

Bijawar, a small forested state of India, in the Bundelkhand Agency, of which the chief city is a town of the same name. Pop. (state) 130,000.

Bikaner, a native state of Rajputana, India, a desolate region without permanent rivers. Camels, sheep, and horses are reared, coal is mined, and goldsmith's work and ivory carving are carried on. Its capital (pop. 70,000) has the same name. Area, 23,317 sq. m. Pop. 900,000.

Bilaspur, a state in the Punjab, in political relation with the Punjab States Agent to the Governor-General. The capital is a town of the same name. Agricultural products are the chief sources of wealth of the state (rice in particular). Pop. (state) 100,000.

Bilbao, capital of the Basque province of Biscay, in Spain; a commercial city of ancient date, famous at one time for its steel, especially in Queen Elizabeth's time, when a rapier was called a "bilbo." There is a Basque University. Was captured by Gen. Franco's forces in 1937 after severe fighting. Pop. 176,000.

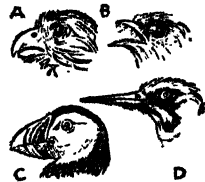
Bilberry, a berry-bearing shrub of the order Ericaceae abundant in the N. of the British Isles and hilly districts of the S. The berries are edible and are popular with cream in Devonshire.

Bile, a fluid secreted from the blood by the liver to aid in digestion, the secretion of which is most active after food.

Bilge, that part of a ship's bottom same as the keel. The word is the same as bulge. When around a ship usually rests upon the keel and one bilge.

Bilharziasis, otherwise schistosomiasis, a disease leading to discharge of blood and mucus from the rectum. It is caused by infection from a fluke parasite, the schistosome. It is prevalent in Africa, S. America, W. Indies, China, Japan, India, Burma and W. Australia.

Bill, the horny, toothless, and lipless jaw of birds, formed by the elongation of the front bones of the skull, and covered with a horny sheath. In birds of prey the upper mandible is larger than the lower. The nostrils are usually at the back, but in some types, notably the puffin, they are placed forward. The bill is used for seizing food, nest-building, fighting, and the preening of feathers. They vary tremendously in size and shape.



BILLS
A. Falcon; B. Night-jar; C. Puffin; D. Woodpecker

Bill Brokers, people who deal in specialise in discounting bills, either for themselves or as agents. When selling Bills of Exchange, they are purely brokers, when buying to sell again, bill merchants, and when dealing with bills involving combined capital of depositors, they become "discount houses." The former term for bill-broking firms was commission houses.

Billerica, a market town of Essex, England, 5 m. E. of Brentwood. It has an ancient church with a fine tower. Bricks are made. Here a Zeppelin was brought down in 1916. Pop. 1,500.

Billeting, a method of provisioning and lodging soldiers when not in camp or barracks. Billeting was formerly in the hands of the chief magistrate of a town, who was to allot the billets as fairly as possible. A list of houses, usually inns, hotels, etc., was kept, and the innkeeper received a billeting allowance. The power of billeting is outlined in the Army Act of 1881, which was extended by the Act of 1909 providing for the billeting in cases of emergency, of troops, etc., on occupiers of all public buildings, dwelling-houses, warehouses, barns, and stables. The Act is renewed annually.

Billiards, a game known in England as long ago as the 16th Century (cf. *Antony and Cleopatra*, Act 2, Sc. v.). It is believed to have been invented by a Spaniard, and has grown rapidly in favour since the middle of last century. J. Roberts, W. Cook, Mitchell, C. Dawson, Diggle, Stevenson, Inman, Reece, Davis, W. Smith, and Newman have been among the leading exponents of the game in this country, to whom must be added W. Lindrum, the Australian champion.

Billingham, an urban district and village of Durham, England. The British Oxygen Company has works here, and iron and steel are also worked. Pop. 8,000.

Billingsgate, a fish-market in London, below London Bridge; also a name given to low, coarse language indulged in there.

Billiton, or *Bilitong*, an island of the Dutch East Indies between Borneo and Sumatra, chiefly notable for its many rich tin mines. Pandang is the capital. Area 1,850 sq. m. Pop. 70,000.

Bill of Exchange, an "uncconditional order in writing, addressed by one person to another, requiring the person to whom it is addressed to pay on demand or at a fixed time a certain sum of money to a person specified." There are two classes: inland and foreign. Inland bills are those drawn and paid within the British Isles. Any other is foreign. A bill of exchange may be transferred. This operation is called negotiation. It must be stamped according to the terms of the Stamp Act. Bills afford a ready means of raising money to commercial bodies, and for adjusting commercial debts between interests in different countries. A bill may always be discounted either by a broker or through a bank.

Bill of Lading, an acknowledgment receipt of merchandise on board ship, and engaging to deliver the said merchandise safely at the port to which the ship is bound. If the ship is lost and the goods are insured, the underwriters accept a copy of the Bill of Lading as evidence of the shipment having been made and of the ownership of the goods. A Bill of Lading is negotiable.

Bill of Rights, the name given to and Mary, embodying the Declaration of Rights and accepted by them with the crown in 1689. It declared the abdication of James II. and contained 13 clauses relating to freedom of parliamentary election, keeping a standing army in time of peace, levying of money, excessive fines, and illegality of dispensing with or suspending laws.

Bill of Sale, a deed or writing under seal, the evidence of the sale of goods, furniture, fixtures, etc. Such are generally used where the possession of the property is not intended to be parted with. Property is liable to be seized under a Bill when the debtor breaks the terms of an agreement, or if execution be levied against the goods of the debtor under a judgment.

Bilston, a market town of Staffordshire, England, 3 m. SE. of Wolverhampton. An iron-smelting and hardware centre, grindstones are made from local stone and casting is carried on. Pop. 31,000.

Bimetallism, the term describing based on the use of gold and silver on level terms regarding legal tender and minting. Conferences met in Paris between 1878 and 1882 to fix the proportion for a bi-metal standard, but without effect. The last attempt to establish international bimetalism was in 1887 in U.S.A., and U.S.A. and France proposed that England should recommence minting silver in India and guarantee a purchase of £10,000,000 of silver annually. India refused, and in 1900 the agitation died down.

The monometallic standard of gold was established in England in 1900, and in 1914 all countries were included except China, on silver, and some small countries. Suggested proportions of a bimetallic standard have been fixed by experts at 1 of gold to 15½ of silver, but variations in currency demands in different countries and their respective silver mine possessions make the adoption unworkable.

Binary or **Double Stars**, were first studied by Sir Wm. Herschel (q.v.). These systems consist of one star revolving about another, giving rise in some cases to a variation in the apparent brightness. Though many of the binaries reveal their double nature in a powerful telescope, others are only identified by the spectroscope or by the variation in their brightness. Data obtained from the observation of double stars enable us to calculate their masses.

Bindweed, the name given to certain of the convolvulus family with attractive, bell-shaped flowers, common in England. *Convolvulus arvensis*, the lesser bindweed, bears sweet-scented flowers much visited by insects. *Calyptegia sepium*, a larger bindweed, bears scentless flowers and is fertilised by the hawk-moth, the distribution of plant and moth being co-extensive.

Bingen, a manufacturing and trading town of the Rhine, in Rhenish Hesse. Opposite it is the tower associated with the myth of Bishop Hatto (q.v.). Pop. 11,000.

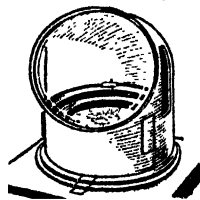
Binghampton, a manufacturing town of New York State, U.S.A., county seat of Broome county, with a variety of commercial products. Pop. 76,600.

Bingley, a market town of Yorkshire, England, in the W. Riding, on the Aire, and has iron works and woollen, worsted, cotton, and paper factories. Pop. 20,000.

Binnacle, a term denoting the box or case used on board ship to contain the compass and its accessories, etc.

The word is an abbreviation of the French *habitable*, a small habitation, and the original name was *bittacle*.

Binocular, a telescope or microscope or field-glass or opera-glass, having two eye-pieces; so that both eyes may use the instrument simultaneously. A binocular telescope is a pair of telescopes mounted on a stand, and having a parallel adjustment for the width between the eyes. Galileo made a binocular telescope in 1716. The invention of the binocular microscope was suggested by Wheatstone's invention of the stereoscope, with its exemplification of the value of binocular vision. The principle of the binocular is now applied by opticians in making spectacles.



BINNACLE

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Binyon, Laurence, English poet, won the Newdigate Prize at Oxford, and then worked as an assistant in the British Museum. Besides many war poems he wrote *The Death of Adam*. His line "They shall grow not old as we that are left grow old," is quoted on hundreds of war memorials. (1869-).

Biochemistry is that branch of chemistry in which special attention is devoted to the investigation of chemical changes and compounds characteristic of living matter. The beginnings of biochemistry may be traced to the school of iatrochemistry (medical chemistry) founded by Paracelsus (1493-1541), but until pure chemistry was well advanced, little progress could be made with biochemical problems, owing to their inherently difficult nature.

Priestley (1733-1804) and Lavoisier (1743-1794) were, however, able to elucidate the chemical changes involved in respiration, and when organic chemistry was developed by Dumas, Liebig, Woehler, Bunsen and others during the course of the 19th Century, much light was thrown upon the structure of such typical products of living organisms as urea, sugar, alcohol, and even much more complex compounds.

Colloidal chemistry has done much to explain the behaviour of protoplasm, while the discovery of enzymes has had far-reaching results not only in furthering the bounds of knowledge, but also in industry. The molecular architecture of some of the highly

active secretions (hormones) of the ductless glands has been fully worked out, and the compounds themselves prepared artificially in the laboratory. A more recent success is the synthesis of certain vitamins (*q.v.*), while in the field of medicine, valuable prophylactic drugs with specific action upon diseases are annually synthesised in large numbers.

Biogenesis, name of the theory that derives life from life, and opposed to Abiogenesis (*q.v.*).

Biography, the art of writing the lives. If the individual writing it is himself or herself the subject, the term used is autobiography. The chief difference between ancient biography such as Plutarch's *Lives* (1st Century A.D.), and the modern Life is that the former was intended to teach standard morality, by way of either example or warning; while the latter is intended to gratify curiosity, more or less scientific. The old way was found to result in suppressions and hypocries; but although its conscious purpose has long been out of fashion, only in our own time has the conventional dressing of character been thoroughly superseded. The greatest biography in English—perhaps in any language—is James Boswell's *Life of Samuel Johnson*, whose own *Lives of the Poets*, though uneven, is valuable.

Biology, the science of living things, including man, animals and plants, though the particular study of man is more usually regarded as the province of medicine. As opposed to the old-fashioned "natural history," biology has a more rigid scientific discipline, and though it is far from its goal, it is nevertheless on the way to becoming an exact science like chemistry and physics.

The main divisions of biology are botany, the study of plants, and zoology, the study of animals; but there are several subsidiary branches of each of these, and at least one division—*viz.*, physiology—which may perhaps claim equal rank with botany and zoology, since it deals with problems largely common to both of them. Heredity and genetics, again, may perhaps be allowed autonomy within the realms of biology, while bacteriology has also become so highly specialised that the bacteriologist does not necessarily look upon himself as a botanist, though he is certainly a biologist.

The basis of life is protoplasm, but this term is to be understood in a generic rather than a specific sense, for the protoplasm of each species of plant or animal and probably of each individual, is different to a greater or less degree from the protoplasm of all others. Protoplasm is a complex colloidal solution of proteins and other substances, and has hitherto defied complete analysis, largely because the methods that have to be employed to analyse it invariably destroy it, or at least destroy those properties of it which we describe as symptoms of life.

Typical protoplasm may be conveniently observed in the microscopic animal called Amoeba; it is opalescent and jelly-like, contains a good deal of water, and coagulates when heated. Ultimate chemical analysis reveals the presence in it of carbon, hydrogen, oxygen, nitrogen, and occasionally other elements, while graduated decomposition produces first various proteins, then compounds known as polypeptides, and finally amino-acids. Fairly complex polypeptides have been synthesised by Emil Fischer and other chemists, but even the most complex of the synthetic products is far simpler in constitution than the simplest protein, so that the synthesis of protoplasm itself is not yet within the remotest horizon of science. Moreover, living protoplasm is in constant

chemical and physical change, and has several characteristics entirely different from those of non-living matter.

Some of the features which distinguish living material are as follows:—Contractility, which consists in a spontaneous and, in the higher forms of animals, a purposive change of shape—*e.g.*, the use of muscles; irritability, which in biology implies a response to stimuli such as heat or cold, light, food, and changes of environment; respiration, the basis of which is the slow oxidation of protoplasm, with liberation of energy available for vital purposes; assimilation or feeding, whereby foreign matter is used to build up the body of the feeding organism; excretion, or the removal of waste products, especially nitrogenous compounds; reproduction, or the production of new individuals of the same kind. All these functions are manifested by both animals and plants, a fact which affords support for the theory that all living organisms had a common origin.

It was at one time believed that life could originate *de novo*, a belief reflected in the old tales of hairs turning into worms and eels, and a host of similar legends; but at the present day every biologist believes that all life is from previously existing life. That is not to say that he rejects the ultimate possibility of success in creating living matter artificially, but merely that, so far, no case of spontaneous generation has been authenticated.

The old belief in occasional abiogenesis was gradually abandoned with the advance of more accurate knowledge, and especially through the work of Pasteur, who definitely proved that decay and decomposition are caused by living organisms.

The more rational outlook adopted by biologists in the 19th Century was greatly stimulated by the publication in 1859 of Charles Darwin's epoch-making book, *The Origin of Species*, in which he amassed evidence to combat the theory of special creation and to show that the vast diversity of living organisms had arisen in the course of the ages by a process of evolution. The heated controversies aroused by Darwin's views, and by Huxley's spirited propaganda in support of them, have long since lost their bitterness, and the fact of evolution is no longer disputed by anyone in a position to weigh the evidence. The actual method of evolution suggested by Darwin is not accorded the same degree of assent, but the facts he accumulated remain. See the individual articles on biological subjects: *e.g.*, Botany; Carbon Assimilation; Cell; Genetics and Heredity; Physiology; Zoology.

Bion, a Greek pastoral poet of 3rd Century B.C., born at Smyrna; a contemporary of Theocritus; settled in Sicily; was poisoned, it is said, by a rival; little of his poetry survives.

Biot, Jean Baptiste, an eminent French mathematician, astronomer, and physicist, born at Paris; professor of Physics in the College of France; took part with Arago in measuring an arc of the meridian; made observations on the polarisation of light by liquids such as turpentine and solutions of sugar and tartaric acid. (1774–1862).

Birch, a tree widely distributed throughout Europe, N. America, and Asia. The several species include silver-birch (*Betula alba*), common birch (*Betula pubescens*), and the drooping birch (*Betula pendula*). In Russia its oil is used in dressing leather. Baskets, boxes, etc., are made from the bark as well as the birch canoes.

Birchington, a seaside resort of Kent, Margate, England, 2 m. W. of course. D. G. Rossetti died, and is buried, here. Pop. 2,000.

Bird, Isabella. See Bishop.

Bird-Catching Spiders, a genus of the family Aviculariidae, found in the tropics. They do not spin webs, but live in burrows on the ground or in trees and catch their prey by springing on it. They feed chiefly on insects, but have also been known to catch small lizards, mice and birds. The largest, though no more than 2 in. broad in the body, occupy, with legs outstretched, a span of 6 to 8 in.

Bird-Lice, an order of wingless insects, parasitic chiefly on birds. They are small, have flat bodies, and belong to the order Mallophaga. Some species affect fowls, and can be transferred to cats and dogs.

Bird of Paradise, a family (Paradisidae) of birds of extremely handsome plumage found in N. Guinea and Australia. There are 10 chief varieties. Their food is fruit and insects. They are closely related to the crow family.

Birdswald, the Roman Amboglanno, largest fort on Hadrian's Wall, in Cumberland, England, 4 m. E. of Greenhead.



MARQUIS RAGGIS
BIRD OF PARADISE

Birds, warm-blooded, oviparous vertebrates, clothed with feathers, and possessing four limbs of which the anterior pair are organs of flight, though in some cases they are rudimentary, and in others aquatic paddlers. The bones of the skeleton are hollow. There are no teeth, the work of chewing being done by the gizzard. Birds eat an amount of food, in proportion, greatly exceeding that consumed by man owing to a far higher bodily temperature.

The species of birds number thousands, and classification is according to their structure. The orders include the Saururæ, containing one species only, the extinct archæopteryx or lizard-tailed birds, the Anseriformes (ducks, geese, swans), the Galliformes (pheasants, partridges, quails, etc.), the Pelicaniformes (pelicans, gannets, cormorants), the Accipitriformes (birds of prey—vultures, eagles, hawks, etc.), Pittaciformes (parrots), Coraciiformes (kingfishers, hoopoes, hornbills, humming-birds, etc.), and the Passeriformes (the largest order, including the sparrow, warblers, thrush, wren, starling, nightingale, etc.).

Birds are carnivorous, insectivorous, granivorous, or omnivorous, and the digestive organs are modified accordingly. The eyes of birds are very highly developed in order to assist in their search for small insects and pursuit of rapidly moving prey. They have a great economic value in their ceaseless search for food, resulting in the wholesale destruction of pests in crops. Observation has shown that birds consume enormous quantities of insects and their grubs.

Nests of birds during egg-laying vary from a simple platform of sticks in trees, such as herons use, to the highest type of nest used by the weaver-bird and the tailor-bird of India. With the evolution of nests, protective colouring of eggs has become modified. An egg takes about 24 hours to form, as usually one is laid at a time, until the required number is complete. The number varies according to the dangers to which the eggs and young are exposed. Many sea-birds lay one egg, but game-birds and waterfowl lay from 10 to 20. The size of eggs

varies from that of the humming-bird, which resembles a small bean, to that of the ostrich, which is between 5 and 8 in. in diameter.

Birdwood, Field Marshal Sir William, entered Army in 1883, served on the NW. Frontier in 1898 and in the Boer War. In 1915 he was in command of the forces in the Dardanelles campaign, and succeeded General Gough as commander of the 6th Army on the Western Front. He was appointed Commander-in-Chief in India in 1925. (1865-).

Biren, Duke of Courland, son of a peasant, favourite of the Russian Empress Anne; held the reins of government even after her death; ruled with great cruelty; was banished to Siberia, but recalled, and had his honours restored to him, which six years after he relinquished in favour of his eldest son. (1687-1773).

Biretta, a cap worn by the Catholic clergy, varying in colour with the rank of the wearer, the pope's being white, cardinal's red, bishop's purple, and a priest's black.

Birkbeck, George, a Yorkshireman, was a zealous promoter all over the country of mechanics' institutes, and founder of the Mechanics' Institute, London, afterwards known as Birkbeck College, in association with Brougham and others interested in the diffusion of useful knowledge. (1776-1841).

Birkenhead, in Cheshire, England, Liverpool and a suburb of it; a town of rapid growth, due to the vicinity of Liverpool; has large shipbuilding yards and docks. A new road-tunnel linking the town with Liverpool was opened in 1934. Pop. 148,000.

Birkenhead, Earl of (F. E. Smith), British politician. Educated at Birkenhead and Oxford, he rose rapidly at the Bar, entered Parliament as Conservative for Liverpool in 1906, and won a name as "The Galloper" in support of the Ulster Unionists in 1914. He became Attorney-General in 1915, Lord Chancellor in 1919, and was Secretary for India from 1924 to 1928, when he left politics for a commercial career. In the field of legal reform he achieved much by his Law of Property Act, 1922, which rid our law of real property of numerous feudal archaisms. (1872-1930).

"Birkenhead," The, a British troopship which in 1852 struck a rock off Simon's Bay and sank. 454 officers and men were drowned. The discipline of the troops, who fell in as on parade on the deck while the ship sank, is often quoted.

Birkett, William Norman, K.C., English barrister, born at Ulverston, and educated at Barrow-in-Furness and Emmanuel College, Cambridge. President, Cambridge Union, 1910. Called to Bar, 1913. K.C., 1924; M.P. (Lib.) E. Nottingham, 1923-1924 and 1929-1931. Has been engaged as counsel in many famous cases. (b. 1883).

Birmingham, in the NW. of Warwickshire, England, 112 m. NW. of London by rail; is the chief town of the Midlands, and celebrated all over the world for its metal ware, and as the "home of a thousand trades." All kinds of engines and machinery, fine gold, silver, copper, and brass ware, cutlery and ammunition are made here; steel pens, buttons, nails, and screws are specialties. It is a picturesque town, with many fine buildings, libraries, art gallery and museums, educational institutions, a cathedral, and a great town-hall. Of this town Burns-Jones was a native, and Priestley, George Dawson, and Dale were dissenting ministers, while it sent the Chamberlains to Parliament. Pop. 1,003,000. Also a city in Alabama, U.S.A., with iron industries. Pop. 260,000.

Birnam, a hill near Dunkeld, in Perthshire, Scotland; contains part of a forest mentioned in *Macbeth*.

Biron, **Sir Henry Chartres**, London magistrate who became standing counsel to the Post Office, then Metropolitan Magistrate (1906), and finally Chief Magistrate at Bow Street (1923-1933). A great magistrate, kindly, a firm opponent of flogging, yet effective in stamping out organised hooliganism in parts of London. Published his *Impressions of Life and Law* in 1936. (1863-).

Birrell, **Rt. Hon. Augustine**, British politician and essayist. Entering Parliament as a Liberal in 1889, he served as Minister of Education in Campbell-Bannerman's Government in 1906. In 1907 he became Secretary for Ireland, a post he resigned in 1916 on account of the Dublin Easter rebellion. His *Life of Charlotte Brontë* and his *Other Dicks* are among his best known literary efforts. (1850-1933).

Birstall, a market town of Yorkshire, England, in the W. Riding, 7 m. SW. of Leeds. Cotton, woollens and worsted are made, and there are iron-foundries and coal and ironstone mines. Pop. 7,000.

Birth, the act of delivery of a newly-born child alive. A child is considered to have been born if it has been proved to have a separate existence from the mother, even if only for an instant, and as such is legally competent to inherit property and transmit it. Children are sometimes born after only 7 months from conception, but the normal period is 9 months.

Birth, Concealment of. In English law the birth of a child by disposing of the body, if dead, whether the child died before, during, or after birth. Under the Act of 1861 the penalty is a sentence of two years' hard labour.

Birth Control, a general term for restriction of birth by unnatural means, including the use of chemical or mechanical contraceptives or abstinence from intercourse. Considerable popular interest has been roused in the subject in recent years, particularly as a result of the publication of books on the subject by such authors as Dr. Marie Stopes, and as a result of the efforts of some social workers who regard a high and uncontrolled birth rate as a drain on the health and meagre resources of the poorer classes. The practice of contraception is, however, severely frowned on by the Catholic Church, and by some elements of the Anglican Church, and the subject must be regarded as a controversial one.

Birth Rate, the rate of births in a country expressed annually per 1,000 of the population. Many causes, such as the varying degree of fertility at different ages, affect the significance of the figure, which is called "crude." From 18 to 22 fertility is highest, and at a minimum after 45. Recent years show a continuous decline in most European countries, and bonuses to parents of families and other measures have been taken in some countries (notably Germany and Italy) to stimulate the birth rate.

Birtley, colliery town of Durham, England, 5 m. SE. of Gateshead. Here, during the War, was a projectile factory and a Belgian refugee colony. Pop. 11,000.

Biscay, **Bay of**, a bay in the Atlantic, in Spain, to Cape Finisterre, in France, and 400 m. broad, of depth varying from 20 to 200 fathoms, and, under SW. winds particularly, one of the stormiest of seas.

Bisceglie, a seaport and episcopal see of Italy, on the Adriatic in the province of Bari. Pop. 33,000.

Bishop, a minister in the Christian Church who exercises superintendence over the ordinary pastors in a certain district, usually called the see or diocese, and to whom belongs the performance of ordination, consecration of persons and places, and, when the occasion arises, excommunication. The title dates from apostolic times.

Many reformed churches on the continent have discontinued the title, but the system is prominent in Eastern and Roman churches and the Church of England, where the bishops are a constituent of the House of Lords. In England a bishop is nominated by the King, and the consecration is performed by the Archbishop. He is regarded as a suffragan of the Archbishop in whose province he is, though that term is in a particular sense applied to a rank corresponding to assistant bishop or country bishop.

Bishop, **Sir Henry Rowley**, an English composer, born in London, composer and director of music in Covent Garden Theatre for 14 years; was for a brief space professor of Music in Edinburgh University, and eventually held a similar chair at Oxford. (1786-1855).

Bishop, **Isabella (Bird)**, distinguished lady traveller and authoress; visited N. America, Japan, China, Malaysia, and Korea; the first woman elected a member of the Royal Geographical Society; interested herself in medical missions abroad; wrote *Unbeaten Tracks in Japan*, *The Englishwoman in America*, etc. (1832-1904).

Bishop Auckland, a town on 10 m. SW. of Durham, and in the county of Durham, England. It contains the Bishop's palace, or castle, which was built in Edward I.'s reign. Chief industries, coal-mining and engineering. Pop. 12,000.

Bishop's Castle, a market town of Shropshire, England. Here was once an ancient castle of the Bishops of Hereford. Pop. 1,500.

Bishop's Ring, the name given to the sky forming a halo near the sun, and caused by fine, diffused volcanic dust, which gives rise to coloured diffraction of light. First observed by the astronomer Bishop in 1883, after the eruption of Krakatoa.

Bishop's Stortford, a market town of Hertfordshire, England. In Norman times it was owned by the Bishop of London. Brewing and malting are carried on. Pop. 9,500.

Bishop's Waltham, a market town of Hampshire, England, 9 m. SE. of Winchester. Its ancient palace of the Bishops of Winchester is now in ruins. Pop. 2,500.

Biskra, an oasis town of Algeria, in the Sahara, a popular French winter resort, with a delightful climate. It was known to the Romans. Pop. 12,000.

Bisley, a village in Surrey, England, noted for the annual meeting of the National Rifle Association in the summer, when the best shots in the world compete for the King's Prize and teams from the public schools for the Ashburton Shield. Pop. 1,100.

Bismarck Archipelago, a group of islands NE. and E. of New Guinea, numbering more than 100, and administered as part of the Mandated Territory of New Guinea (Australian Mandate). Under German flag since 1884, they were occupied by Australian forces in Sept. 1914. The chief islands are New Britain (14,600 sq. m.), New Ireland (2,800 sq. m.), Lavongai (460 sq. m.), Duke of York Is. and Admiralty Is. Chief industries coconut-growing (copra), coffee, cocoa, pearl- and shell-fisheries. Pop. 154,700.

Bismarck, **Otto** **Eduard** **Leopold**, **Prince von**, born at Schönhausen; roused in civil life by the events of 1848; took a bold stand against revolutionary ideas and measures; conceived the idea of freeing the several States of Germany from foreign control and welding them into one under the crown of Prussia. Summoned in 1862 by King William to be his political adviser, his influence was at first distrusted, but the annexation of Sleswig-Holstein by force of arms in 1863 raised him into general favour. His next feat, the humiliation of Austria at Königgrätz in 1866, and the consequent erection of a German Confederation, with Prussia at its head, made him the idol of the nation. His treatment of Napoleon III. provoked the latter into a declaration of war, and to an advance on the part of the French against Berlin. To the surprise of nearly all Europe, the Germans proved to be a nation of soldiers, organised an invincible army, and beat the French ignominiously back from the Rhine. Count Bismarck had the satisfaction of seeing the power of France, that still threatened, as well as that of Austria, helpless at his feet. The German empire restored under a Hohenzollern king, and himself installed as chancellor of the monarch he had served so well. Nothing he did after this—though he reformed the coinage, codified the law, established protection, increased the army, and repressed Socialism—equalled this great feat. He ceased to be chancellor of Germany on the accession of William II., because the young king felt he would have a freer hand with a minister more likely to be under his control. (1815–1898).

Bismuth, a grey metal similar to antimony used for many alloys; its compounds are used extensively in medicine.

Bison, the name given to two species of the ox family, of which the

European branch is almost extinct. The North American Bison was once in danger of being exterminated, but remnants of herds were collected by the Canadian government, and these are now preserved and are multiplying in parts of the NW. The bison is remarkable for the development of the fore part of its body, for its heavy mane and beard.

Bissagos, a group of some 20 volcanic islands off the coast of Portuguese Guinea (W. Africa), of which they form a part. They have a large negro population and yield tropical products.

Bissextile, the name given in the Roman Calendar, at its reformation by Julius Caesar, to the intercalary day which he inserted after the 24th of February every fourth year.

Bissing, **Moritz** **Ferdinand**, **Baron**, Prussian general. Became Governor-General of Belgium in 1915. Signed warrant for execution of Edith Cavell, 1915. Died in Brussels. (1844–1917).

Bithur, a town in India, on the right bank of the Ganges, 12 m. above Cawnpore, where Nana Sahib lived and concocted the conspiracy which developed into the mutiny of 1857.

Bithynia, a country in the NW. of Asia Minor, anciently so called; the people of it were of Thracian origin.

Bitlis, a high-lying town in Asiatic Turkey, near Lake Van; stands in a high valley, 4,700 ft. above the sea-level; has a population of Kurdish Mohammedans and Armenians. Pop. 31,000.

Bitonto, a town and episcopal see of Italy in the province of Bari; has a fine Romanesque cathedral. Pop. 32,000.

Bitter Lakes, two stretches of water in Egypt which form part of the Suez Canal.

Bittern (*Bolaurus*), a genus of wading birds of the heron family. They are poor in flight, but active in the marshes where they are found. They are characterised by their buff-striped breasts, their habit of concealing themselves amongst the reeds by pointing neck and bill vertically upwards so that they are almost indistinguishable (in which their coloration helps them), and by their loud "booming" in the mating season. The Common Bittern (*B. stellaris*) is widely spread in Europe, Asia and Africa. It is rare in England, a few pairs only nesting in E. Anglia. It inhabits marshes, and consumes small mammalia, birds, fishes, frogs, newts and insects, chiefly at night. The Little Bittern inhabits SW. Asia, S. Europe and Africa.



BITTERN

Bitters, beverages, usually alcoholic, containing bitter flavouring substances. The bitter flavouring is usually obtained from such substances as orange-rind, gentian, rhubarb, angostura, etc. In general they stimulate the digestive processes, and some of them in virtue of this have medicinal value.

Bittersweet (*Solanum dulcamara*), a British perennial climbing plant, of the order Solanaceae, sometimes called woody nightshade. It grows in wet and shady places, especially hedges. The twigs have a medicinal value, and the taste, at first bitter, then acid, then sweet, is indicated by the name.

Bitumen, inflammable mineral substances, presumably of vegetable origin. The term properly comprises all the natural hydrocarbons, including liquid hydrocarbons (petroleum), Maltha, a viscid hydrocarbon, and the solid Asphalt. They are widely distributed in nature.

Bivalves, the name commonly applied to the Lamellibranchia, a class of aquatic (and chiefly marine) molluscs (shell-fish) which possess a shell composed of two pieces or valves. There are four orders of Lamellibranchia, and included in the class are the scallop, oyster, mussel, cockle, and shipworm. Certain species of crustacea which are anatomically quite unrelated to the molluscs also have bivalved shells—e.g., the order Conchostraca and the water-fleas (*Daphnia*) of the order Cladocera.

Bivouac, a temporary encampment of soldiers in the open without tents, usually only employed when troops are, or are about to be, engaged.

Biwa, the largest lake in the island of Honshu (Mainland), Japan.

Bizerta, a seaport and naval station of the French dependency, Tunis, northernmost town in Africa, 38 m. NW. of the capital, with an excellent harbour. Pop. 23,000.

Bizet, **Georges**, an operatic composer, born at Paris; his greatest work *Carmen*; died of heart-disease shortly after its appearance. (1838–1875).

Björnson, **Björnstjerne**, Norwegian poet, novelist and playwright. Director, Bergen theatre, 1857–1859; Christiania (Oslo) theatre, 1865–1867. Travelled widely in Norway and on the continent. In politics played the rôle of radical and reformer

NORTH AMERICAN
BISON

1, being implicated in treason charge (leader of Peasant Party), took refuge abroad, 1832-1888. Was a fervent nationalist, and played a part in the events that led to the secession of Norway from Sweden. His published works include *Poems and Songs*; an epic *Arnljof Gelline*; many plays, including the *Sigurd* trilogy, *Mary Stuart in Iceland*, *Leonarda*, *Beyond our Strength*; and numerous novels including *Synnövebakken*, and *Mary*. Awarded Nobel prize for literature, 1903. (1832-1910).

lack, Joseph, a physician and celebrated chemist, born at Bordeaux, of ottish parents, formulator of the theories what has been called latent heat, but what really transformed energy, and also of electric heat; professor of Chemistry, first Glasgow, then in Edinburgh. (1728-1799).

lack, William, novelist, born in Glasgow; started life as a journalist in connection with the *Morning Star*; wrote me 30 novels, about the West Highlands ofotland, rich in picturesque description; best known, *A Daughter of Helth*, *Madcap Violet*, *Macled of Dare*, *The Strange Adventures of a Pheton*, and *A Princess of Thule*. 841-1898).

lack Acts (Scottish) are so named from being printed in black letters. They consist of the Acts of the Scottish Parliament during the times of the emeses. In English law an Act of 1722 enacted against a band of ruffians who ackened their faces.

lack and Tan, a terrier sometimes known as the Manchester terrier. There are two varieties, the normal and the toy, but the latter is not easy to rear. The ordinary black and tan formerly had cropped ears. Its characteristics are a long and narrow head with small black eyes and drop ears. The shoulders are sloping, and the chest is narrow and deep. The colour is black with tan markings along the jaws, breast, and insides of the legs.

Also the popular name of a force raised in 1920 for the suppression of the I.R.A. in Ireland and for the maintenance of order. It was recruited from ex-army men. The uniform worn was khaki, with black hat and arm-band.

lack Assize, a plague at Oxford of 300 victims; caught at the assize from the prisoners under trial.

lackberry (*Rubus fruticosus*), a common species of the ramble of the order Rosaceae. It is a hook-limber, and is found all over Europe, especially in hedges, thickets, and woods. The fruit is popular in jam, and the shoots are used by hatters for binding their straw and making cobbles.

lackbird, a species of the thrush, a permanent resident in Britain and S. Europe. It migrates in winter from the northern regions. It feeds upon shrubs, shelled snails, worms and insects, and fruit trees, etc. White varieties are met.

lack Book of the Admiralty, was lost at the end of the 18th Century, but was found in 1874 at the bottom of a chest belonging to a former Registrar of the Admiralty Court, and is now kept in a locked, glass-topped table in the room of the President of that court. It contains the most ancient laws of the sea in force in this country, which were based on the Laws of Oléron in use during the Crusades, which were in turn based in the Sea Law of Rhodes.

lackburn, a manufacturing town in Lancashire, England, 24 m. N.W. of Manchester, a centre of the cotton industry; the birthplace of Hargreaves, the inventor of the spinning-jenny. Pop. 123,000.

Blackburn Rovers, an Association Football Club, founded in 1874. They have won the F.A. cup 6 times and have held the championship of the League twice. The ground is Erwood Park.

Black-Cap, a migratory song bird of the family, inhabiting N. Europe, Africa, and Asia. It arrives in England in April, and leaves in September. Food is grubs and fruit; prefers to nest in woods and orchards. The male bird has a cap of deep black feathers on the head, the female of brown, the general colouring of the bird being grey.

Black Cock, one of the English names for the male bird of the common black grouse, widely spread over Central Europe and Denmark, Sweden, Norway and Russia, and highlands of Scotland. In the early autumn they moult heavily, lose their tail-feathers, and become incapable of flight. Their normal black head and neck-feathers are particularly conspicuous, and during the moulting period are replaced by temporary feathers of brown like the hens. The flesh is much esteemed.

Black Country, a mining and manufacturing district partly in S. Staffordshire, and Warwickshire, where iron smelting and manufactures are carried on. Towns include Wolverhampton, Walsall, W. Bromwich.

Black Death, a name given to a succession of fatal epidemics that devastated the world from China to Ireland in the 14th Century, believed to be the same as the Oriental plague, though attended with peculiar symptoms; the most serious was that of 1348, which, as is reckoned, stripped England alone of one-third of its inhabitants.

Blackfeet, a tribe of Algonquin Red Indians of Alberta and Montana, N. America. Originally about 90,000, they now number no more than 5,000 in the Indian Reserves.

Black Forest, a wooded mountain chain 4,000 ft. high (so called from the black pines that cover it), which runs parallel with the Rhine, and E. of it, through Württemberg and Baden, from the Swiss frontier to Karlsruhe; is remarkable for its picturesque scenery and its mineral wealth; it possesses many health resorts, as Baden-Baden and Wildbad, where are mineral springs; silver, copper, cobalt, lead, and iron are wrought in many places; the women and children of the region make articles of wood-work, such as wooden clocks, etc.

Black Friars, monks of the Dominican order; name of a district in London where they had a monastery, this having stood near the north end of the present Blackfriars Bridge over the Thames.

Black Friday, the name applied to a disastrous memory, e.g., Dec. 6, 1745, when the Young Pretender advanced as far as Derby; in the U.S.A., Sept. 24, 1745, when there was a big stock-exchange crash in New York; and May 11, 1866, when a popular London bank failed.

Black Hand, a society notorious for New York, composed mostly of Italians, and specialising in various forms of blackmail and extortion. The rapid spread of the society was due to their methods of intimidation, and took the form of stabbing, shooting, incendiarism, and child kidnapping. The symbol was a black hand clutching a dagger. The society was dispersed with difficulty in 1914.

Blackheath, a common 7 m. S.E. of London, in the borough of Lewisham, once a favourite haunt of highwaymen, now a place of holiday resort for

Londoners; scene of Wat Tyler's and Jack Cade's meetings; for long provided one of the two old golfing-courses in England.

Black Hills, a group of mountains in South Dakota and Wyoming, U.S.A., largely forested with pine and rich in minerals.

Black Hole of Calcutta, a confined apartment 20 ft. square, into which 146 English prisoners were crammed by the orders of Suraj-ud-Dowlah, Nawab of Bengal, on June 20, 1756; their sufferings were excruciating, and only 23 survived till morning.

Blackie, John Stuart, Scottish author, German; born in Glasgow; he studied German; executed a metrical translation of Goethe's *Faust*, Part I.; held the chair of Humanity in Aberdeen, and afterwards that of Greek in Edinburgh; was a zealous educational reformer; founded a Celtic Chair in Edinburgh University; translated *Æschylus* and Homer's *Iliad* in verse. (1809-1895).

Blacking, a compound of charcoal or sugar, bone-black, lamp-black, sugar, oils and fat used either in the form of a thick paste or a liquid to preserve and give a high black polish to leather. The actual constituents and the proportions vary according to the brand.

Black Lands, lands in the heart of between the Carpathians and the Urals, constituting one-third of the soil, and consisting of a layer of black earth or vegetable mould, of from 3 to 20 ft. in thickness, and a chief source, from its fertility, of the wealth of the country.

Blacklead, or graphite, a form of nearly pure carbon obtained from plumbago, and used in the manufacture of stove-polish and lead pencils. It is found in Cumberland, Austria, Czechoslovakia, Siberia, and in Ceylon. When finely powdered it is used in polishing the coarser varieties of gunpowder to render it damp-proof. It is also used in the melting of steel and other metals which require great heat for fusion.

Black Letter, the name usually given to the earliest printed books commonly called on the continent Gothic. Black-letter books are rare and highly prized. Gothic characters passed out of use generally after the 16th Century, though still found in Germany.

Black List, a name familiarly applied to certain printed lists of bankruptcies, liquidations by arrangement, registers of protested bills, decrees in absence, offers of composition, and other matters relating to the credit of firms and individuals, which are circulated for the guidance of men of business. They are issued only to subscribers.

Blackmail, once a legal term for rent paid in kind as a substitute for silver (white). Later a form of tribute in coin or cattle by extortion as a deterrent against Border raids from the Scots. Nowadays it means an attempt to extort money or goods on the threat of exposure.

Black Monday, Easter Monday in 1380, remarkable for the extreme darkness that prevailed, and an intense cold, under which many died.

Blackmore, Richard Doddridge, educated for the Bar; wrote several novels, the best known *Lorna Doone*, which, though coldly received at first, became highly popular. (1825-1900).

Blackpool, a watering-place on the coast of Lancashire, England, 18 m. NW. of Preston, sometimes called the "Brighton of the North." Has an Eiffel Tower, 500 ft. high, a 7 m. promenade and several piers. Pop. 106,000.

Black Prince, Prince of Wales, son of Edward III., so

called, it is said, from the colour of his armour; distinguished himself at Crécy, gained the Battle of Poitiers, but involved his country in further hostilities with France; returned to England, broken in health, to die. (1330-1376).

Blackrock, a seaside resort and urban district, forming a S. suburb of Dublin, Eire (Ireland). Pop. 10,000.

Black Rod, Gentleman Usher of, an official of the House of Lords, whose badge of office is a black rod surmounted by a gold lion; summons the Commons to the House; is also Usher of the Order of the Garter.

Black Saturday, name given in Scotland to Saturday, Aug. 4, 1621; a stormy day of great darkness, regarded as a judgment of Heaven against Acts then passed in the Scottish Parliament tending to establish Episcopacy.

Black Scab, variously called wart disease; potato tumour, potato canker, cauliflower disease, a wart disease of potatoes causing large outgrowths resembling cauliflowers which become black. The disease must be notified to the Ministry of Agriculture. Flowers of sulphur and gas lime dug into the soil of unaffected plants act as a deterrent.

Black Sea, or Euxine, an inland sea, lying between Europe and Asia, 700 m. in greatest length and 400 m. in greatest breadth; communicates in the N. with the Sea of Azov, and in the SW., through the Bosphorus, the Sea of Marmora, and the Dardanelles, with the Mediterranean. It washes the shores of Turkey, Rumania, Bulgaria and Russia, receives the waters of the Danube, Dnieper, Bug, Dniester and Don, from Europe, and the Kizil-Irmak and Sakaria from Asia.

It has but one island, Adassal, off the mouths of the Danube; no reefs or shoals; hence in summer navigation is very safe. In winter it is harassed by severe storms. Among the chief ports are Odessa, Kherson, Batum, Trebizond, and Sinope; the first two are ice-bound in January and February.

For three centuries the Turks excluded all other nations from its waters; but the Prussians (1774), Austrians (1784), French, and English (1802) secured trading rights. Its waters are fresher than those of the ocean, and it has no noticeable tides. Under the Treaty of Paris, 1856, the sea was closed to all warships. In 1871 this was modified so as to allow both Turkish and Russian fleets in it. In the Great War, Turkey was compelled, under the Mudros Armistice, to admit Allied Fleets. Under the Lausanne Treaty, 1923, the Dardanelles were demilitarised, but at a convention at Montreux this policy was reversed at the request of the Turkish Government.

Blacksod Bay, a stretch of water, in Co. Mayo, Ireland (Eire).

Blackstone, Sir William, an eminent jurist and judge, born in London, the son of a silk-merchant; was Fellow of Pembroke College, Oxford, and in 1746 called to the Bar; became first Vinerian professor of Law at Oxford; had Jeremy Bentham for one of his pupils; author of the well-known *Commentaries on the Laws of England*, a legal classic. (1723-1780).



BLACK PRINCE

Lackthorn, or *Sloe* (*Prunus spinosa*), a common shrub of the rosaceous order (genus *Prunus*). It is common in hedgerows and thickets in England, Europe, W. Asia, and N. Africa. The fruit is small, purple, and very bitter-taste. The stems are black and bear sharp spines.



BLACKTHORN

Blackwall, a riverside district of London, England, in the metropolitan borough of Croydon. Here are the East India Docks and the Thames Tunnel under the Thames connects it with E. Greenwich.

Black Watch, a Highland regiment, late the 42nd and 3rd of the line, so called from the dark colour of the tartan; the 42nd raised originally for the preservation of the peace in the Highlands.

Blackwater, several rivers of the British Isles. One, the second longest of Ireland (100 m.), flows to the Atlantic at Youghal; another, rising near Saffron Walden, Essex, flows 40 m. to the sea at Mersea I.

Blackwater Fever, a disease, similar to and closely associated with (in fact, described as a complication of) malaria, prevalent in tropical countries. It is an affliction of Europeans chiefly, its chief symptom being hæmoglobinuria. The nature of the disease is obscure, and has been supposed to be due to excessive use of quinine to combat malaria, though the disease is more probably a virus associated with the malarial parasite.

Blackwell, Elizabeth, a lady doctor, born in Bristol, and the first to hold a medical diploma in the United States; was admitted into the Maternity Hospital in Paris, and to St. Bartholomew's in London, and distinguished herself as a social reformer. The first woman to be admitted to the register of the General Medical Council. (1821-1910).

Blackwood, Sir Henry, British admiral, distinguished at Aboukir Bay and Trafalgar, was present at Nelson's death; held subsequently high naval positions. (1770-1832).

Blackwood, William, born in Edinburgh, burgh, originator of *Blackwood's Magazine*; began as a bookseller; started *Maga*, as it was called, in 1817, his principal literary advisers being Professor Wilson and Lockhart; conducted it as editor till his death. (1776-1834). John, his third son, his successor, no less distinguished in the cause of literature; publisher of Lord Lytton's and George Eliot's books. (1818-1879).

Bladder, a musculo-membranous bag or reservoir for the urine. It communicates with the kidneys by means of the ureters, and opens externally by means of the urethra. It is in the pelvis.

Bladderwort (*Utricularia vulgaris*), a small submerged water plant which has no roots and finely-divided leaves growing from the surface. The submerged leaves bear curious bladders which open inwards only and which serve to trap the small crustacea, etc., from which the plant derives its nourishment. Yellow flowers are borne on stems which rise out of the water 4 to 6 in.

Blaenavon, a market town of Monmouthshire, England, with collieries, iron and steel works, and blast-furnaces. Pop. 11,000.

Blagovyeshehensk, a town of Asiatic Russia on the Amur R. near the Manchuria (Manchukuo) border, a centre of trade in gold, tea, cattle, and grain. Pop. 63,000.

Blaine, James Gillespie, American statesman, born in Pennsylvania, elected as a Republican to the State Legislature of Maine, 1858; entered Congress, 1862; Speaker of the House of Representatives, 1869-1874. Secretary of State under Garfield; ran for the Presidency as a Republican in 1884, but was defeated by Grover Cleveland. (1830-1893).

Blair, Robert, author of *The Grave*, born in Edinburgh, minister of Athelstaneford. His poem was illustrated by William Blake. (1699-1746).

Blair Atholl, a village of Perthshire, Scotland, 3 m. NW. of Killinchrane Pass. Near is Blair Castle, ancient seat of the Duke of Atholl. Pop. 1,500.

Blairstown, a town and summer resort of Perthshire, Scotland, 20 m. NE. of Perth, on the Erich. Flax-spinning and engineering are carried on; there are salmon and trout fisheries, and fruit, mainly raspberries, is grown. Pop. 3,000.

Blake, Robert, the great English admiral and "Sea King," born at Bridgewater; successful as a

soldier under the Commonwealth, before he tried seamanship; took first to sea in pursuit of Prince Rupert and the royalist fleet, which he destroyed; beat the Dutch under Van Tromp, De Ruyter, and De Witt; sailed under the great guns of Tunis into the harbour, where he fired a fleet of Turkish pirates; and finally, his greatest feat, annihilated a Spanish fleet in Santa Cruz Bay under the shadow of the Peak of Tenerife, one of the fiercest actions ever fought on land or water." (1599-1657).

Blake, William, poet, painter, and engraver, born in London, where, with rare intervals, he spent his life, a mystic from his very boyhood; apprenticed to an engraver, whom he assisted with his drawings; started on original lines of his own as illustrator of books and a painter; devoted his leisure to poetry; wrote *Songs of Innocence*, *Marriage of Heaven and Hell*, *Gates of Paradise*, and *Songs of Experience*; was an intensely religious man of deep spiritual insight, most vivid feeling and imagination; illustrated, among many notable works, Young's *Night Thoughts*, Blair's *The Grave*, and *The Book of Job*. He was a man of stainless character but eccentric habits, and had for wife Catherine Boucher, who under his tuition assisted him in his art work. (1757-1827).

Blakeney, William, Baron, British soldier, born in Ireland; as Lieutenant-Governor defended Minorca against the French during the Seven Years War. Owing to Admiral Byng's failure to relieve him (for which Byng was executed), he was compelled to surrender the fortress after a gallant defence. (1672-1761).

Blanc, Mont, the highest mountain in the Alps, 15,780 ft., almost entirely within France; sends numerous glaciers down its slopes; was first ascended in 1786 by Paccard and Balmat.

Blandford, or Blandford Forum, a municipal borough of NE. Dorset, England. Roman and British remains are found in the neighbourhood. Pop. 3,000.



ADMIRAL ROBERT BLAKE

Blanesburgh, Sir Robert Younger, Baron, fifth son of James Younger of Alloa, Clackmannan. Judge of the Chancery Division 1919-1919; Lord-Justice of Appeal, 1919-1923. Principal British delegate to Reparations Commission, 1925-1931. P.O., 1919. Lord of Appeal in Ordinary and life-peer, 1923. (1861-1937).

Blankenberghe, a Belgian seaside resort in W. Flanders, 13 m. N.E. of Ostend. Fishing and ship-building are carried on. It was occupied by the Germans, 1914-1918. Pop. 7,000.

Blanket, cloth, but to-day a large sheet chiefly of woollen material used as a covering. The best blankets are of pure wool, but generally they are manufactured from cotton warp and woollen weft, the surface of the material being "teased" to give it a fluffy appearance.

Blanketeers, a name given to a body who, in 1817, attempted to march to London from St. Peter's Field, Manchester, to seek redress of wrong treatment. The leaders were imprisoned. Each person carried a blanket, hence the name.

Blank Verse, verse without rhyme or syllables, used by the Greek and Roman poets. The first English blank verse appeared in 1547 in a translation of the first and fourth books of the *Æneid* by Lord Surrey. When Shakespeare began to write for the stage, blank verse had become familiar, though it was confined to dramatic literature for most of the 17th Century. It reached its highest form, perhaps, in Milton's *Paradise Lost*. The most successful form, and the commonest in the English language, is iambic pentameter, consisting of a line of 10 syllables (5 iambs).

Blanqui, Louis Auguste, a French republican, said to be the first advocate of the dictatorship of the proletariat. A leader of the socialist movement of his time and, for a few hours in 1870 after the French defeat at Sedan, head of the provisional Government. Spent nearly half of his life in gaol. (1805-1881).

Blantyre, the chief town of Nyasaland Protectorate, E. Africa, in direct railway communication with Beira. Pop. (white) 600. Also the name of a parish of Lanarkshire, Scotland, a coal-mining centre. Birthplace of David Livingstone. Pop. 17,000.

Blarney, a village of Co. Cork, Ireland (Eire), 4 m. N.W. of Cork. It possesses an ancient castle, about 20 ft. from the summit of which is the famed Blarney stone, the kissing of which is said to confer the gift of persuasive eloquence. Pop. 800.

Blasphemy, a mode of speech which, according to the Greeks, was made to a person's face in a reproachful and insulting manner. To-day it takes the form of profane scoffing at the Scriptures. Writings or utterances maliciously designed to outrage the feelings of the Christian religion are "blasphemous libels," and are offences against the common law, though the law is seldom invoked.

Blatchford, Robert, author and journalist, founder of *The Clarion*, socialist weekly, 1891. His socialism, atheism, and determinism in *Merry England, God and My Neighbour*, and *Not Guilty* brought him fame. (1851-).

Blavatsky, Mme. Helena Petrovna, born in Russia; a great authority on theosophy, the doctrines of which she professed to derive from the fountain-head in Tibet. Founded the Theoso-

phical Society in 1875 in New York. Her publications include *Isis Unveiled*. (1831-1891).

Blaydon, a market town of Durham, England, at the head of navigation of the Tyne, here spanned by a bridge. There are collieries and iron-foundries. Bottles, fire-bricks, chemicals, etc., are made. Pop. 33,000.

Blazon and Blazonry, the art of announcing and describing the coats of arms worn by Knights. The "blazoning forth" was performed by a herald during the introduction of a contestant usually for honours of combat in tournaments during the "romantic" age of chivalry. The arms were borne on a heraldic shield, and the proper rules and terms of heraldry were observed by the announcer; only those who were educated in blazonry could understand the various terms. The field of the coat of arms was called first, then the tinctures, which varied in colour and area, and then the charges or symbols in each division or quarter (gule).

Bleaching, the removal of colour from an object, but sometimes implying in addition the removal of certain impurities. Bleaching has been effected by the use of sunlight from time immemorial, and the nations of antiquity also employed various chemicals such as plant ashes, soap, and sulphur dioxide. Chlorine, bleaching-powder (which contains calcium hypochlorite as the active ingredient), and sodium hypochlorite are the principal substances used now in bleaching, though for delicate fabrics sulphur dioxide and hydrogen peroxide are preferred.

Bleaching-powder, a whitish powder made by passing a stream of chlorine over dry, slaked lime; its chemical constitution is roughly represented by the formula CaOCl_2 , but it contains also varying amounts of lime; commonly it is known as "chloride of lime." Its principal use is in bleaching, but it finds application as a disinfectant and deodoriser (e.g., for drains and swimming-baths). It should be preserved in air-tight containers, since on exposure to air it gradually loses much of its chlorine content. On treatment with a dilute acid it yields gaseous chlorine.

Bleak, a small, fresh-water fish of the (British as in other European rivers. Its silvery scales are used in France for the manufacture of artificial pearls.

Bleeding, a surgical remedy greatly in use for many centuries, but now obsolete except in certain cases of heart and lung disease when venous blood is taken from the arm. In olden times "cupping," or removal of blood by placing a heated cup over a puncture in the skin, was extensively used, as was bleeding with leeches.

Blekinge, a small maritime province in the S. of Sweden, formerly a part of Denmark. Chief town Karlskrona. Area 1,173 sq. m. Pop. 146,000.

Blende, the name given to zinc sulphide, an important ore of zinc. Also called "Black Jack" by English miners. Found in Derbyshire, Cumberland, Cornwall. There is also manganese and antimony blende, etc.

Blenheim, a village in Bavaria, on the Danube a few miles from Höchstädt, famous for Marlborough's victory over the French and Bavarians in 1704, and giving name to the battle.

Blenheim Park, near Woodstock, Oxfordshire, the gift, with the Woodstock estate, of the country to the Duke of Marlborough, for his military services in the Spanish Succession War; it was designed by Vanbrugh.

Blenny, the name given in general to any of the blennoid fishes in all of which the pelvic fin is jugular—i.e., placed far forward in front of the pectoral fins. The skin is usually scaleless. The type includes the shanny in British seas, the great wolf fish in N. seas, etc. The family Blenniidae includes the blennies and rock-skippers, most of which are small shore-dwelling fish. The viviparous blenny or Eel Pout (*Zoarces viviparus*) of the Zoarcidae family is common round the shores of the British Isles.



Blériot, Louis, French aviator and owner of plane factory. He was the first man to fly an aeroplane over the English Channel, which he did in 1909. (1872-1936).

Blessington, Marguerite, Countess of, an Irish lady celebrated for her beauty and wit; figured much in intellectual circles in London; had her salon at Kensington; was on intimate terms with Byron, and published *Conversations with Byron*, and several novels; being extravagant, fell into debt, and had to flee the country. (1789-1849).

Bletchley, a village of Buckinghamshire, England, in the urban district of Fenny Stratford. It has a fine old church. Pop. 6,000.

Blickling, a village of Norfolk, England, on the Bure. Here is Blickling Hall, now the residence of the Marquess of Lothian, formerly the manor of the Boleyn family. Anne Boleyn is said to have married Henry VIII. here. Pop. 300.

Blida, a walled town of Algeria, 32 m. from Algiers, with considerable orange groves. Pop. 39,000.

Bligh, William, a naval officer; served under Cook; commanded the *Bounty* at Tahiti, when his crew mutinied under his harsh treatment and set him adrift, with 18 others, in an open boat, in which, after incredible privations on a 4,000-m. voyage, he reached Timor; was afterwards Governor of New South Wales, but was imprisoned after a mutiny caused by his severity. How was also present at the mutiny of the *Nore*, and fought in the battles of Camperdown and Copenhagen. (1754-1817).



CAPTAIN
BLIGH

Blind (*Blindness*), those who have lost the sense of sight. Most blindness results from disease, accident, senility, or is congenital. The chief inducing diseases are amaurosis or paralysis of the optic nerve, cataract, purulent ophthalmia, scarlet fever, scarola, smallpox, and measles. Hereditary blindness is infrequent, and many cases of persons thought to be born blind have proved to be erroneously diagnosed.

Instruction of blind persons began with Valentin Haüy of Paris in 1784. He had noticed the remarkable delicacy of touch in blind persons, and introduced raised printing, raised geographical maps, etc. This reading of raised characters has developed to-day in the triumph of the Braille and the Moon methods. In the Braille method symbols can be read and written. The basis of the system is six dots, and the same system is applied to music. The Moon system is based upon a simple line, the characters following the outline of ordinary Roman lettering. It is used with advantage by the old and mentally backward patients. The method, however, is slow to learn, and the books are bulky.

There are many associations for the blind,

including the National Institute for the Blind, which maintains home and hostels, massage schools, a college for blind girls, a special school for blind children, Braille and Moon publications, an employment bureau and technical research; the Blind Sailors and Soldiers' Hostel at St. Dunstan's, inaugurated by Sir Arthur Pearson; the Incorporated Association for Promoting the Welfare of the Blind, the National League of the Blind in Westminster, possessing many thousands of volumes in Braille and Moon type. In 1936 the state pension to the blind at the age of 50 was made payable at the age of 40, and under the Blind Persons Act of 1920 domiciliary assistance is rendered to blind incapable persons as distinct from public assistance. The number of registered blind persons in England and Wales in 1936 was over 75,000.

Blind Spot, that part of the retina the spot where the optic nerve enters the eye is blind.

Blind-worm. See *Slow-worm*.

Bliss, Arthur, composer. Educated: Rugby, Pembroke College, Cambridge. B.A. and Mus. Bac. 1913. Composed *Madam Noy*, 1918; *Rout*, 1920; *Mélée Fantastique*, 1920; music to *The Tempest*, 1921; *Colour Symphony*, 1922, *Introduction, Allegro for Orchestra*, 1926; *Morning Lierces*, 1930; film music to *Whither Mankind*, 1934; *Music For Strings*, 1935; songs, symphonies, etc. (1891-).

Blister, a bladder or vesicle containing upon the skin through some irritation; also the application given when blistering is caused artificially as a counter-irritant in pneumonia and other disorders, such as inflammation of the stomach. The substance usually employed is cantharides. Mustard is sometimes used. In modern warfare mustard gas has a similar, though more horrible result.

Bloch, Jan (*Ivan Stanislavovich*), Judeo-Polish banker and opponent of war. Educated at Industrial High School of Warsaw. Administrator of the railway system connecting Black Sea with Baltic, head of lumber and sugar trades in Poland. In 1898 published *La Guerre* in 6 volumes, which led Nicholas II., to propose the Hague Peace Conference. (1836-1902).

Blockade, Laws of, those laws which define and limit the operation of a blockade, i.e., a military or naval operation whereby a fort or port is enclosed against the arrival of supplies or assistance—briefly, a kind of siege. Latterly the manoeuvre is always naval.

A blockade was defined by the Declaration of Paris in 1856 to be in force only when it was effective by the maintenance of a sufficient force, and all countries were to be included impartially. The Hague Conference of 1909 extended the definition and terms, and the Declaration of London in the same year stated that neutral countries have the right to trade with a blockaded town in non-contraband goods (armaments and munitions), but "absolute contraband" goods were liable to seizure by the blockading navy. During the Great War the blockade of Germany was rendered ineffective because she was able to obtain supplies from Scandinavia and Denmark, and in 1916 neutral countries were informed that the Declaration of London was withdrawn, and that the terms would be disregarded in the economic war to be pursued. Protests were made by America at the decision that no neutral ships would be permitted to enter an enemy port, whether carrying goods contraband or otherwise.

An important condition included by the Declaration of London was that a blockade must not extend beyond ports or coasts

belonging to or occupied by the enemy, as well as the condition that goods intended for the enemy might be unloaded in neutral ports and carried by rail to the enemy. In order to overcome the leakage of supplies, the Ministry of Blockade, set up in London in 1916 (and dissolved in 1919), limited imports of neutral countries to pre-war extent. The result was an attempt by Germany to interrupt Great Britain's own merchant shipping, and several successful attempts were made to "run the blockade." Among others, the German ships *Morve* and *Wolf* escaped, and caused not a little hindrance. Later the submarines *Deutschland* and *U.53* made a spectacular and successful dash through the blockading ships.

Many British ships were sunk, but, as many American passengers were killed, the final consequence was the intervention of the U.S.A. in the war and the ultimate defeat of the Central Powers. During the Spanish Civil War in 1936 the question of Blockade Law was raised when a German merchant ship with goods alleged to be intended for the rebels was stopped and searched by Spanish Government vessels outside the territorial sea limit. But as no state of war existed between Germany and Spain, blockade conditions did not exist.

Block Books, books printed in early engraved wooden blocks. The practice was known in China five centuries before its use in Europe in the 15th Century, when block books were produced in Germany and the Netherlands. The pages consisted generally of half illustration, half text.

Block-House, a military building, fort and pierced with loopholes to facilitate defensive rifle fire. Many were built of wood in America in early settler days. Brick block-houses are used to-day on the borders of Afghanistan.

Bloemært, a family of Flemish painters 16th and 17th Centuries.

Bloemfontein, capital of the Orange Free State on the R. Modder, founded in 1846. The town has a cathedral, museum, library and theatre, and is the seat of the Supreme Court of the Union. Lord Roberts captured it from the Boers in 1900. Pop. 65,000 (Europeans 30,000).

Blois, capital of the dept. of Loir-et-Cher, France, on the Loire, 35 m. S. of Orleans; contains the Château of the family of Orleans, once a favourite residence of Francis I. and Charles IX.; the scene of events of interest in the history of France. Pop. 24,000.

Blok, Alexander Alexandrovich, Russian poet, born in St. Petersburg, son of a professor of Mathematics at Warsaw. First book of poems, *Songs of the Beautiful Lady*, he afterwards contemned. He took to drink, and wrote *Nocturnal Hours*, 1911. Became patriotic in Great War; but the Bolshevik Revolution inspired him with his remarkable short poem *The Twelve*, 1918. (1880-1921).

Blomfield, Sir Arthur William, architect, fourth son of J. Blomfield, was born in Fulham Palace. Articled to Philip Charles Hardwick. President, Architectural Association; Architect to Bank of England. Built Law-Courts branch of Bank of England. Built and restored churches; notably rebuilt nave and south transept, St. Saviour's, Southwark, 1880-1897. (1829-1899).

Blomfield, Sir Reginald Theodore, British architect. He specialised in garden design and civil architecture. Elected A.R.A. in 1905, he was made R.A. in 1914. Knighted 1919. (1856-).

Blondel, a troubadour of the 12th Century; a favourite of Richard Cœur de Lion, who, it is said, discovered the place of Richard's imprisonment in Austria by singing the first part of a love-song which Richard and he had composed together.

Blondin, Charles, an acrobat and rope-dancer, born at St. Omer, France; celebrated for his feats in crossing Niagara Falls on the tight-rope and taking a woman over in a wheelbarrow. (1824-1897).

Blood, a connective tissue in animals, differing from most connective tissues in possessing a fluid basis. This fluid is called the plasma and is yellowish in colour; it contains a large number of red corpuscles or erythrocytes, a smaller number of white corpuscles or leucocytes, and a variable number of small platelets or thrombocytes.

The red corpuscles, of which there are approximately 500 times as many as the white corpuscles, are biconcave discs without nuclei in mammals; in other vertebrates they are biconvex and nucleate. They characteristically group themselves together in rouleaux, and owe their colour to the red colouring-matter haemoglobin; their principal function is to transport oxygen from the lungs to all parts of the body. A cubic millimetre of human blood normally contains about four to five million red corpuscles, the life of each of which is probably a few weeks, after which disintegration occurs and the remains of the corpuscles collect in the spleen.

The leucocytes are of at least five different types, the most numerous and important being the phagocytes, which destroy bacteria and similar foreign bodies by engulfing them. The plasma, which is alkaline in reaction and contains dissolved substances such as proteins, salts and hormones, deposits fine interlacing strands of fibrin when the blood is withdrawn from the body. In the meshes of this network the corpuscles become entangled, and a clot is formed, further loss of blood thus being prevented or hindered.

An adult man contains about a gallon of blood, and may lose as much as a pint without more inconvenience than a feeling of faintness. That the blood undergoes a regular circulation in the body, from the heart to the lungs, thence to all parts of the body, and finally back to the heart, was discovered by William Harvey (1578-1657) and announced by him in 1628 in his *Exercitationes de motu cordis et sanguinis*.

Blood, Thomas, Colonel, an Irish desperado, noted for his daring attempts against the life of the Duke of Ormonde, and for carrying off the regalia in the Tower; unaccountably pardoned by Charles II., and received afterwards into royal favour with a pension of £500 per annum. d. 1680.

Blood, Avenger of, an early custom in patriarchal tribes, where the near male relative of a murdered man took up the duty of vengeance. In the Mosala law the custom was permitted under conditions and survives in some Eastern tribes.

Bloodhound, the name celebrated for its keen scent and perseverance. A true bloodhound is muscular, compact, and powerful. The muzzle is long and deep, with pendulous lips and ears. The colour is a reddish tan. Once kept for detection of deer and sheep-stealers, and later employed as a man-hunter, especially in slave countries like N. America in the 18th Century. The police sometimes employ them to follow a scent given by clothing, etc. The voice of the bloodhound is deep and mellow, and can be heard at a long distance.



HEAD OF A
BLOODHOUND

Blood Pressure, the force with which the blood is driven along the arteries by the pumping of the heart. Normal blood pressure varies according to the age of the subject and is reckoned at 100° plus a half the age. In certain conditions of the body such as anæmia and heart failure blood pressure may be lower than normal, in others it may rise above normal. Blood pressure recordings may be of great value in effecting a correct diagnosis.

The instrument used to-day is the sphygmomanometer which consists of a bag into which air may be pumped. The bag is strapped round the arm above the elbow and inflated until the pulse in the wrist becomes imperceptible. The pressure of the air in the bag is registered on a gauge.

Blood Root, (*Sanguinaria canadensis*), a plant of the Papaveraceæ (poppy) family. Has narcotic, emetic, and purgative properties, and is found in N. America.

Bloodstone, a variety of crystalline silica, dark-green in colour with red spots, also known as heliotrope, found in large quantities in the Deccan, India.

Blood Transfusion, the transfusion of blood from one living subject to another, practised upon animals since the 17th Century, but first applied to human beings in the 18th Century. Fatal results often occurred in early days, largely because—as was discovered by Jansky in 1907—there are four types of human blood, and incompatibility is likely to manifest itself unless the blood of the donor is of the same type as that of the recipient; one type, however, is of more general application and may as a rule be used safely with any of the other three.

Transfusion is sometimes affected directly, by connecting an artery of the donor with a vein of the recipient, and sometimes indirectly, by drawing off blood from the donor, preventing it from clotting by adding sodium citrate, and then pumping it into the appropriate vein. Transfusion is employed in cases of anæmia, hæmophilia, hæmorrhage, and shock.

Bloody Assizes, the judicial massacres and cruel injustices perpetrated by Judge Jeffreys during circuit in 1685.

Bloomers, a costume for women devised by an American, Mrs. Bloomer, and consisting of a short skirt and bodice, with loosely made trousers; although of short popularity it led to the adoption of a national feminine dress for cycling and other sports.

Bloomfield, Robert, an English poet, born in Suffolk, by trade a shoemaker; author of the *Farmer's Boy*, a highly popular production, translated into French and Italian; spent his last days in ill-health, struggling with poverty, which brought on dejection of mind. (1766-1823).

Bloomsbury, a district, chiefly residential, of west-central London, between Euston Road, Tottenham Court Road, Holborn and Grays Inn Road. Here are the British Museum, University College, University College Hospital and the new central institution or administrative establishment of London University.

Blow, John, composer, was one of the children of the Chapel Royal when re-established, 1660. Organist, Westminster Abbey, 1669; of Chapel Royal also, 1676. Resigned Westminster Abbey in favour of Farwell, 1680. Master of Choristers of St. Paul's 1687-1693. At his Hampton residence composed celebrated anthem *I was glad when they said unto me*, for opening of St. Paul's 1697. (1648-1703).

Blow Fly. See under *Blue Bottle*

Blowpipe, a contrivance by which a current of air is driven through a flame, and the flame directed upon some fusible substance to fuse or vitrify it.

Bloxwich, an ecclesiastical district and village of Staffordshire, England, 3 m. NW. of Walsall. Coal and ironstone is worked in the neighbourhood. Pop. 9,000.

Blubber, the name of the fat found under the skin of the whale, and at one time the chief source of profit in whaling. It is melted into oil.

Blücher, Gebhard Leberecht von, Prussian field-marshal, familiarly named "Marshal Forwards," born at Rostock; served first in the Swedish army, then in the Prussian; distinguished as a leader of cavalry, and met with varying fortune; at the age of 70 commanded the centre of the Allied army in 1813; distinguished himself at Lützen and Leipzig; pursued the French across the Rhine; pressed forward to Paris at the time of Napoleon's abdication; defeated by Napoleon at Ligny, June 16, 1815; arrived on the field of Waterloo just as the French were preparing to make their last charge, and contributed to decide the fate of the day. (1742-1819).

Blue, one of the highest honours in sport, awarded at Oxford and Cambridge to those who play against the other University. Blues for rowing, cricket, and both codes of football are the most highly prized. Oxford is a dark blue, and Cambridge a light.

Blue (colour), as used by artists is made from native and artificial ultramarine, cobalt, indigo, and Prussian blue. True ultramarine is obtained from lapis-lazuli, a mineral, and with cobalt blue is permanent. Mixtures of cobalt blue with other bases give Saxon blue, royal blue, cerulean blue and azure blue.

Bluebell, the English name of a common wild flower, viz., the wild hyacinth (*Scilla festalis*). The term also includes in Scotland the *Cranpanula rotundiflora*, or harebell, while in some parts of the U.S.A. it refers to a variety of valerian.

Blue-Bird (*Sialia sialis*), migratory bird of N. America, its return heralding spring. It equals the robin in its familiarity with man, and stands as high in the United States in the popular affection.

Blue-Books, Parliamentary documents bound in blue paper, as the corresponding documents in France are in yellow; they have been published regularly since the beginning of the 18th Century, those of a single session now forming a collection of some 60 folio volumes.

Blue Bottle, the name of a wild flower, common in corn fields (the cornflower, *Centaurea cyanus*); the blue bottle fly is closely related to the common house-fly. It is common in England and in Europe. It lays its eggs in meat.

Blue Boy, The, Thomas Gainsborough's (q.v.) famous portrait of Master Buttall, painted in 1770.

Blue-Coat School, a name given to Christ's Hospital, West Horsham, founded by Edward VI., from the blue coats worn by the boys.

Blue Ensign, a blue flag of the Royal Naval Reserve, in the upper left quarter of which is the Union Jack.

Blue Fish (*Pomatomus saltatrix*), a ferocious and voracious fish found on the Atlantic coast of the United States. They feed on other fishes, often scarcely inferior in size, hunt in large schools, and destroy untold quantities of fish.

Blue-Gown, in Scotland a beggar, a who wore a blue gown, the gift of the king, and had his licence to beg; abolished in 1863.

Blue Mountains, a range of thickly wooded mountains traversing Jamaica from E. to W., from 5,000 to 7,000 ft. in height; also a chain of mountains in New South Wales of two parallel ranges, with a deep chasm between, and full of gloomy ravines and beetling precipices, the highest 4,100 ft.

Blue-Peter, a flag with a blue ground and a white square in the centre, hoisted as a signal that the ship is about to sail, a recalling signal to the crew.

Blue Sharks, or Requiem Sharks, a genus of sharks found in temperate and tropical seas. Some grow to a large size, and can be dangerous, though the species (*Carcharinus glaucus*), which occurs not infrequently in British seas, is smaller and is not regarded as dangerous. It is destructive to fishing and fishing-nets.

Blue-Stocking, a female pendant or *femme savante*, a name which originated from the literary circles established in London about 1750 by a Mrs. Elizabeth Montagu at which a Mr. Benjamin Stillingfleet wore blue worsted stockings, but said to be ultimately derived from a learned coterie, formed in the 15th Century at Venice, who wore blue stockings as a badge.

Blue-Throat, a bird of the Turdidæ (Thrush) family, with a tawny breast marked with a sky-blue crescent, inhabiting N. Europe and Asia. It is a bird of passage, and is taken in France for the table. It is found only as an occasional visitor in England.

Blum, Léon, French statesman, born in Paris, of Alsatian-Jewish parents. Studied law; entered Conseil d'État, 1895. Joined Socialists, 1899. Dramatic critic, *Comœdia* and *Le Matin*, 1905-1914. Deputy for Seine, 1919. Real power behind Herriot ministry, 1924-1925. Brutally assaulted in Paris, February, 1936. After May elections, became prime minister; various leagues of violence were disbanded, and many reforms carried. Resigned 1937. Again became Prime Minister in 1938 but his ministry lasted only a few weeks. (1872-).

Blundellsands, an ecclesiastical district and holiday resort of Lancashire, England, 6 m. NW. of Liverpool on the estuary of the Mersey. Pop. 4,000.

Blundell's School, a public school in Tiverton, Devonshire, made famous in Blackmore's novel *Lorna Doone*. It was founded by Peter Blundell in 1604.

Blunden, Edmund Charles, poet and prose-writer. Served in Great War with Royal Sussex Regiment (M.C.). Hawthornden prize, 1922. Professor of English Literature, Tokyo University, 1924-1927. Chief work, *Underlines of War*, 1928. (1896-).

Blunderbuss, an obsolete firearm, short and with a wide muzzle. It fires a number of balls. The name is of Dutch origin, *bus* meaning a gun and *donder*, thunder.

Blunt, Wilfrid Scawen, English poet and traveller; born at Petworth; in diplomatic service for some years; championed cause of Arabi Pasha in 1882; author amongst other works of *The Future of Islam*. (1840-1922).



BLUE PETER



BLUNDERBUSS

Blyth, a seaport and watering-place of the Northumberland, England, at the mouth of the R. Blyth. It exports coal. Ship-building, fishing, and the making of rope, cables, and sails are its main industries. Pop. 32,000.

Boa, the name given in particular to a genus of constricting, non-venomous serpents found in tropical America; included with pythons and anacondas (q.v.) in the family Boidæ. The Boa Constrictor is one of the commonest and grows to a length of 10 ft.

Boabdil or **Abu-Abdallah**, surnamed "The Unfortunate," the last Moorish King of Granada, from 1482 to 1492; expelled from his throne by Ferdinand of Castile and Aragon.

Boadicea (**Boudicca**), a British heroine, who occupied Norfolk and Suffolk; routed by indignity done to her and her people by the Romans, gathered round her an army, who, with a murderous onslaught, attacked their settlements and destroyed them; but being attacked and defeated in turn by Suetonius Paulinus, the Roman governor, she, in her despair, put an end to her life by poison, A.D. 62. Cowper made her the theme of one of his poems.

Boanerges (i.e., Sons of Thunder), the name applied by Christ to James and John sons of Zebedee for the vehemence of their zeal. See Mark iii.

Boar, the adult male of the pig (*Sus scrofa*). The wild boar is larger than the domestic pig (*Sus scrofa domestica*), and is a fierce animal, having long tusks, and a stiff, bristly mane. The wild pigs feed on roots and fruit; they do damage, pushing up the earth in fields. They are hunted for this reason, and for sport and food. They are found in Central and S. Europe. Other species are found in Central and W. Asia, and N. Africa.

Board of Trade, The, embracing the Department of Overseas Trade and the Mines Department, looks after national trade affairs, including the mercantile marine, marine survey, the coastguards, bankruptcy, joint-stock companies, weights and measures, patents, trade marks and copyright, the cinema industry, mines and quarries, etc. The President is a member of the Cabinet with a salary of £5,000 a year. The Parliamentary Secretary receives £1,500 a year, the Secretary for Mines £1,500 a year, for Overseas Trade £2,000 a year. Nominally it is the Committee of the Council of Trade, supervised by a President and instituted in 1786.

Boar's Hill, a residential district and village of Berkshire, England, 4 m. N. of Abingdon. Near, on the top of Boar's Hill (550 ft.), is Ripon Hall, a Church of England college for candidates for Holy Orders.

Boat, a small open vessel usually propelled by oars or by sail, though engines are a common mechanical aid to propulsion to-day even in the smallest. The origin of the boat is in the dug-out canoe and in a raft composed of logs of wood fastened together; both exist in primitive parts of the world to this day. In the process of evolution in different countries many types have been produced and bear distinctive names. Boats built with overlapping planks are termed clinker-built. Those with the planks laid flush on the sides are carvel-built.

The front of a boat is called the bow, the back the stern, the bottom edge is the keel and the top running along the sides of the boat is the gunwale (pronounced "gun'le"). A small rowing boat or dinghy is from 8 ft. to 15 ft. long. A pram-dinghy is one built with a square bow. In the Royal Navy every ship possesses boats propelled by oars, e.g., the gig and cutter. A lifeboat is a specially constructed vessel fitted with buoyant tanks which it is almost impossible to sink.

Boatbill, a species of heron with a broad boat-shaped bill, of nocturnal habits, found in Brazil.

Boatfly, an aquatic insect of the family Notonectidae. It is able to take in a supply of air when diving. The commonest species (*Notonecta glauca*) found in Great Britain is the water-boatman.

Boat Race, the annual rowing match on the Thames in March or April between Oxford and Cambridge Universities from Putney to Mortlake. The first race was rowed in 1829 at Henley, and it became an annual fixture in 1856.

Boatswain (pronounced "bo's'n"), a warrant officer in the Royal Navy whose duty is to summon the crew. For this purpose he uses a pipe or whistle. He is also charged with looking after the anchors, rigging, cables, etc.

Boaz, a wealthy landowner in Bethlehem, the benefactor, and then the husband of Ruth; he was an ancestor of David and so of Christ. (See Ruth ii and iv; Matthew i and Luke iii).

Boaz and Jachin, the names of the two pillars of brass at the entrance of Solomon's Temple.

Bobolink, one of the finest song-birds of N. America, of the order Icteridae. Is in appearance something like the starling. Its middle toe, however, is longer and its tail more pointed.

Bobruisk, a town of 64,000 inhabitants on the R. Bevesina in White Russia, formerly fortified.

Boccaccio, Giovanni, the celebrated Italian raconteur, born probably in Paris and brought early to Florence; showed a youthful passion for literature; sent by his father to Naples to pursue a mercantile career; gave himself up to story-telling in prose and verse; fell in love with Maria, a beautiful woman, daughter of the King, styled by him Flammetta, for whom he wrote several of his works and his greatest, the *Decameron*; early formed a lifelong friendship with Petrarch, with whom he contributed to the revival and study of classic literature; lectured on Dante in Florence; Petrarch's death deeply affected him, and he died the year after. (1313-1375).

Boccherini, Luigi, a celebrated Italian at Lucca; was associated with Manfredi, the violinist; his works were numerous; was a fine cellist, and was treated with favour by the King of Spain's brother and by Frederick William II. of Prussia. (1743-1805).

Bochum, town of Westphalia, Germany, with coal-mines and iron and steel works. Pop. 314,000.

Boc-land, or **Bookland** (Anglo-Saxon boc, a book), a form of tenure of manor-land in early England. Boc-land was originally land held by the King or in ecclesiastical possession, and was given into private ownership in return for rent and service. It is the origin of the modern freehold.

Bode, Johann Elert, an astronomer, born at Hamburg; was professor of Astronomy and director of Observatory at Berlin; produced a number of astronomical works, one of his best being *An Introduction to the Knowledge of the Stars Heavens*; gave name to the law of the planetary distances, called Bode's Law, although it was observed by Kepler long before his day. (1747-1826).

Bodensee, another name for the Lake of Constance (q.v.).

Bodiam, a village of E. Sussex, England, on the Rother. Here is the ruin of a fine 14th-Century moated castle.

Bodleian Library, the university library of Oxford, founded, or rather restored, by Sir Thomas Bodley in 1582; enlarged from time to time by bequests, often munificent. A copy of every book published in the United Kingdom has to be sent there. Owing to congestion a new building has recently been added to the library.

Bodley, Sir Thomas, born at Exeter; employed on embassies by Elizabeth on the Continent, where he collected a number of valuable books; bequeathed them and his fortune to the university library of Oxford, named after him. (1545-1613).

Bodmer, Johann Jacob, a distinguished Swiss critic, born near Zurich; the first, by study of the masters in literature of Greece and Rome, France, England, and Italy, to awaken Germany to a sense of its poverty in that line, and thus aided, along with others, in the inauguration of a new era, which he did more by his republication of the Minnesingers and part of the *Nibelungen Lied* than by his advocacy. (1698-1783).

Bodmin, the county town of Cornwall, England, superseded Truro as capital, an important agricultural centre; has large annual fairs for cattle, horses, and sheep. Pop. 5,500.

Bodoni, Giambattista, an Italian printer; settled at Parma, where his press was set up in the ducal palace, whence issued magnificent editions of the classics, Horace, Virgil, Tacitus, Tasso, and, last of all, Homer. (1740-1813).

Body-Snatchers, those engaged in the removal of the dead from churchyards with the object of the sale of the corpses to medical students and surgeons for anatomical purposes; a practice stopped by the Anatomy Act of 1832. The iron railing seen in Greyfriars churchyard, Edinburgh, is a relic of the practice, such bars being employed to frustrate body-snatchers.

Boece, Hector, known also as **Boethius**, a humanist and Scottish historian, born at Dundee; professor of Philosophy at Paris; friend of Erasmus; was principal of university at Aberdeen; wrote *History of Bishops of Morlach and Aberdeen*, and *History of Scotland* in Latin. (1465-1536).

Boehm, Sir Joseph Edgar, sculptor, born in Vienna, of Hungarian parentage; settled in England; executed a colossal statue of Queen Victoria at Windsor, a seated statue of Carlyle, and a statue of Bunyan at Bedford; patronised by the Queen and royal family. (1834-1899).

Boehme, Jacob, a celebrated German mystic, born at Görlitz; spent his whole life in meditation on divine things; saw in the Bible a revelation of these as in no other book. His philosophy would seem to have anticipated the secret of Hegel, who acknowledges him as one of the fathers of German philosophy. His writings embody a scheme of mystical theology, setting forth the Trinity in Unity of the Hegelian system. (1575-1621).

Bæotia, a country of ancient Greece, the natives, though brave, were mere tillers of the soil under a heavy atmosphere, innocent of culture, and regarded as boors and dullards by the educated classes of Greece, and particularly of Athens, although Hesiod, Pindar, and Plutarch were natives of Bæotia.



BOBOLINK

Boers (i.e., husbandmen), Dutch colonists of an independent republican temper, who in the 17th Century settled in S. Africa; gave themselves to agriculture and cattle-rearing; settled at length in the Transvaal in a self-governed community by themselves, the independence of which was recognised after the war of 1880-1881.

Boer War, The, started in Oct. 1899, Natal, and was ended by the Treaty of Pretoria in May 1902. Britain suffered heavily in the opening six months of the war, but with the appointment of Lord Roberts as Commander-in-Chief, with Lord Kitchener as Chief of Staff, the tide turned. Kimberley was relieved in Feb. 1900. The relief of Ladysmith and Mafeking were other successes leading to the surrender of the Boer leaders.

Boëthius, Anicius Manlius Severinus, a Roman statesman, of Consular rank, a profoundly learned man, held the highest offices, Consul, among others, under Theodoric the Goth; his integrity and opposition to injustice procured him enemies, who accused him of treason; he was cast into prison, and finally put to death; wrote in prison his *De Consolatione Philosophiæ*, in five parts, employing verse and prose alternately, which King Alfred translated into Anglo-Saxon; he was canonised as a martyr, and his influence was great during the Middle Ages. (470-524).

Bog, land saturated with water. The vegetation in consequence decomposes and forms peat. They are found in N. Europe, and particularly in Ireland. Bogs are more easily drained when they are not level.

Bog Asphodel (*Narthecium ossifragum*), a yellow-flowered plant of the order Liliaceæ, found in England and Scotland in wet moorland districts.

Bog-Bean, *Marsh Trefoil*, or *Buckbean*, a bog plant, order Gentianaceæ. The native species, *Menyanthes trifoliata*, is worth cultivating in a water-garden. It needs to be rooted in mud in shallow water. The rhizome has bitter tonic properties.

Bog Butter, a fatty substance of hydrocarbon, found in Irish peat-bogs. It is either of vegetable or of animal origin.

Bogermann, Johann, Dutch divine, translated the Bible into Dutch, and was President of the Synod of Dort. (1576-1633).

Bogie, the term given to the undercarriage of a locomotive bearing the front four wheels when this is attached to the body of the engine by a pivot. Being less rigid, it adjusts itself to the curves of the line, and so diminishes the likelihood of the train leaving the line, and lessens vibration.

Bog Iron Ore, a variety of limonite, or ferric hydrate. It is found in a loose or porous state in marshy places. Semi-fossilised wood and leaves are often found enclosed in it.

Bog Moss, a name given to various species of Sphagnum, found in marshes. The leaves and roots absorb water. The roots decay, and are a constituent of peat.

Bog Myrtle, or *Sweet Gale*, a shrub found in bogs and swamps in Britain, especially in Scotland, the leaves

of which secrete a fragrant wax and emit a sweet odour when crushed. It bears flowers in short catkins and a wax-secreting drupe as fruit. Its botanical name is *Myrica gale*, order Myricaceæ.

Bognor Regis, a seaside resort of W. Sussex, England. It received the name Regis when King George V. passed his convalescence there in 1929, after his dangerous bronchial illness. Pop. 14,000.

Bog Oak, a hard black wood found in the bogs of Ireland. It has obtained its characteristic hardness and colour from having been preserved for centuries in the peat. It is used for carving.

Bogota, capital of the Republic of Colombia, S. America, situated on a remarkable, almost mountain-encircled, plateau, on the R. Bogota, 65 m. S.E. of its port, Honda, the highest navigable point of the Magdalena; is 8,600 ft. above sea-level, and has a spring-like climate. It is regularly built, with many churches, a mint, university, library and observatory, and several schools. Pop. 350,000.

Bohemia, the chief province of Czechoslovakia; is encircled by mountains, and drained by the upper Elbe and its tributaries. The Erzgebirge separate it from Saxony; the Riesengebirge, from Prussia; the Böhmerwald, from Bavaria; and the Moravian Mountains, from Moravia. The mineral wealth is varied and great, including coal, the most useful metals, silver, sulphur, and porcelain clay. The climate is mild in the valleys, the soil fertile; forests are extensive. Dyeing, calico-printing, linen, and woollen manufactures are the chief industries. The glassware is widely celebrated; there are ironworks and sugar refineries. The transit trade is very valuable.

The people are mostly Czechs, of the Slavonic race, Roman Catholics in religion; there is a large German minority (Sudeten Deutsche, q.v.). There is a university at Prague. In the 16th Century the crown was united with the Austrian, but in 1619 religious questions led to the election of the Protestant Frederick V. This was followed by the Thirty Years War, the extermination of the Protestants, and the restoration of the Austrian House. The independence of Czechoslovakia was proclaimed in 1918. Area, 20,000 sq. m. Pop. 6,700,000.

Bohemian Brethren, a fraternity of an extreme sect of the Hussites, organised as United Brethren in 1455; broken up in the Thirty Years War, met in secret, and were invited, under the name of Moravians or Herrnhuters, by Count Zinzendorf to settle on his estate in Silesia.

Bohemian Forest, or *Böhmerwald*, a mountain range in Bohemia (Czechoslovakia) and Bavaria, and dividing the two, is heavily forested and in parts broken and rugged. Highest point, Arber, 4,780 ft. high.

Bohemond, first Prince at Antioch, son of Robert Guiscard; set out on the first crusade; besieged and took Antioch; was besieged in turn by the Saracens, and imprisoned for two years; liberated, he collected troops and recaptured the city. (1056-1111).

Bohn, *Henry George*, publisher, son of a German bookbinder in London, became secondhand bookseller; issued "guinea" catalogue of his large stock, 1841. Dealt in "remainders." From 1846 published cheap editions of valuable works of many kinds; many that were in foreign languages he translated. (1796-1884).

Bohol, an island of the Philippine group of 1,534 sq. m., between Cebu and Leyte. Pop. 400,000 (approx.).



BOG-BEAN

Bohr, **Niels Henrik** ^{Danish}, professor of Physics at Copenhagen, a distinguished mathematical physicist. His greatest work has been in connection with the application of the quantum theory (q.v.) to the structure of the atom (q.v.). His work was based upon the planetary conception of the atom put forward by Rutherford. Awarded Nobel Prize for Physics, 1922. (1885-).

Bohun, the name of a family the founder of which, Humphrey de Bohun, surnamed Barbu, accompanied William the Conqueror to England, and which subsequently played an important part in English history. One, Henry, was granted the earldom of Hereford by John in 1199. The family estates were on the Welsh borders, and the family itself from now on became one of the most important on the border. Henry's son Humphrey became Earl of Essex also, 1286; he was one of the barons who obtained Magna Charta (d. 1274). His great-grandson, Humphrey, Earl of Hereford and Essex, was a lord and ordainer temp. Edward II. (1276-1322). The line ended with his grandson Humphrey, Earl of Hereford, Essex, and (from 1360) Northampton (d. 1373).

Boiardo, **Matteo Maria**, Count of Scandiano, surnamed the "Flower of Chivalry", an Italian poet, courtier, diplomatist, and statesman; author of *Orlando Innamorato* (1456), the model of Ariosto's *Orlando Furioso*, which eclipsed it. (1434-1494).

Boieldieu, **Adrien François**, a distinguished French musical composer of light operas; author of the *Café de l'Opéra*, *Télémaque*, and *La Dame Blanche*, reckoned his masterpiece; called the French Mozart. (1775-1834).

Boileau, **Nicolas** (surnamed Despréaux, to distinguish him from his brother), poet and critic, born in Paris; brought up to the law, but devoted to letters, associating himself with La Fontaine, Racine, and Molière; author of *Satires* and *Epistles*, *L'Art Poétique*, *Le Lutrin*, etc., in which he attacked and employed his wit against the bad taste of his time; did much to reform French poetry. As Pascal did to reform the prose, and was for long the lawgiver of Parnassus; was an imitator of Pope, but specially of Horace. (1636-1711).

Boiler, a vessel in which liquids are boiled, but refers especially to a vessel in which steam is generated by boiling water under pressure. Two main types are in use—viz., the water-tube boiler and the fire-tube boiler. In fire-tube boilers, the water is contained in a cylindrical drum, through which pass numerous tubes conveying the hot gases from the furnace; such boilers are used in locomotive engines, for raising steam for heat in large buildings, and for much of the mercantile marine. Water-tube boilers are, so to speak, the converse of the fire-tube variety; in them the steam is generated within the tubes, which are heated from the outside. They are much more suitable for high-pressure steam, such as is required, for example, in the Navy, in great liners, and for raising power in power-stations and factories.

Boiling Point, is the temperature at which a liquid, when heated, turns to steam. The boiling point of water, at normal pressure, for instance, is 212° F. or 100° C. The boiling point is raised by increased pressure, lowered by decreased pressure.

Boils and Carbuncles are skin affections caused by the microbe staphylococcus. They frequently imply ill-health or general debility, and are treated by fomentations, lancing, and vaccine.

U.E.

Bois-de-Boulogne, a large park along the W. side of Paris from the Porte Maillot to the Porte d'Auteuil, and from Paris to St. Cloud.

Boise, capital of Idaho, U.S.A., on Boise R. is a mining centre. Pop. 22,000.

Bois-le-Duc. See 's Hertogenbosch.

Boito, **Arrigo**, Italian composer and librettist; born at Padua; produced *Meiselsiele* and other operas; wrote librettos for works of Verdi and other composers. (1842-1918).

Bokhara (**Bukhara**), formerly a Mohammedan State in Central Asia, N. of Afghanistan, now part of the Uzbek and the Turkmenistan S.S.R. of Soviet Russia. The surface is arid, and cultivation possible only near the rivers—the Oxus, Zerafshan, and Karshi. In the sands of the Oxus, gold and salt are found. Rice, cotton, and cereals are grown; silk, cotton-thread, jewellery, cutlery, and firearms are manufactured. The people are of Turkish and Persian origin. In 1866 the Russians defeated the Emir, and though the country remained nominally an independent emirate, it became dependent on Russia. In 1920 revolution broke out and the Emir fled to Afghanistan. A counter-revolution under Enver Pasha came to an end with his death in action in 1922. Bokhara and Khiva were subsequently in association with the U.S.S.R. A re-grouping of the territories of Turkistan took place in 1924. Bokhara being included partly in Uzbekistan and partly in Turkmenistan, both of which in 1925 became member states of the U.S.S.R.

The capital, Bokhara, is on the plain of the Zerafshan, a walled, mud-built city, 8 or 9 m. in circumference, with numerous colleges and mosques, the centre of learning and religious life in Central Asia. It has important trade markets. Pop. 70,000.

Bolan Pass, a high-lying, deep, narrow gorge, with a torrent running through it, extending between Quetta (Baluchistan) and Kandahar (Afghanistan), sloping upwards at an inclination of 90 ft. a mile; is traversed by a military road.

Bolas, a weapon used by S. American natives, consisting of stone balls (either 2 or 3) attached to the ends of a piece of strong rope. It is whirled and thrown in such a way as to entangle the legs of the quarry.

Bole, a hydrous aluminium silicate, in form resembling clay; is of varying colours, red, dull yellow, brown, and is used as a pigment. Red letters in old manuscripts were painted with bole.

Bolero, a lively Spanish dance, usually 3-4 time. Also its music or any composition of a like nature.

Boleyn, or **Bullen**, **Anne**, second wife of Henry VIII. and mother of Queen Elizabeth; daughter of Sir Thomas Bullen (afterwards Earl of Wiltshire); after a three years' residence at the French Court became

maid of honour to Queen Katherine; attracted the admiration of Henry; was married to him, and became Queen; charged with adultery and conspiracy, was found guilty and beheaded; was of the Reformed faith; her marriage with Henry had important bearings on the English Reformation. (1507-1536).



ANNE BOLEYN

Bolingbroke, Henry St. John, Viscount, English statesman, orator, and political writer, born at Battersea; Prime Minister of Queen Anne in the Tory interest, after her dismissal of the Whigs; on the accession of George I. fled to France and joined the Pretender; was impeached and attainted; returned in 1723 to his estates, but denied a seat in the House of Lords, an indignity which he resented by working for the overthrow of Walpole; was the friend of Pope and Swift, and the author of *Letters*, bearing upon politics and literature. The *Letter to Windham*, a sort of apologia, and the *Ideal of a Patriot King* exhibit him at his best. It was he who suggested to Pope his *Essay on Men*. (1678-1751).

Bolivar, (1) a thickly-wooded dept. of Colombia Republic, S. America, with a coastline on the Caribbean Sea. Area 23,000 sq. m. Pop. 640,000. Cap. Cartagena. (2) An inland province of Ecuador, S. America, area 1,160 sq. m. Pop. 86,000. Cap. Guaranda. (3) A large inland state of Venezuela, well watered and heavily wooded, but sparsely inhabited. Area 91,900 sq. m. Pop. 98,000. Cap. Ciudad Bolivar.

Bolivar, the monetary unit in Venezuela, divided into 100 centimos, the old par value being 25-25 to the £1.

Bolivar, Simon, surnamed the Liberator, general and statesman, born at Caracas, Venezuela; a man of good birth and liberal education; seized with the passion for freedom during a visit to Madrid and Paris, devoted himself to the cause of S. American independence; freed from the yoke of Spain Venezuela and New Granada, which, in 1819, he erected into a republic under the name of Colombia; achieved in 1825 the same for Upper Peru, henceforth called Bolivia, after his name; accused of aspiring to the Dictatorship, he abdicated, and was preparing to leave the country when he died of fever, with the sage reflection on his lips, "The presence of a soldier, however disinterested he may be, is always dangerous in a State that is new to freedom"; he has been called the Washington of S. America. (1783-1830).

Bolivia, an inland republic of S. America, occupying lofty tablelands E. of the Andes and surrounded by Peru, Brazil, Paraguay, Argentina, and Chile. The S. is chiefly desert; in the N. are Lake Titicaca and many well-watered valleys. The very varied heights afford all kinds of vegetation, from wheat and maize to tropical fruits. Agriculture, however, is backward, and bark and hides are the chief products. In the lower plains coffee, tobacco, cotton, and cocoa are cultivated. The most important industry is mining, tin being easily the most important mineral output. Tin is the chief export; manufactured goods are imported.

The country has been independent since 1825; it lost its sea provinces in the war with Chile 1879-1883. A protracted war with Paraguay broke out in 1932 over the boundary through the Gran Chaco. After heavy fighting, peace was ratified in 1938. The capital is Sucre, but La Paz (actual seat of the government) and Cochabamba are larger towns. Rather more than half the population is Indian (Aymaras and Quechuas), and a large proportion of the rest is of mixed blood. Language of the educated classes is Spanish. Pop. 3,000,000.

Bolland, John, a Jesuit of Antwerp, born in Belgium; compiled six vols. of the *Lives of the Saints* called *Acta Sanctorum*, which was continued by others, called after him "Bollandists." (1596-1665).

Bollington, a market town of Cheshire, England, 2½ m. N.W. of Macclesfield. Silk manufacture is the chief industry. Pop. 6,000.

Boll Worm, the name of the larvae of various moths, including *Heliothis armigera*, which eat away the seed pods (the boll) of the cotton-plant.

The cotton boll-weevil has done a tremendous amount of damage to cotton crops in the U.S.A. during the last 40 years and is a serious plague. It lays its eggs in the cotton boll and the larvae feed on the cotton destroying the boll. The adult beetle is a very small insect—only ½ in. long, including its long proboscis.



COTTON BOLL WEEVIL (much enlarged)

Bologna, an ancient walled city of Italy, and capital of a dept. of the same name, on a fertile plain, at the foot of the Lower Apennines, 82 m. N. of Florence; has many fine buildings, a university, one of the oldest in Europe, schools of music and art, libraries and art collections. There are some silk and other industries and considerable trade. Pop. 267,000.

Bolometer, an instrument designed by Prof. Langley of Washington in 1881 for the study of the distribution of heat in the solar spectrum. It is extremely sensitive to very feeble heat rays, its action depending upon the change of resistance of a thin strip of metal with varying temperature.

Bolsena, a small town in Italy, on the S. shore of Lake Bolsena. The lake is in a hollow crater of a volcano and abounds in fish, but has an unhealthy atmosphere.

Bolshevism, an extreme form of, and violently opposed to capitalism and religion; the political and economic doctrines of the Bolshevik or majority party as opposed to the Menshevik or minority party. Under Lenin and Trotsky its adherents took control of Russia in 1918.

The term originated from a conference of Russian socialists in London in 1903. The various groups were agreed as to principles laid down by Karl Marx, but opposed on the method of bringing them into operation. Lenin's party urged that the existing Government in Russia should be overthrown by violence and a communistic administration be forced upon the people without waiting for education by propaganda—in other words, revolutionary socialism to come from the top.

In 1921 the revolutionary Socialist Government was established and the theories of the Bolshevik were developed in practice. The leading doctrine of Bolshevism is the Dictatorship of the Proletariat, based on the idea that producers (workers) are the class which merits most consideration, and since the proletariat never gets justice under ordinary democratic government, democracy must be abolished. The doctrine, both political and economic, have been modified in some directions by force of circumstances, but the experiment has been successful in so far that Soviet Russia is to-day one of the strongest nations. Many classes, however, who actively opposed or who failed to co-operate in the communistic experiment (e.g., the Kulaks) have been "liquidated."

Bolsover, a town of Derbyshire, England, 6 m. E. of Chesterfield. It has a Norman church and castle ruins. Coal is mined here and a building stone—Bolsover stone—is quarried. Pop. 12,000.

Bolthead, a headland of S. Devon, England, W. of the Exe estuary. Here is a wireless station.

Bolton, a large manufacturing town of the cotton industry, with iron-works, bleaching and chemical works. There are coal mines in the neighbourhood. Arkwright and Crompton, inventors of spinning machinery, were born here. Pop. 175,000.

Bolton Abbey, an old abbey in Yorkshire, England, 6 m. E. of Skipton, founded in 1121 by the Augustinian canons and moved to its present site in 1151.

Bolton-upon-Dearne, an urban district and ancient village of Yorkshire, England, in the W. Riding, 7 m. N.E. of Rotherham. Pop. 14,000.

Boma, a station in Belgian Congo on the Lower Congo; once a great slave mart and until 1923 cap. of the Colony.

Bomarsund, a fortress of the island of Aland, occupied by Russia and destroyed by the Anglo-French fleet in 1854; the Russians bound by the Treaty of Paris not to restore it. In 1917 with the rest of the Aland Is. it fell within the new Republic of Finland.

Bomb, an explosive weapon originally intended to be thrown by hand in close-range fighting. It was first used in the 15th Century, being a ball of baked earth filled with explosives. They were used by grenadiers, and were extensively employed during the Great War, the commonest type being the Mills hand grenade. They were adapted to be fired by a rifle, and made to explode by a fuse ending in a rim-fire percussion-cap. The bomb speedily became an effective aircraft weapon, aerial bombs including incendiary, gas, and explosive types.

Bombardier, the lowest rank of non-commissioned officer in the Royal Artillery, so called because formerly they handled a primitive canon called a bombard.

Bombardment, the direction of artillery fire against a fortress, a fortified position held by troops, or against a town. When against the latter, the purpose of bombardment is either to induce the town to surrender or to demoralise the population. At the Hague Peace Conference of 1899 it was laid down that opportunity should be allowed for the inhabitants of a threatened town to evacuate; that undefended open towns should not be exposed to bombardment, and that notable buildings, works of art, etc., should be spared.

In trench warfare the enemy's position is usually bombarded before, and right up to, the time of an infantry attack. Modern range-finding is so accurate that troops are able to advance under cover of the bombardment of their objective.

Bombay, the western Presidency of India, embraces 26 British districts and 19 feudatory states. N. of the Nerbudda R. the country is flat and fertile; S. of it are mountain ranges and tablelands. In the fertile N. cotton, opium, and wheat are the staple products. In the S., salt, iron, and gold are mined; but coal is wanting. The climate is hot and moist on the coast and in the plains, but pleasant on the plateaux. Cotton manufacture has developed extensively, and cotton cloths, with sugar, tea, wool, and drugs are exported. Area of Presidency, 77,271 sq. m. Pop. 18,000,000.

Bombay, the chief city, stands on an island, connected with the coast by a causeway, and has a magnificent harbour and docks. It is rapidly surpassing Calcutta in trade, and is one of the greatest of seaports; its position promises to make it the most important

commercial centre in the East, as it already is in the cotton trade of the world. It swarms with people of every clime, its merchandises being mainly in the hands of the Parsees, the descendants of the ancient fire-worshippers. It is the most English town in India. It came to England from Portugal as dowry with Catherine of Braganza, wife of Charles II., who leased it to the East India Company for £10 a year. Its prosperity began when the civil war in America afforded it an opening for its cotton. Pop. 1,161,000.

Bona, a seaport and naval station in French Algeria, in the province of Constantine, on a bay of the Mediterranean, with an excellent harbour and a growing trade; is much improved since its occupation by the French in 1832. Near it are the ruins of Hippo Regius, the episcopal city of Augustine. Pop. 69,000.

Bona Dea (the good goddess), a Roman goddess of fertility, worshipped by women; her priestesses vestals and her worship by rites from which men were excluded. Her symbol was a serpent, but the name under which she was worshipped is not known.

Bonaparte, name of a celebrated family of Italian origin settled in Corsica; the principal members of it were: **Charles Marie**, b. at Ajaccio, 1746; d. at Montpellier, 1785; married 1764. **Lucia Ramolino**, b. at Ajaccio, 1750; d. at Rome, 1836; of this union were born 8 children; **Joseph**, became King of Naples, 1806; King of Spain from 1808 to 1813; retired to United States after Waterloo; returned to Europe, and d. at Florence, 1844. **Napoleon I. (g.v.)**, **Lucien**, b. 1775; became President of the Council of the Five Hundred, and Prince of Canino; d. in Viterbo, 1840. **Mariannne-Elise**, b. 1777; married Felix Bacciochi, who became Prince of Lucce; d. at Trieste 1820. **Louis**, b. 1778; married Hortense de Beauharnais; father of Napoleon III.; King of Holland (from 1806 to 1810); d. at Leghorn 1846. **Marie Pauline**, b. 1780; married General Leclerc, 1801; afterwards, in 1803, Prince Camillo Borghese; became Duchess of Guastalla; d. at Florence, 1825. **Caroline-Marie**, b. 1782; married Murat in 1800; became Grand-duchess of Berg and Cleves, then Queen of Naples; d. at Florence, 1839. **Jerome**, b. 1784; King of Westphalia (from 1807 to 1813); Marshal of France in 1850; married, by second marriage, Princess Catherine of Wurtemberg; d. 1860; his daughter, Princess Mathilde, (1820-1904); his son, Prince Napoleon, called Jerome (1822-1891), married Princess Clothilde, daughter of Victor Emmanuel, of which marriage was born Prince Napoleon Victor (1862-1926), whose son Louis became head of the family.

Bonar Law. See Law, Andrew Bonar.

Bonchurch, picturesque village of Hampshire, England, in the Isle of Wight, 1 m. E. of Ventnor, a favoured winter resort for invalids. Near by is Pulpit Rock. Pop. 500.

Bond, a certificate of ownership of capital lent to a government, municipality, company or corporation. Interest bonds are those whose interest, if not paid in any year, is carried forward as a lien on future profits. In law, a document binding the signatory to do or not to do a certain act. They are used as a guarantee of another's fidelity, and in other ways. Post obit bonds are those given to be realisable after someone's death. A bonded warehouse is one in which goods may be stored without payment of customs or excise duties, the depositor of the goods giving a bond as security.

Bond, The Rt. Hon. Sir Robert, Canadian statesman, born in Newfoundland; entered the House of Assembly in 1883 and

motive force in the work of charging the accumulators in an electric power-station. They may, on the other hand, be used to help discharge the accumulators so that the continuous supply of current from the larger dynamo may be unimpeded.

Boot, an instrument of torture used in early 18th Century. It was a boot made of wood and iron which was fitted on to the victim's leg. Wedges were then driven in, by hammer blows, between the boot and the calf.

Bootes (the ox-driver or waggoner), a son of Ceres; inventor of the plough in the Greek mythology; translated along with his ox to become a constellation in the northern sky, the brightest star in which is Arcturus.

Booth, Edwin Thomas, son of Junius Brutus Booth, greatest of American tragedians, famous for Shakespearian impersonations; appeared with success in England. (1833-1893).

Booth, Evangeline Cory, General of the Salvation Army, born on Christmas Day at Cambridge Heath, Hackney, seventh child of the Army's founder, William Booth. She had charge of the Army's work, successively, in Great Britain, Canada, Newfoundland, and (1904-1934) U.S.A. Succeeded Edward John Higgins as General in 1934. (1805-).

Booth, John Wilkes, actor, another son of J. B. Booth; served with the Southern forces in the American Civil War and, after their defeat, assassinated Lincoln; he was shot by his captors. (1839-1865).

Booth, Junius Brutus, actor, born in Richard Booth, lawyer, who had fought for Americans in War of Independence. First appearance, 1813. Covent Garden, 1815; rival of Kean. Went to U.S.A., 1821; revisited England, 1825 and 1836-1837. Popular in Shakespearian villainous and tragic parts. Lived on farm near Baltimore. Died on voyage up Mississippi. (1796-1852).

Booth, William, founder and general of the Salvation Army, born in Nottingham; published *In Darkest England*; a man of singular self-devotion to the religious and social welfare of the race. (1829-1912).

Booth, William Bramwell, General of the Salvation Army. He succeeded his father after 32 years as Chief of Staff. In 1928 he was taken ill, and the High Council removed him from office despite strenuous opposition on the part of the Booth family. He died a few months later. (1856-1929).

Boothia, a peninsula of N. Canada, W. of the Gulf of Boothia, in which the N. magnetic pole of the earth is situated; discovered by Sir James Clark Ross in 1829.

Bootle, a borough of Lancashire, England, at the mouth of the Mersey, just N. of Liverpool. It has immense docks, and iron and engineering works, also timber yards, jute factories, tanneries, and corn mills. Pop. 77,000.

Bootlegger, a person engaged in the liquor, with special reference to the business organisations which grew up in the U.S.A. during the era of National Prohibition. Bootleggers were organised on the plan of a gang and its leader, and with the exception that violence took the place of law in the settlement of disputes, their procedure was based on usual commercial practices. The word was derived from the method of concealing forbidden liquor in the tops of heavy boots, a practice in early colonial days when liquor was sold illegally to the Indians.

Bopp, Franz, a celebrated German philologist, and Sanskrit scholar, born at Mayence; was professor of Oriental Literature and General Philology at Berlin; his greatest work, *A Comparative Grammar of Sanskrit, Zend, Greek, Latin, Lithuanian, Old Slav, Gothic, and German*; translated portions of the *Mahabharata* (q.v.). (1791-1867).

Bora, Katharina von, the wife of Luther, born in Meissen, originally a nun, who, with eight others, was at Luther's instance released from her convent; proved "a pious and faithful wife" to Luther, as he says of her, and became the mother of six children, three sons and three daughters. (1499-1552).

Boracic Acid, is found in free form in England, in the U.S.A., Tuscany, etc., and is also chemically produced. It is best known as a white powder or in the form of small crystals, and is almost tasteless. It is a mild antiseptic, and as such is used in medicine chiefly in ointment and lint. On account of its mild antiseptic properties it has also been used as a preservative, but in 1927 this was forbidden by law in Great Britain.

Borage (*Borago officinalis*), an exceedingly hispid plant, cultivated in England as a garden flower, though sometimes found wild; with brilliant blue flowers and rough stem; it was once regarded as a cordial and used in claret-cup; the young leaves may be used as a salad. It is bee-fertilised, and is cultivated as a honey plant for feeding bees.



BORAGE

Borah, William Edgar, U.S. constitutional lawyer and senator for Idaho since 1907, was born at Fairfield, Ill. Practised law in Lyons, Kans., 1889-1891, then removed to Boise, Idaho. He was forward in opposing entry into League of Nations and World Court. Became chairman, Senate Foreign Relations Committee, 1924. (1865-).

Borax, the borate of soda, found in the mineral colemanite. It is used for enamels, glazes, etc., for softening hard water, and as an antiseptic.

Bordeaux, a great industrial and commercial city, the chief seat of the wine trade in France and the fourth seaport; on the Garonne; capital of the dept. of Gironde; the birthplace of Rosa Bonheur and Richard II., his father, the Black Prince, having had his seat here as Governor of Aquitaine. There are sugar refineries, potteries, foundries, glass and chemical works, also shipbuilding and motor industries. The cod-fishing industry has its base here. Exports include wine, chemicals, fish, and glass. The cathedral dates from the 11th Century. There are schools of science, art, theology, medicine, and navigation, a library, museum, and a rich picture-gallery. There is a new port at Balacan. It became the seat of the French Government in 1914, when the fall of Paris seemed imminent. Pop. 263,000.

Borden, Rt. Hon. Sir Robert Laird, Canadian statesman. Entered the Canadian Parliament in 1896, succeeding to the leadership of the Conservative Party in 1901, after a distinguished legal career. He became Prime Minister in 1911, and held the post till 1920, frequently visiting London during the war to co-operate with the British Cabinet. (1854-1937).

Borders, The, the shifting boundary before the Union, a centre of endless fighting and marauding on the opposite sides for centuries.

Bordighera, a town of Italy on the Riviera, in the dept. of Liguria, a popular winter pleasure resort on a hill overlooking the Mediterranean. It is divided into an old, and a new, or Visitors' Town. Pop. 6,000.

Bordone, Paris, an Italian painter, born at Troviso, a pupil of Titian and Giorgione; his most celebrated picture, "The Gondolier presenting the Ring of St. Mark to the Doge." (1500-1571).

Bore, or **Eagre**, a watery ridge rushing and violently up an estuary, due to a strong tidal wave travelling up a gradually narrowing channel. Bores are common in the estuary of the Ganges and other Asiatic rivers, in those of Brazil, and at the mouth of the Severn, in England.

Boreas, the god of the North wind, and of Aurora.

Borecole (*Borecole acephala*), Scotch cabbage, a cruciferous winter vegetable related to and derived from the cabbage (*Brassica oleracea*). Its curly leaves are used for table purposes.

Borghese, name of a family of high Rome; position and great wealth in Rome; Camillo, having become Pope in 1605 under the title of Paul V.; and Prince Borghese having married Pauline Bonaparte, sister of Napoleon, who separated himself from her on the fall of her brother (1775-1832); the palace of the family one of the finest in Rome, with a rich collection of paintings; it was built by Cardinal Scipio Caffarelli-Borghese on the Cenci estate, and many of its works of art are now in the Louvre.

Borgia, Caesar, fourth son of Pope Alexander VI.; was made cardinal at the age of 17, an honour he relinquished to become a soldier, in which capacity it is alleged he gave himself up to deeds of inhumanity which have made his name a synonym for every action that is most crafty, revolting, and cruel; a portrait of him by Raphael, in the Borghese gallery, is a masterpiece. Notwithstanding the execration in which his memory is held, he is reputed to have been just as a ruler in his own domain, and a patron of art and literature. (1476-1507).

Borgia, Francesco, third general of the Order of the Jesuits, a post he filled with great zeal as well as prudent management; was beatified by Urban VIII., and canonised by Clement X., 1671. (1510-1572).

Borgia, Lucrezia, sister of Caesar Borgia, born at Rome; her father annulled her first marriage, and gave her to a nephew of the King of Naples, who was murdered by her brother's assassins. She then married the Duke of Ferrara; was celebrated for her beauty and her patronage of letters, though she has been accused of enormities as well as her brother. (1480-1519).

Borgu, or **Barba**, fertile and densely-peopled district in Africa traversed by the Niger, partly in Nigeria but largely in Dahomey, French W. Africa; in one of the chief towns Mungo Park lost his life.

Boris III., Ferdinand; son of Ferdinand, succeeded his father on his abdication in October 1918. Married Princess Giovanna of Italy, 1930. (1894-).

Borkum, one of the E. Frisian Is., Germany, near the mouth of the Ems, in Hanover province. Cattle are

reared, and in the summer it is a popular holiday resort. Pop. 3,000.

Born, Bertrand de, one of the most celebrated troubadours of the 12th Century, born in Périgord aggravated the quarrel between Henry II. of England and his sons; is placed by Dante in the *inferno*.

Borneo, an island in the Malay Archipelago, the third largest on the globe, its length 800 m. and its breadth 700; covered with mountains in the interior. Kinabalu, the highest (13,500 ft.), has no volcanoes; bordered all round with wide plains and low, marshy ground; rich in vegetation and in gold and precious stones; its forests abound with valuable timber, teak, ebony, etc.; all tropical crops and spices are cultivated; the population is Dyak, Malay and Chinese. Politically it is divided into Dutch Borneo, British N. Borneo, Brunei, under British Protectorate since 1888, and Sarawak, recognised by Britain as independent in 1888 but ruled by the "White Rajah," Sir Charles Vyner Brooke, and in close relationship with England. Pop. Dutch Borneo, 2,169,000; British N. Borneo, 270,000; Brunei, 30,000; and Sarawak, 475,000.

Borneo, British North, a British part of Borneo, occupying the N. part of Borneo. Mainly mountainous (Mt. Kinabalu is 13,500 ft. high) and thickly forested; its area is 31,000 sq. m. and coastline 900 m. The chief towns are Sandakan and Jesselton. The chief products are timber, tobacco, rubber, camphor, fruits, etc., birds' nests, seed-pearls, and beche-de-mer. Coal and gold are mined. The country is under the jurisdiction of the British N. Borneo Co. (chartered 1881). A Governor is appointed by the Company with the approval of the Colonial Secretary, and a Court of Directors meets in London. Cap. Sandakan.

Bornholm, an island belonging to Denmark, in the Baltic; has no good harbour; agriculture, cattle-breeding, and fishing the occupation of the inhabitants. Chief town, Rønne. Pop. 45,000.

Bornu, a district partly in Nigeria, W. and S. of Lake Chad; famed for a breed of horses; population mostly negroes; the ruling race of Arab descent, called Shuwas; climate hot and unhealthy in the low ground, but temperate in the high. Formerly an independent Sultanate, it was divided between England (Nigeria), France (French W. Africa), and Germany (Cameroons). Since the war that part which fell within the German Cameroons has been administered under British Mandate. Bornu is to-day a large province of British Nigeria. Pop. 700,000.

Boro Budor, the ruin of a magnificent Buddhist temple in Java, ornamented with figures of Buddha and scenes in his life, with representations of battles, processions, chariot races, etc.

Borodin, Alexander Porfiryevich, Russian chemist and musical composer, was born and died in St. Petersburg, (Leningrad) where he studied medicine and practised as a military doctor until made professor of chemistry. A natural musician, took to composition in 1882. Was composing the opera *Prince Igor* when he died. (1834-1887).

Borodino, a village 70 m. W. of Moscow; the scene of a bloody battle between Napoleon and the Russians, Sept. 7, 1812.



BORNEO
WOMAN
WEAVING
THREAD

Boron, an element present in a natural state only in compounds. It can be produced by heating boric acid with a powerful reducing agent, e.g., potassium or magnesium. The boron obtained is in a powder form, dark red in colour. There are several compounds of boron, used considerably in commerce and industry, e.g., boric acid, borax (one of the borates).

Bororos, an important native Brazilian race in the Mato Grosso between Cuyaba and Goyas, noted for the height of its people.

Borotra, Jean, Basque lawn-tennis player, born in Biarritz; member of French team in Davis Cup contest, U.S.A., 1925; played in Finals of the Cup 1935. Men's Singles champion at Wimbledon 1924 and 1926; won Men's Doubles (with J. Brugnon) in 1932 and 1933. Many years Singles champion of France. Decorated with the Legion of Honour 1930. A volatile and very popular player. (1898-).

Borough, in Scotland *Burgh*, is in its town that sends a representative to Parliament; but it is further an area of local government, under a mayor and corporation, exercising police, sanitary, and sometimes educational supervision, and deriving its income from rates levied on property within its bounds, and in Scotland sometimes from "common good" and petty customs. Its charter may be held from the Crown or granted by Parliament.

Boroughbridge, a market town of 10 m. N. of Harrogate, Yorkshire, England, defeated his uncle, Earl of Lancaster. Three huge monoliths near by are known as "The Devil's Arrows." Pop. 800.

Borromean Islands, four islands in Lake Maggiore, Italy, of which three were converted into gardens by Count Borromeo in 1671, on one of which, Isola Bella, stands a palace of the Borromeos, enriched with fine paintings and other works of art.

Borromeo, St. Carlo, cardinal and Archbishop of Milan, a prominent member of the Council of Trent, who contributed to the Tridentine Catechism; conspicuous by his self-sacrificing offices during a plague in the city of which he was the archbishop; canonised by Pope Paul V. in 1610. (1538-1584).

Borromeo, Frederigo, Count, nephew and successor of the preceding, of equal status in the Church, and similar character. Founder of the Ambrosian Library. (1584-1631).

Borrow, George Henry, traveller and philologist, born in Norfolk; early showed a passion for adventure and a facility in languages; was appointed agent for the Bible Society in Russia and Spain; in his fondness for open-air life, associated much with the gipsies; wrote an account of those in Spain, and a famous book, entitled *The Bible in Spain*; also *The Itomany Itpe* and *Laceogro* (a gipsy designation applied to him, meaning "word-master") which is chiefly autobiography. *Wild Wales*, and a *Word-book of English-Gypsy*. (1803-1881).

Borrowstounness, or *Bo'ness*, a Lothian, Scotland, on the Firth of Forth. Shipbuilding, coal-mining, iron-smelting, brewing, soap-making, and salt-refining are carried on, and there is a brisk coastal trade. Pop. 10,000.

Borsippa (mod. *Birs-Nimrud*), an ancient Babylonian city, the temple-tower of which, rebuilt later by Nebuchadnezzar II., may have been the Tower of Babel. Excavations on the site have revealed many antiquities.

Borstal, a system of reformatory schools for youthful offenders. The system was first tried in Borstal, Kent, hence the name. In 1908 Parliament passed the "Borstal" Act, so called, under which convicted juveniles between 16 and 21 may be sent to one of the four institutions (one of them for girls) and dealt with by a specially chosen staff of officials with the idea of reclamation. Two-thirds of the cases respond to this treatment. Duration of detention is 2 to 3 years.

Borzoi, a dog of the greyhound variety. It is of elegant, aristocratic appearance with a long and silky coat. Points of the breed are: head long and bent, ears small, muscles highly developed, back arched, forelegs lean and straight, hindlegs long and muscular, tail long and well feathered. Its height is from 27-32 in.



BORZOI

Bosboom, Jan, Dutch painter who specialised in local landscapes and church interiors. Married (1851) Anna Louisa Bosboom-Toussaint (1812-1886), a Dutch historical novelist. (1817-1891).

Boscawen, a small seaport of N. Cornwall, England, a popular holiday resort, with a little sheltered harbour. A hill near by is the site of a Norman castle. Pop. 4,000.

Boscawen, Sir Edward, a British fearlessness as "Old Dreadnought"; distinguished himself in engagements at Puerto Bello, Cartagena, Cape Finistere, and the Bay of Lagos, where, after a "sea hunt" of 24 hours, he wrecked a fine French fleet, eager to elude his grasp. (1711-1761).

Boscobel, a parish of Shropshire, England, the manor house of which sheltered Charles II. after his defeat at Worcester.

Bose, Sir Jagadis Chandra, a distinguished Indian botanist, devoted himself to the study of the nervous system in plants and obtained many remarkable results. Founder of Bose Research Institute, Calcutta. Fellow of the Royal Society. Knighted, 1917. (1858-1937).

Bosna-Serai, the Turkish name of Bosnia and Herzegovina.

Bosnia and Herzegovina, since 1918 part of Yugoslavia, lying at the NW. of the Balkans and adjoining Croatia and Slavonia on the N. Formerly part of Turkey in Europe. In 1908 the district was annexed by Austria-Hungary. Sarajevo, the capital of the district, was the scene of the assassination in June 1914 of the Archduke Francis Ferdinand and his consort, an event leading directly to the outbreak of the World War.

Bosphorus, or *Bosporus*, (1) (Ox-ford) a channel 18 m. long, from 1 to 3 m. broad, and averaging 30 fathoms deep, extending from the Sea of Marmora to the Black Sea. It derives its name from the channel which, according to the Greek myth is crossed in the form of a black cow. By a treaty of 1841 all warships except Turkish were excluded. In 1918 it was demilitarised. In 1936 a new Straits Convention was ratified permitting remilitarisation by Turkey.

(2) Ancient name for the Straits joining the Black Sea with the Sea of Azov.

Boss, an architectural term for a round, slightly raised ornament used to disguise the joints of ribs in ceilings. Later it became the central ornamentation of a ceiling.

Bossuet, Jacques Bénigne, Bishop of Meaux, born at Dijon, one of the greatest of French pulpit orators, and one of the ablest defenders of the doctrines of the Catholic Church; took a leading part in establishing the rights of the Gallican clergy, or rather of the Crown, as against the claims of the Pope; proved himself more a time-server than an outspoken champion of the truth; and he is not clear of the guilt of the Revocation of the Edict of Nantes; wrote largely; his *Discourses on Universal History* is on approved lines, and the first attempt at a philosophy of history; his *Funeral Orations* are monuments of eloquence; his *Politique Sacrée* founded on Holy Scripture a defence of the divine right of kings. (1627-1704).

Boston, a seaport of Lincolnshire, England, on the Witham, 30 m. SE. of Lincoln; exports coal, machinery, corn, and wool, and imports timber and general goods. There is a large cattle and sheep market, also canvas and sailcloth works. Fox, the martyrologist, was a native. It has a spacious church, which is a conspicuous landmark and beacon at sea. Pop. 17,000.

Boston, on Massachusetts Bay, is the capital of Massachusetts, U.S.A., and the chief city of New England. With an excellent harbour and eight converging railways it is an emporium of trade, and very wealthy. Sugar, wool, hides, and chemicals are imported; farm produce, cattle, cotton, and tobacco exported; boot- and shoe-making is one of many varied industries. The many educational institutions and its interest in literature and art have won for it the title of American Athens. Among famous natives were Franklin, Poe, and Emerson; while most American men of letters have been associated with it. Among its historically famous buildings are Faneuil Hall, called the "Cradle of Liberty" from the fact that the revolutionaries assembled there, Old State House, and Old North Church. The Boston riots of 1770 and 1773 were the heralds of the revolution, and the first battle was fought at Bunker Hill, not far off, now included in it. Pop. 781,000.

Boston Orators, a school of Orators in America at the time of the American War of Independence and after. The style of oratory was formal and the speeches were charged with sincere convictions. Daniel Webster was the most famous exponent of this school.

Boston Tea-Party, the insurgent colonists who, disguised as Indians, boarded, on Dec. 16, 1773, three English ships laden with tea, and hurled several hundred chests of it into Boston harbour.

Boswell, James, the biographer of John-
son, son, born in Edinburgh, showed early a penchant for writing and an admiration for literary men; fell in with Johnson on a visit to London in 1763, and conceived for him the most devoted regard; made a tour with him to the Hebrides in 1773, the *Journal* of which he afterwards published; settled in London, and was called to the English Bar; succeeded, in 1782, to his father's estate, Auchinleck, in Ayrshire. Johnson dying in 1784, *Boswell's Life* of him appeared five years after, a work unique in biography, and such as no man could have written who was not a very ardent hero-worshipper. He succumbed in the end to intemperate habits, aggravated by the death of his wife. (1740-1795).



JAMES BOSWELL

Bosworth, a town in Leicestershire, England, near which Richard III. lost both crown and life in 1485, an event which terminated the Wars of the Roses and led to the accession of the Tudor dynasty to the throne of England in the person of Henry VII.

Botanic Garden, a garden laid out aid to the study of botany. The equipment includes hothouses where tropical plants may be grown under the conditions in which they thrive when wild. Probably the finest and best known in the world are the Kew Botanic Gardens, which were planned in 1760. Since 1841 Kew Gardens have become a centre for the distribution of commercial plants to new areas in the colonies, two of the most important examples of this work being the introduction of quinine to India, and of Para rubber to the Malay states.

Botany, the scientific study of plants. In ancient times and the Middle Ages botany was studied very largely for the sake of medicinal substances derived from plants, and though much careful observation was made, there was no successful attempt at a systematic classification. After the Renaissance the study of botany was revived in Europe by such men as Fuchs, Cesalpini, Gerard, and Ray; but the first scientific classification of plants was made by the Swedish botanist Carl von Linné, better known as Linnaeus (1707-1778). His system was based upon the nature of the "sexual" organs of flowers—that is, their stamens and pistils—it proved of inestimable value in the development of botany, but has now been superseded by a system in which account is taken of other important features of plants as well.

To Linnaeus is due also the credit of having introduced the binomial system of nomenclature, according to which every plant has both a "family" or generic name, and a specific name—e.g., the botanical name of the creeping buttercup is *Ranunculus repens*, indicating that it is the creeping species of the genus *Ranunculus*.

At the present day the chief groups or phyla of the plant kingdom are described as follows: *Schizophyta* (e.g., bacteria); *Thallophyta*, including Algae (seaweeds, diatoms, etc.) and Fungi (moulds, mildews, mushrooms, toadstools, etc.); *Bryophyta*, including Hepaticae or liverworts and Musci or mosses; *Pteridophyta*, including Filicales or Equisetals or horsetails, and *Lycopodia* club-mosses; and *Spermophyta*, including Gymnosperms—e.g., conifers, and sperms. The Spermophyta are still referred to as the Phanerogams, because their (wrongly named) sexual reproduction is comparatively "hidden"—i.e., less obvious.

The principal branches of botany are *morphology* (the study of the forms of plants, whether living or extinct), *physiology* (the study of the chemical and physical changes occurring in plants, the reaction of plants to stimuli, and so on), *ecology* (the study of plants in relation to their surroundings, plant associations, etc.), *phytopathology* (the study of the diseases of plants), and *genetics* (the study of heredity and plant breeding). Applied botany is practised in horticulture, agriculture, afforestation, the production of special crops, and the control of plant pests.

The typical flowering plant consists of root, stem, leaves, and flowers. The flower consists usually of four whorls—viz., the calyx or sepals, the corolla or petals, the androecium or stamens, and the gynoecium or pistil. The stamens produce pollen which, transferred to the pistil by insects, wind, or other agency, fertilises the ovules or potential seeds, and converts them into actual seeds. The transference of pollen to pistil is called pollination.

The study of heredity in plants was greatly advanced by Charles Darwin's book *The Origin of Species* (1859) and by the work of later investigators such as Mendel and Bateson. The application of the principles so discovered has led to the production of new and valuable strains—as, for example, in wheat.

Botany Bay, an inlet in New South Wales, 5 m. S. of Sydney;

discovered by Captain Cook in 1770; so called, by Sir Joseph Banks, from the variety and beauty of its flora; convict settlement at Sydney, known by the name, abolished in 1840.

Botfly, a large, hairy insect, order Ectoparasitidae, the larva of which is parasitic on mammals. One species, *Gastrophilus equi*, the gadfly of the horse, lays its eggs on the horse's coat. They are licked off and pass into the horse's stomach, where the larvae remain, finally being passed out. Another species, *Estrus ovis*, develops in the nasal organs of the sheep.



CAPTAIN COOK

Botha, General Louis, South African statesman. One of the leading Boer generals in the South African war; he became first Prime Minister of the Transvaal in 1907 and of the Union in 1910. He took up his military career again in 1914 and led the South Africans against the German colonies, besides stamping out a rebellion fomented by Germany. He attended the 1919 Peace Conference. (1862-1919).

Bothnia, a former province of Sweden, divided into E. and W. by a gulf of the name. The eastern part is now included in Finland and the western is the Swedish province of Norrland.

Bothnia, Gulf of, a large inlet, part of the Baltic Sea, dividing Sweden from Finland. The Åland Is. stand at the entrance. It is some 400 m. long and 140 m. broad.

Bothwell, a village in Lanarkshire, Scotland, on the Clyde, 8 m. SE. of Glasgow; scene of a battle between Monmouth and the Covenanters in 1679. Near is the ruin of a great Norman castle.

Bothwell, James Hepburn, Earl of, one of the envoys sent in 1560 to convey Mary Queen of Scots, from France home; was made Privy Councillor the year after; had to flee to France for an act of conspiracy; was recalled by Mary on her marriage with Darnley; was a great favourite with the queen; was believed to have murdered Darnley, though when tried was acquitted; carried off Mary to Dunbar Castle; was pardoned and made Duke of Orkney, and married to her at Holyrood; parted with her at Carberry Hill; fled to Norway, and was kept captive there at Malmö; after ten years of misery he died, insane, it is believed. (c. 1536-1578).

Botley, a parish and railway junction of Hampshire, England, on the Hamble, 8 m. NE. of Southampton. Here William Cobbett lived. Strawberries and other fruit are cultivated. Pop. 1,000.

Botocudos, a wandering wild tribe in the forests of Brazil, near the coast; a very low type of men, and at a very low stage of civilisation; are demon-worshippers, and are said to have no numerals beyond one.

Botosani, a town of Rumania and a province of the same name, 60 m. distant from Czernowitz. Pop. 30,000.

Bo-Tree, a species of *Ficus* (*F. religiosa*), also known as the Peepul tree, sacred to the Buddhists as the tree under

which Buddha sat when the light of life first dawned on him. It is found in wet tropical forests. The leaves have a long apex from which rain drops rapidly. See Buddha.

Botticelli, Sandro or Alessandro, a Florentine school; began as a goldsmith's apprentice; a pupil of Fra Lippo Lippi; the best-known examples of his art are on religious subjects, though he was no less fascinated with classical-mythological conceptions; is distinguished for his attention to details and for delicacy, particularly in the drawing of flowers. His "Fortitude" is in the Uffizi gallery; his still more famous "Primavera," painted for his patron Lorenzo de Medici, was finished in 1478; and other great pictures are "The Birth of Venus," "The Magnificat" and "The Annunciation." (1447-1510).

Bottomry Bond, a method of the bottom of a ship (i.e., the ship itself) is pledged as mortgage against a loan. The lender has first claim for the return of his loan, but has no claim if the ship is lost. Bottomry bonds date back to the Roman Empire and have continued up to the present day, although now rarely used.

Botulism, a very dangerous kind of poisoning, usually fatal. It has been traced to a microbe which can live without oxygen, so can be present in food preserved in tins and jars. It is a rare disease, and the symptoms are nervous, and not gastric, and fever is absent.

Bouches-du-Rhône, a dept. of France, at the mouth of the Rhône, with a Mediterranean seaboard of 120 m. Salt is obtained; wheat, olives and vines are grown and coal and iron mined. Cap. Marseilles. Area 2,025 sq. m. Pop. 1,225,000.

Boucicault, Dion, actor, dramatist, writer, and author of popular Irish plays, e.g., *The Colleen Bawn* (adapted from Gerald Griffin's *Collegians* and produced by him) and *The Shaughraun*. (1822-1890).

Boufflers, Marquis de, marshal of France, distinguished for his defence of Namur (1695) and of Lille (1708), and his masterly retreat from Malplaquet. (1645-1711).

Bougainville, Louis Antoine de, a French navigator, born in Paris; voyaged round the world, which occupied him two years and a half; his travels as described by him in *Un Voyage autour du Monde* had a remarkably stimulating effect on the imaginations of the "philosophes." (1729-1811).

Boughton, George Henry, R.A., landscape painter, born near Norwich, son of a farmer, was taken as an infant to America. Without teaching, able to exhibit at American Art Union's Exhibition. In Paris 1860-1862, thenceforward in London. R.A., 1896. Two chief subjects: peasant-life in Brittany and Holland; New England history. Illustrated Washington Irving and Hawthorne. (1833-1905).

Boughton, Rutland, English composer, born at Aylesbury. Protected an Arthurian cycle, items of which are: *The Birth of Arthur*, *The Round Table*, and *The Queen of Cornwall*. In this connection, founded, 1914, Glastonbury Festival School of Music-Drama. Most famous works *The Immortal Hour* and *Bethlehem*. Awarded a Civil List pension in 1938. (1878-).

Bouille, Marquis de, a French general, born in Auvergne, distinguished in the Seven Years' War, in the West Indies and during the Revolution; favoured the flight of Louis XVI.; did his utmost for royalty,

failed, and quitted France; died in London, and left *Memoirs of the French Revolution*. (1739-1800).

Bouillon, district in Belgium, originally a German duchy; belonging to Godfrey, the crusader, who pledged it to raise funds for the crusade. Now the name of a small fortified town in the province of Luxembourg, Belgium.

Boulanger, Jean Marie, a French general, born at Rennes; of note for the political intrigues in which he was involved during the last years of his life, and the dangerous popular enthusiasm which he excited; accused of treason; fled the country, and committed suicide at Brussels. (1837-1891).

Boulder, a mining town of W. Australia, 350 m. N.E. of Perth. It stands on the Kalgoolie gold field. Pop. 7,000. Also a gold mining town of the same name in Colorado, U.S.A. Pop. 11,000.

Boulder Clay, the clayey material stones, which forms the deposits of the Pleistocene Age. It was formed as a result of glacial action during the Ice Ages.

Boulder Dam, U.S.A., a dam of the Colorado R. at Black Canyon, the purpose being to store up a vast quantity of water sufficient to maintain irrigation of about 2,000,000 acres. The dam is over 700 ft. above the bed of the river and raises the level of the water some 600 ft. It was begun in 1933 and was completed in 1936.

Boulders, Erratic, the name applied to boulders that differ in composition from the rocks or soil amongst which they are lying, and which must have been carried some considerable distance by the action of glaciers. The boulders themselves are large rounded blocks of stone. They are larger as they near the poles.

Boulevard, a word similar in derivation to the English "bulwark," referred originally to the fortifications of a town, later to walks constructed along dismantled fortifications and shaded by trees; hence any street lined with trees. The long line of streets of this kind stretching across Paris are in particular known as "the Boulevards."

Boulogne-sur-Mer, a fortified seaport in France, on the English Channel, in the dept. of Pas-de-Calais, one of the principal ports for debarkation from England; where Napoleon collected in 1803 a flotilla to invade England; is connected by steamer with Folkestone, and a favourite watering-place; the chief station of the North Sea fisheries; is the centre of an important coasting trade. It was used as a port of landing for part of the British Expeditionary Force and by British troops throughout the Great War. Pop. 52,000.

Boulogne-sur-Seine, a town, of the right bank of the Seine, 5 m. SW. of Paris, from which it is separated by the Bois-de-Boulogne. Produces chemicals, linen and aeroplanes. Pop. 97,000.

Boult, Sir Adrian Cedric, D.Mus., musical conductor, born at Chester. Became well known as conductor of Royal Philharmonic Society's concerts, 1918-1919. On staff of Royal College of Music, 1919-1930, for long conductor of its orchestra. Conductor, Birmingham City Orchestra, 1924-1930. Musical director of B.B.C. Knighted 1937. (1869-).

Boulton, Matthew, an eminent engineer, born in Birmingham; entered into partnership with James Watt, and established with him a manufactory of steam-engines at Soho, on a barren heath near his native place; contributed to the improvement of the coinage. (1728-1809).

Bounty, a grant paid by a government industry to the promoters of a selected industry to encourage production and export, to further development, and to enable those engaged to compete successfully with foreign industries of the same nature. A bounty on growing corn existed in England for over a century, being granted as far back as 1688. The industry which since the Great War has been developed most notably as the result of a bounty is the growing of sugar-beet and the manufacture of beet-sugar. During the "economic war" with England, Mr. de Valera made use of bounties to enhance the price of Irish agricultural produce.

Bounty, Mutiny of the, a mutiny which took place on the ship *Bounty*, on April 28, 1789, bound from Tahiti to the West Indies, on the part of 25 of the crew, who returned to Tahiti after setting the captain (Bligh) adrift with others in an open boat. Bligh (q.v.) reached England after a time, his report leading to the seizure at length of certain of the offenders and the execution of others. Those who escaped founded a colony on Pitcairn I.

Bourbon, a family of French origin, members of which occupied for generations the thrones of France, Naples, and Spain, and who severally ruled their territories under a more or less overweening sense of their rights as born to reign. Two branches, both of which trace back to Henry IV., held sway in France, one beginning with Louis XIV., eldest son of Louis XIII., and the other, called the Orleans, with Philip of Orleans, second son of Louis XIII., the former ending with Charles X. and his family, and the latter ending with Louis Philippe and his line. The branches of the family ruling in Spain and Naples began with Philip V., grandson of Louis XIV., the former branch ending with the flight of Alfonso XIII. in 1931, the latter ending with Francis II. in 1860.

Bourbon, Charles de, styled the Con-
stable de Bourbon, acquired immense wealth by the death of an elder brother and by his marriage, and lived in royal state; was for his daring in the field named Constable of France by Francis I.; offended at some, perhaps imaginary, injustice Francis did him, he clandestinely entered the service of the Emperor Charles V., defeated the French at Pavia, and took Francis captive; parted from Charles, laid siege to Rome, and fell in the assault, mortally wounded, it is said, by Benvenuto Cellini. (1490-1527).

Bourbonnais, ancient province in the centre of France, being the duchy of Bourbon; united to the crown in 1531; cap. Moulins.

Bourchier, Arthur, English actor-manager born in Berkshire. Educated at Christ Church, Oxford. Founded O.U.D.S. Acted with Wyndham and George Alexander and in America with Ada Rehan. Managed Garrick Theatre, 1900-1910 and 1912-1913. Was the king in Tree's production of *Henry VIII.* (1863-1927).

Bourdaloue, Louis, a French Jesuit, born at Bourges; one of the most eloquent pulpit orators of France; did not suffer by comparison with Bossuet, his contemporary, though junior. His sermons are ethical in their matter from a Christian standpoint, carefully reasoned, and free from ornament, but fearless and uncompromising. (1632-1704).

Bourrée, a dance form popular in Spain; also the name of a musical movement commonly used in a suite by earlier composers.

Bourg-en-Bresse, a railway centre, of Ain, France. It has some manufactures and a trade in grain, cattle, etc. The Church

of Notre-Dame is chiefly in the Renaissance style. The Church of Bron, a suburb, is a fine specimen of late Gothic. Pop. 23,000.

Bourgeois, Léon Victor Auguste, French statesman. Prefect of Police, 1887; Deputy (Seine) and Under-Secretary for Interior, 1888. Minister of Public Instruction, 1890; of Justice, 1892. Senator, 1905. Minister for Foreign Affairs, 1906. Member of Permanent Court of Arbitration, Hague, 1903. Chairman, drafting committee to form League of Nations, 1919. (1851-1925).

Bourgeoisie, the name given in France to the middle class, professional people, and merchants, as distinguished from the nobles and the peasants, but applied by the Socialists to the capitalists as distinct from the workers.

Bourges, a French town in the dept. of Cher; birthplace of Louis IX. and Bourdelone. Has a military arsenal. Seat of an archbishop. Notable for the Cathedral of St. Etienne. Pop. 36,000.

Bourget, Paul, an eminent French novelist and essayist, born at Amiens of a Russian father, a subtle analyst of character, with a clear and elegant style, his novels are what he called "psychological," and distinct from the romanticist and naturalistic. His *Mémoires* brought him fame, and his critical studies, *Essais* and *Essais de Psychologie Contemporaine*, are notable for their keen analysis. Other notable works include *Crucelle Enigme*, *André Cornélis*, *L'Étape*, etc. (1852-1935).

Bourget, Le, village of France, in the dept. of Seine, 5 m. N.E. of Paris, an important military and civil airport. Pop. 6,500.

Bourlon Wood, near Cambrai, in France, was a point of great strategic importance during the Great War. It was captured by General Byng, in a surprise attack without preliminary bombardment, in Nov. 1917. Only a few days later, however, the Germans compelled the British to evacuate the position.

Bourne, a market town of Lincolnshire, England, in the Parts of Kesteven. Hereward the Wake had a castle here. Pop. 5,000.

Bourne, Francis, cardinal, born at Clapham, son of a postal official. Was a curate at Blackheath and Mortlake, became Bishop of Southwark in 1897. In 1903 he succeeded Cardinal Vaughan as Roman Catholic Archbishop of Westminster. Cardinal 1911. (1861-1935).

Bourne, Hugh, founder of the Primitive Methodist, and a zealous propagator of their principles; he was a carpenter, and appears to have wrought at his trade while prosecuting his mission, which he did extensively both in Britain and America. (1772-1852).

Bournemouth, a town in Hampshire, England, on Poole Bay, 37 m. SW. of Southampton, with a fine sandy beach; a great health resort; is of recent, and has been of rapid growth. Notable for its Pavilion and gardens, its chimes, the Russell-Cotes Museum and Undercliff Promenade. Pop. 113,000.

Bournville, a garden city of Worcester-shire, England, 4 m. SW. of Birmingham, built by George Cadbury to house employees of his firm.

Bourrienne, Louis Antoine Fauvelet, secretary of Napoleon, and a school friend, born at Sens; held the post for five years, but dismissed for being implicated in disgraceful money transactions; joined the Bourbons at the Restoration; the Revolution of 1830 and the loss of his fortune affected his mind, and he died a lunatic at Ocen; wrote *Mémoires* disparaging to Napoleon. (1789-1834).

Bourse, the French name for what in London is the equivalent of the London Stock Exchange. Most Continental Stock Exchanges have now taken the name; the most important besides Paris, being Berlin, Frankfurt, Amsterdam, Brussels, Zurich and Geneva. The word is derived from the Latin, *bursa*, meaning "a purse."

Boussa (or Bussa), a town in N. Nigeria, where Mungo Park, the explorer, in 1806, lost his life as he was going up the Niger. Pop. 11,000.

Bouvet Island, in the Southern Ocean, uninhabited, but used as a whaling-station, possession of which lies with Norway after being disputed with England.

Bouvines, a village of France, in the dept. of Nord, between Lille and Tournai. Here in 1214 Philip Augustus of France defeated the combined armies of the Emperor Otto IV. of Germany and King John of England. Pop. 600.

Bovey Tracey, a village of Devon, England, its church said to have been built, in penance, by a murderer of Thomas à Becket. A local clay is used to make pottery. Pop. 3,000.

Bovidae, a sub-family of mammals of the order Ungulata. It includes the different species of antelopes, gazelles, sheep, goats, and oxen. Various species are native to all parts of Europe, Asia, and Africa. They are all artiodactylate. The horns of the males are hollow. There are nearly 50 genera and some 200 species.

Bow, or *Scrattford-le-Bow*, a district of E. London, in the borough of Poplar. With Bromley it returns a member to Parliament. Bow (in full, St. Mary-le-Bow) Church in Cheapside is a Wren church, with the famous Bow Bells in the steeple.

Bowdler, Thomas, an English physician; edited expurgated editions of Shakespeare and Gibbon in the interest of moral purity; added in consequence a new term to the English language, Bowdlerism. (1754-1825).

Bowdoin, James, an American statesman, born in Boston of French extraction; a zealous advocate of American independence; author of *Discourse on the Constitution of the United States*. Also interested in scientific research. (1728-1790).

Bowel, one of the divisions of the alimentary canal below the stomach. The word is rarely found in the singular except in medical use. In the plural it means intestines or entrails.

Bower-Bird, a family of birds (Ptilonorrhynchidae), closely

allied to the crows and the Birds of Paradise, found in Australia and New Guinea. The birds of all species except one (the Green Cat-Birds) clear a piece of ground, in which both sexes meet to play and court, and ornament it with shells, stones, flowers, and bright objects. These bowers may be distant from the nests, which are built in trees.

Bowie-knife, an American hunting-knife invented by Col. James Bowie. The point is double-edged, and the blade then straight and single-edged to the hilt. It has a cross-piece and strong handle.

Bow-legs, a condition in which the legs are bowed outwards. Frequently the whole leg is bowed, the knees being widely separated and the ankles touching, though the curvature may be of



BOWER-BIRD

the shin bones only. One leg only may be affected. It is sometimes congenital, though more often it is caused by the weight of the body being placed on the legs at a time when they are not strong enough to support it, as, e.g., in the case of a heavy child starting to walk too early, or after rickets, when the bones are weakened. Treatment is by keeping the child off its feet, and, in the case of rickets, by attention to diet.

Bowles, William Lisle, an English poet, born in Northamptonshire; his sonnets were much admired by Coleridge, and their appearance is believed to have inaugurated a new era in English poetry, as developed in the Lake School. (1762-1850).

Bowling, an indoor game played with wooden balls, ten wooden pins in alleys 41½ in. wide by 80 ft. long. The object is to knock down the pins by rolling the balls. The usual game is 3 balls to a player though in first-class play two only are used. Balls may not exceed 27 in. in circumference and 16½ lb. in weight, three balls to a frame and ten frames a game. The number of players is unlimited. The game is of German origin, but is most popular in the U.S.A., where it was introduced by Dutch immigrants.

Bowls, one of the oldest and most popular of English outdoor games. It is played on a green of about 40 sq. yds. which is divided into strips (rinks) of about 30 ft. in width. The bowls or "woods," made of lignum vitae, are from 4½ to 5½ in. in diameter, and not more than 3½ lb. in weight. They are biased—i.e., slightly more convex on one side than the other—and should draw about 6 ft. in 30 yds. The "jack," an earthenware ball of 2½ in. diameter, is placed by bowling towards the end of a rink and the player endeavours to bring his woods to rest nearer to the jack than his opponent. Each player uses 4 woods in a single-handed game and only 2 in matches. 21 points or 71 ends is the usual match game. Henry VIII. was an exponent, and Francis Drake played at it just before the arrival of the Armada.

Bowness, a town and pleasure resort of Lake Windermere, Westmorland, England, on Pop. 3,000.

Bowring, Sir John, linguist and political writer, born at Exeter; friend and disciple of Bentham, as well as editor of his works; first editor of *Westminster Review*; was an M.P. (1835-1837 and 1841-1849); became Governor of Hong-Kong; ordered the bombardment of Canton, which caused dissatisfaction at home. (1792-1872).

Bow Street, in W.C. London, with a famous police station which owes its origin to Col. Sir Thomas de Vell, who, being on the Commission of the Peace as an acting justice, established himself in a house in Bow Street in 1735, and became first of the Bow Street magistrates. The post was next held by Henry Fielding, the novelist, who organised the first body of constables.

Up to 1829 the functions of the Bow Street magistrate included executive responsibilities which are now vested in the Commissioner of the Police of the Metropolis. Extradition warrants under the Foreign Jurisdiction Acts are issued at this court. Many famous criminals have appeared and have been committed for trial by the Bow Street magistrates.

Box, a small evergreen shrub of the genus *Buxus* (order Buxaceae). Some varieties are of very great value for commercial purposes—e.g., in turning, the manufacture of musical instruments, etc., *B. sempervirens*, a slow-growing shrub, is widely cultivated in England as a border-plant in gardens. It lends itself to topiary work.

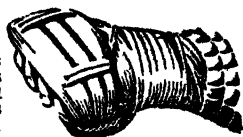
Box-Elder, the name applied in parts of the U.S.A. to a species of maple.

Boxer Rising, The, an outburst of feeling in China, which broke out in riots in 1900. The Empress was largely in sympathy with the rioters, who besieged the legations in Peking, and attacked Europeans, especially missionaries. European troops and naval forces were sent out to end the trouble.

Box Hill, a height of the North Downs, of Dorking, a famous beauty spot, vested in the National Trust, part is open downland, part heavily wooded, there being many box trees.

Boxing, fighting with the fist as a form of exercise or sport, has been

practised from the earliest times. In ancient Greece and Rome a glove was used. At first this consisted of strips of hide bound round the hand as a protection against injury. Later a pad of thick leather round the knuckles was used, and when this came to be loaded with lead, as it sometimes was, it became a terrible and often fatal weapon.



ROMAN BOXING-GLOVE

In England the history of boxing goes back to the early 18th Century, when bare-knuckle fighting became popular, gloves being used only in practice. The brutality of this prize-fighting resulted in legislation against it, and though it survived for many years in spite of police action, it was eventually superseded by the present form of the sport.

The rules of present-day boxing are based on those first drawn up by the Marquis of Queensberry in 1867, and the conduct of professional boxing contests is controlled by the British Board of Boxing Control, while amateur boxing is directed by the Amateur Boxing Association. Contests are either for a certain number of rounds for a score of points, or to a finish by a knock-out (K.O.), or until one of the combatants retires. A round lasts three minutes, with one minute rest between rounds for the shorter bouts, and a longer interval between the later rounds of lengthier contests. Gloves of not less than 6 oz. must be worn. Foul blows include those below the belt or with the open glove. The principal weights are bantam, light, middle, heavy, and welter (or any weight). After the Great War a great revival in interest in boxing took place.

Boxmoor, an ecclesiastical district of Hertfordshire, England, 2 m. SW. of Hemel Hempstead. Here Roman remains have been found. Pop. 7,000.

Box Thorn (*Lycium*), a genus of the order Solanaceae. They are allied to the deadly nightshade, and bear small purple flowers followed by scarlet or orange berries. *L. afrum* is a native of the Cape of Good Hope, where it is used as a hedge-plant. It grows to a height of 10 ft., and was introduced into Britain in 1712. *L. halimifolium* (*Europaeum*) is a native of S.E. Europe and Asia; *L. Chinense* (*barbarum*), or Chinese Box-tree is the so-called Cottage Tea-plant.

Boyers, the old nobility of Russia, whose undue influence in the State was broken by Peter the Great; also the landed aristocracy of Rumania.

Boy Bishop, a boy chosen on Dec. generally out of the choir, to act as bishop until Dec. 28, Holy Innocents Day, and do all his episcopal duties, except celebrate Mass. For the term of his office was treated as bishop, and if he died during his tenure of it was buried with episcopal honours. The

term of office was limited in 1279 to 24 hours, and the custom of the election abolished in Elizabeth's reign.

Boyce, William, composer, chiefly of church music, born in London; published a collection of the *Cathedral Music of the Old English Masters*; composed *Hearts of Oak*, a naval song sung by ships' crews at one time before going into action. (1710-1779).

Boycotting, is an offence under the Crimes Act, 1837. It is a method of coercion by conspiracy whereby all dealings with an individual, company or group cease. It was first adopted against Capt. C. C. Boycott of Co. Mayo in 1880. Boycotting has become an instrument in international warfare.

Boyd, Andrew Kennedy Hutchison, a Scottish clergyman and writer; educated for the Bar, but entered the Church; known to fame as A.K.H.B.; author of *Recreations of a Country Parson* and of *Reminiscences* of his life. (1825-1899).

Boyd, Zachary, a Scottish divine; regent of a Protestant college at Saumur, in France; returned to Scotland in consequence of the persecution of the Huguenots; became minister of Barony Parish, Glasgow, and rector of the University; preached before Cromwell after the battle of Dunbar; author of the *Last Battell of the Soule in Death* and *Zion's Flowers*, being mainly metrical versions of Scripture, called *Boyd's Bible*. (1585-1653).

Boydell, John, an English engraver and print-seller, famous for his *Shakespeare Gallery*, with 96 plates in illustration of Shakespeare, and the encouragement he gave to native artists; he issued also Hume's *History of England*, with 196 plates in illustration. (1719-1804).

Boyer, Jean Pierre, president of Hayti, born at Port-au-Prince of a negress and a Creole father; secured the independence of the country; held the presidency for 25 years from 1818, but was driven from power by a revolution in 1843; retired to Paris, where he died. (1776-1850).

Boyle, Richard, first and great Earl of Cork, distinguished among Irish patriots and landlords for what he did to improve his estates and develop manufactures and the mechanical arts in Ireland, also for the honours conferred upon him for his patriotism; when Cromwell saw how his estates were managed he remarked that had there been one like him in every province in Ireland rebellion would have been impossible. (1566-1643).

Boyle, Robert, a distinguished natural philosopher, born at Lismore, of the Orrery family; devoted his life to science and contributed greatly to it, especially chemistry and pneumatics; was one of the originators of the Royal Society; showed that an acid combined with a base to form a salt; enunciated Boyle's law (q.v.); was the first to prepare methyl alcohol; author of *The Sceptical Chymist*. (1627-1691).



ROBERT BOYLE

Boyle Lectures, the lectureship founded by Robert Boyle in 1691, and held for a tenure of three years, the endowment being £50 per annum; the lecturer must deliver eight lectures in defence of Christianity, and some of the most eminent men have held the post.

Boyle's Law, that the volume of a gas varies inversely as the pressure, if the temperature remains constant.

Boyne, a river in Ireland (Eire), which flows through Meath into the Irish Sea; gives name to the battle in which

William III. defeated the forces of James II, on July 1, 1690.

Boys' Brigade, The, an organisation founded in 1883 in Glasgow by Sir William Smith, aiming at the development of character and discipline on a religious basis. Numbers about 100,000 officers and boys, between ages 13-18.

Boy Scouts, an international organisation founded by Lord (then Sir Robert) Baden-Powell in 1908. Its motto is "Be Prepared," and it inculcates principles of citizenship, with instruction in sport, first aid, etc., for which badges are awarded. The movement spread to all parts of the world, and at the coming of age Jamboree at Birkenhead in 1929, 50,000 Scouts from all nations attended. To-day there are about 480,000 Scouts in Great Britain and N. Ireland. Elsewhere in the British Empire there are 390,000. The total membership in all parts of the world exceeds 2,000,000.

Boz, a *nom de plume* under which Dickens wrote at first, being his nickname when a boy for a little brother.

Brabançonne, La, Belgium's national anthem, written at the time of the revolution, 1830; music by Van Campenhout.

Brabant, in medieval times was an important province of the Low Countries, inhabitants Dutch, cap. Breda; is now divided between Holland and Belgium. It comprises three provinces, the N. or Dutch Brabant; Antwerp, a Belgian province, inhabitants Flemings, cap. Antwerp; and S. Brabant, also Belgian, inhabitants Walloons, cap. Brussels; the whole mostly a plain.

Bracelet, an arm ornament. The custom of wearing bracelets is of great antiquity, and has existed among all nations, both civilised and uncivilised. It is recorded as of Eastern origin, and the Bible has references to the custom. Bracelets were worn by the ancient Egyptians, and were bestowed upon Roman soldiers as a reward for valour. Metals, both base and valuable, wood, ivory, and other materials are all used in the manufacture of the innumerable designs.

Brachiopods, a group of bivalves, especially in the Lower Palaeozoic rocks. There are comparatively few living species, the best known being *Lingula*.

Brachycephalic, the name given to the transverse diameter is more than four-fifths of the long diameter. This type of skull (roundhead) is found in the Alpine type of Europeans and distinguishes them from both the Nordic and Mediterranean peoples; a certain proportion of brachycephalic skulls is found among the populations of most of the countries of Central Europe. The roundheaded peoples appear to have been invaders from Central Asia after the Nordic and Mediterranean stocks were settled in Europe.

Bracken, or **Brake**, names for *Pteris aquilina*; also known as fern. Grows freely in woods, parks, and by roadsides, covering large areas in temperate regions and spreading rapidly. Its encroachment on hill pastures in Central Scotland, where it grows to a height of over 6 ft., presents a problem. *P. esculenta*, of Australasia, is regarded by some as a separate species.

Bract, or **Hypophyll**, in botany, a leaf in the axil of which a flower arises.



BRACT (A-A)

Bradbury of Winsford, Sir John Bradbury, Baron, was an Insurance Commissioner, 1911-1913; Joint Parliamentary Secretary to the Treasury, 1913-1919 (name became familiar through its appearance on first treasury-notes); principal British representative at Reparations Commission, Paris, 1919-1925; chairman, National Food Council, 1925-1929; president, British Bankers' Association, 1929-1930 and 1935-1936. Ennobled, 1925. (1872-).

Braddon, afterwards Maxwell, Mary Elizabeth, novelist, born in London; became famous with *Lady Audley's Secret*, 1862. Married John Maxwell, publisher. Wrote eighty novels; sensational, never great, but possessing the vitality of the Dickensian age. (1837-1915).

Bradford, a manufacturing city of Yorkshire, England, on a tributary of the Aire, 9 m. W. of Leeds; it is the chief seat of worsted spinning and weaving in England, and has an important wool market; coal and iron mines are at hand, and ironworks and machinery-making are its other industries. Created a city in 1897. Pop. 290,000. Also a town in Pennsylvania, U.S.A., with petroleum refineries. Pop. 20,000.

Bradford-on-Avon, a market town of Wiltshire, England, 9 m. SE. of Bath. It has a Norman church and other old buildings. Noted for its cloth-making in Stuart times, it now makes beer and rubber goods. Pop. 5,000.

Bradlaugh, Charles, a social reformer on secularist lines, born in London; had a chequered career; had for associate in the advocacy of his views Mrs. Annie Besant; elected M.P. for Northampton thrice over, but not allowed to sit till he took the oath, which he did in 1886; died respected by all parties in the House of Commons. (1833-1891).

Bradley, Andrew Cecil, literary critic of the philosopher F. H. Bradley. Educated: Cheltenham and Balliol College, Oxford. Fellow of Balliol, 1874; lecturer, 1875-1881. Professor of Modern Literature: University College, Liverpool, 1881-1889; Glasgow University, 1889-1900. Professor of Poetry, Oxford, 1901-1906. Wrote: *Commentary on "In Memoriam," Shakespearean Tragedy, Oxford Lectures on Poetry, A Miscellany*. (1851-1935).

Bradley, Francis Herbert, British philosopher, brother of A. C. Bradley, born in Brecknockshire, educated at Oxford and Fellow of Merton College; author of *Principles of Logic, Appearance and Reality*; awarded O.M. in 1924. (1846-1924).

Bradley, Henry, biographer, born in the authority on place-names. Began editorial work on Oxford Dictionary, 1888. Editor-in-chief on Murray's death, 1915. President, Philological Society, 1890-1893. (1845-1923).

Bradley, James, astronomer, born in Gloucestershire; professor of Astronomy at Oxford, and astronomer-royal at Greenwich; discovered the aberration of light and the nutation of the earth's axis. (1693-1762).

Bradman, Donald George, Australian cricketer, was born near Sydney, N.S.W. No regular training; played in matches for school and town clubs. Bowled. Reached 1st-grade cricket in Sydney for St. George Club, 1926. Played for N.S.W., 1927. In Australian eleven, 1928. At Sydney, 1929-1930, made 452 not out against Queensland. In England, at Leeds, 1930, broke individual record with score of 334. Made 1,000 in May 1930, and in 1938. Captain Australian team Test Matches 1936-1937, and in England in 1938. (1908-).

Bradshaw, George, an engraver of maps in Manchester; published maps illustrative of certain canal systems, and did the same service for railways, which developed into the well-known *Railway Guide*. (1801-1853).

Bradshaw, John, president of the High Court of Justice for trial of Charles I.; a friend of Milton; a thorough republican, and opposed to the Protectorate; became president of the Council on Cromwell's death; was buried in Westminster; his body was exhumed and hung in chains at the Restoration. (1602-1658).

Braemar, a Scottish Highland district, SW. of Aberdeenshire; much frequented by tourists, and resorted to for summer country quarters. Castles include Balmoral and Abergeldie. It is famous for its annual Highland games.

Braga, a city, 34 m. N.E. of Oporto, Primate; the residence of the residence of the capital of Minho. Pop. 22,000.

Bragança, capital of a district of Trás-os-Montes, in Portugal; gives name to the royal dynasty of Portugal, called the House of Braganza, the eighth Duke of Braganza having ascended the throne in 1640 on the liberation of Portugal from the yoke of Spain. Pop. (town) 5,000; (district) 185,000. Also a seaport in Para, Brazil. Pop. 50,000. There is another town in Brazil of the same name in São Paulo. Pop. 60,000.

Bragg, Sir William Henry, physicist, professor at Adelaide, Leeds, and London. He carried out research on radioactivity and X-rays, his greatest work being in connection with crystal structure, which he investigated by means of X-rays. In 1923 he was appointed Director of the Royal Institution. Awarded (with his son) Nobel Prize for Physics, 1915. K.B.E., 1920. President British Association, 1928. O.M., 1931. (1862-).

Bragi, the Norse god of poetry and eloquence, son of Odin and Frigg; represented as an old man with a long flowing beard and unwrinkled brow, with a mild expression of face; received in Valhalla the heroes who fell in battle.

Brahé, Tycho, a Swedish astronomer, of noble birth; spent his life in the study of the stars; discovered a new star in Cassiopeia; had an observatory provided for him on an island in the Sound by the King, where he made observations for 20 years; he was, on the King's death, compelled to retire under persecution at the hand of the nobles; accepted an invitation of the Kaiser Rudolf II. to Prague, where he continued his work and had Kepler for assistant. (1548-1601).

Brahma, in the Hindu religion and philosophy, a sophy at one time the formless spirit of the Universe, from which all beings issue and into which they all merge, and as such is not an object of worship, but a subject of meditation; and at another the creator of all things, of which Vishnu (q.v.) is the preserver and Shiva (q.v.) the destroyer, killing that he may make alive.

Brahman, or Brahmin, one of the sacred caste of the Hindus that boasts of direct descent from, or immediate relationship with, Brahma; its members are custodians and mediators of religion, and therefore of high-priestly rank.

Brahmanas, treatises on the ceremonial system of Brahminism, with prescriptions bearing upon ritual, and abounding in legends and speculations.

Brahmaputra (i.e., son of Brahma), a river which rises in Tibet, circles round the E. of the Himalayas, and, after a course of some 1,800 m., joins the Ganges, called the Teampo in Tibet, the Dihong in Assam, and the Brahmaputra in

British India; it has numerous tributaries, brings down twice as much mud as the Ganges, and in the lower part of its course overflows the land, particularly Assam, like an inland sea.

Brahma-Samaj (i.e., church of God), a secession from traditional Hinduism, originated in 1830 by Raja Ram Mohun Roy, and developed by Debendra Nath Tagore and Keshub Chandra Sen; founded on theistic, or rather monotheistic—i.e., unitarian—principles, and the rational ideas and philosophy of Europe, as well as a profession of a sense of the brotherhood of man no less than the unity of God.

Brahminism, the creed and ritual of the Brahmins, or that social, political, and religious organisation which developed among the Aryans in the valley of the Ganges under the influence of the Brahmins. According to the religious conception of this class, Brahma, or the universal spirit, takes form or incarnates himself successively as Brahma, Vishnu, and Shiva, which triple incarnation constitutes a trimurti or trinity. In this way Brahma, the first incarnation of the universal spirit, had four sons, from whom issued the four castes of India—Brahmins, Kshatriyas, Vaisyas, and Sudras—all the rest being outcasts or pariahs. See Caste.

Brahms, Johannes, a distinguished composer, poet, born at Hamburg; of great promise from a boy; settled in Vienna; famous as a performer as well as a composer. (1833-1897).

Braila, a town and river-port of Rumania on the Danube about 100 m. from its mouth. It has a large trade in grain and timber. During the Great War it was occupied by Russians, Germans, and Hungarians. Pop. 66,000.

Braille, Louis, a blind Frenchman, invented printing in relief for the blind. (1809-1852).

Brain, may be defined as the specialised front end of the central nervous system of vertebrate animals, including man. It consists basically of three regions or vesicles, viz., the prosencephalon or fore-brain, the mesencephalon or mid-brain, and the metencephalon or hind-brain. The fore-brain is divided into the cerebral hemispheres, corpus striatum, olfactory lobes, pineal body, pituitary body, thalamus, and infundibulum; the mid-brain into the optic lobes and crura cerebri; and the hind-brain into the cerebellum and medulla oblongata.

From the brain arise several pairs of cranial nerves, among them being the first or olfactory, the second or optic, the fifth or trigeminal, the seventh or facial, and the eighth or auditory. In man, the hemispheres which constitute the cerebrum are so large that they hide the remaining portions of the brain, and this condition is found also in the anthropoid apes. The cerebrum is covered by a thin layer (about 3 to 5 mm. in thickness) of grey matter (cerebral cortex); this consists mainly of about 2,000 million nerve-cells, and is the region in which many of the higher mental processes take place. The interior is composed chiefly of white matter or nerve-fibres.

The weight of the human brain shows considerable variation, but at birth is roughly 400 gm., rapidly increasing to nearly its maximum during the first 7 years, and afterwards more slowly up to the age of 18-20. The average weight in an adult male is approximately 1,400 gm. (50 oz.), and in adult females 1,300 gm. (45 oz.), but since the female body is on the whole smaller than

the male, the proportion of brain is roughly the same in both sexes.

Though exceptions are numerous, it is generally true that a large brain accompanies high intelligence, and it is also true that certain areas of the brain have specialised functions; but the pretensions of phrenology find no support in the ascertained facts of brain anatomy. The essentially human characters are associated with the great development of a special area or organ of the cerebral cortex called the neo-pallium. This is not found in the lower vertebrates, and in mammals other than man is present only in a very rudimentary form. Even in the gorilla it is not more than a sixth to a quarter of the size it reaches in man, and since it serves as a unifying centre, correlating the information received from all the sense-organs and issuing commands to the muscles, the great gap in intelligence between even the cleverest ape and the stupidest child is readily understood. The human brain must be regarded as the most complex structure that evolution has produced, though it is not without interest that, in the words of the late Sir Grafton Elliot Smith, "no structure found in the brain of an ape is lacking in the human brain, and, on the other hand, the human brain reveals no formation of any sort that is not present in the brain of the gorilla or chimpanzee."

Braintree, a market town of Essex, England, 12 m. N.E. of Chelmsford. Brewing, straw-plaiting, corn-milling, and the making of silk, crepe, fibre mats, and brushes are carried on. Pop. 9,000. Also a town in Massachusetts, U.S.A. Pop. 16,000.

Brake, a means of restricting speed by friction on a wheel or on a rail. The early form was a block, slipper, or band; the block was of wood pressed against the rim of the wheel; the slipper, a metal shoe which, fitting on to the wheel, controlled motion down-hill, and the band, used in winches or cranes, is a metal belt capable of being tightened round the shafting of the machine.

Hydraulic brakes attached to hydraulically worked machines act by water pressure in a cylinder and are used in hydraulic lifts. Electric brakes in trams are operated by the momentum of the vehicle when current is cut off. The impetus generates a current which applies a frictional brake by electro-magnets.

Railway brakes are usually worked by air-pressure, and were invented by Westinghouse in 1869, and the modern type is automatic and continuous through a "train-pipe." Another type is the vacuum brake, which works by causing varying air-pressure. Vacuum gauges are placed in the engine cab and the guard's van, and on the breaking of a coupling the resultant change of air-pressure automatically operates the brakes piston which controls the clamps by the two sides of the wheel.

Bramah, Joseph, an engineer, son of a Yorkshire farmer; author of many mechanical inventions, 18 of which were patented, among others the hydraulic press and the lock, named after him. (1748-1814).

Bramah's Press, is a hydraulic machine for pressing and for lifting heavy bodies. It was invented by Pascal, who did not succeed in making water-tight the moving parts, a task which Joseph Bramah accomplished in 1796, and the machine has thus acquired his name. It is a single-acting force-pump, in connection with which is a cylinder, containing a ram which is forced upwards from the cylinder through a tight collar by the pressure of the water delivered into the cylinder from the force-pump. At the top of the ram is the platform on which material, such as cotton seed, for pressing is placed.



JOHANNES
BRAHMS

Bramante, Donato, architect; laid the foundation of St. Peter's at Rome, which he did not live to complete. (1444-1514).

Bramble or **Blackberry** (*Rubus fruticosus*), a species of rosaceae.

The plant is a hook climber and the fruit, conical in form is composed of a number of single-seeded drupelets.



BRAMBLE

Bramley,

Frank, R.A., painter, of the Newlyn school, born near Boston, Lines. Studied at Lincoln School of Art, and at Antwerp. Exhibited at Academy from 1884. R.A., 1911. "A Hopeless Dawn," 1888, is in the Tate Gallery. (1857-1915).

Brampton, Lord (Sir Henry Hawkins), British judge. As counsel he took part in the Tichborne trial among others, and was made a judge in 1876. He retired in 1898 and was raised to the peerage. (1817-1907).

Bran, the husk of grain separated from the flour. It is used for making cattle food, and it is an ingredient of brown bread.

Bran, son on Llyr, and a lord of the underworld of Welsh Celtic mythology; presided over bardic music and poetry, and generally figured as a giant. In later medieval legend he becomes metamorphosed in the "Bran the Blest," who first brought the cross to the Isle of Britain from Rome, where he had dwelt for a period, as a hostage for his son Caradoc. According to an ancient British myth, his head was buried under the White Tower of London, the eyes directed towards France as a spell against foreign invasion; but Arthur unearthed it, saying that Britain must rely upon her own inherent strength.

Brancker, Sir William Selson, English soldier and director of Civil Aviation, son of an artillery officer; was a cadet at the Royal Military Academy, Woolwich. When the Great War began he was made Deputy Director of Military Aeronautics, having been trained for some years previously in flying. Controller General of Equipment and Director of personnel on the Air Council, 1918; finally Director of Civil Aviation. Lost his life in the R.101 airship disaster in 1930. (1877-1930).

Brand, Sir Jan Hendrik, president of Orange Free State, was born in Cape Town, son of Sir Christoffel Brand, speaker of the House of Assembly there. Educated, Leyden. Called to Bar, 1849. President of Free State from 1863. Fought Basutos, 1865-1866 and 1867. Accepted G.C.M.G. from British Government, 1886. (1823-1888).

Brandan, St., island of, an island the Irish saint (d. 577), who founded a monastery at Clonfert, as lying W. of the Canary Is. It figured on charts as late as 1755, and voyages of discovery were undertaken in quest of it as recently as the beginning of the 18th Century, up to which time it was believed to exist.

Brandeis, Louis Dembitz, American Ky, U.S.A. Specialties: industrial matters and public rights. First Jew to be made judge of U.S.A. Supreme Court, 1916. Wrote *Other People's Money and Business as a Profession*. (1856-)

Brandenburg, in the great N. plain of Germany, is a central Prussian province, and the nucleus of the Prussian state; most of it a sandy plain, with fertile districts and woodlands here and there. Pop. 2,728,000. The cathedral town of Brandenburg, formerly Brennbor, is built on the Havel R. The cathedral stands on an island in mid-river. Pop. 64,000.

Brandenburg, The House of, an illustrious German family dating from the 10th Century; from it descended the Kings of Prussia.

Brandes, Georg Morris Cohen, Danish literary critic, of Jewish parentage, was born and died in Copenhagen, at whose university he graduated, 1864. His scepticism prevented his appointment as professor. Greatest work *Main Literary Currents of the Nineteenth Century*. Returned, 1925, to the agnostic charge, with *The Jesus Myth*. (1842-1927).

Branding, the impressing of an intoboken ownership; usually done by burning a mark on with a branding-iron. Cattle are often so marked. Branding was sometimes used as a form of punishment in the past.

Brandon, a market town of Suffolk, England, chiefly remarkable for its flint-chipping or knapping industry which had been carried on since the Stone Age to 1917. Pop. 2,500.

Brandt, or **Brant,** Sebastian, a German satirical writer, born at Strassburg; author of the *Narrenschiff* or *Ship of Fools*, of which there have been many translations and imitations. (1458-1521).

Brandy, a spirit distilled from wine. Distillation improved in the 13th Century, and brandy then became better known. It was also called burnt wine. It is a product of many countries, but the most famous comes from Cognac, on the R. Charente, France.

Brandywine Creek, a small Pennsylvania and Delaware; river in a victory near Wilmington of the British over the Americans in 1777.

Brangwyn, Frank, British artist. Born in Bruges, of Welsh extraction, he early became familiar with Flemish tapestry, a study that brought him in contact with William Morris. At 16 he went to sea and added shipping to his studies. Has done much decorative work for public buildings. R.A., 1919; awarded Albert Medal of the Royal Society of Arts, 1932. (1867-)

Branks, a name for the scolding bridle and Scotland as a punishment for scolds and women convicted of petty offences. It consisted of a hoop arrangement fixed over the head, which rendered speech impossible or painful.

Brantford, a city of S. Ontario, Canada, on the R. Grand; the centre of a rich agricultural country, and an important manufacturing town. Pop. 29,000.

Branting, Karl Hjalmar, Swedish statesman, was born and died in Stockholm. Astronomer, Stockholm Observatory, 1883. Edited *Socialdemokraten*, 1886-1917. Principal founder of Labour Party, 1889; leader from 1907. Entered Second Chamber, 1906, first socialist to do so. Finance Minister, 1917. Prime Minister, 1920, 1921-1923, 1924-1925. Nobel Peace Prize, 1921. On Council of League of Nations, 1922. (1860-1925).

Brantôme, Pierre de Bourdeille, a contemporary of Montaigne, born in Périgord; led the life of a knight-errant, and wrote *Mémoires* remarkable for the free-and-easy,

faithful, and vivid delineations of the characters of the most celebrated of his contemporaries. (1640-1614).

Brasenose College, Oxford,

founded in 1509 by William Smith, Bishop of Lincoln, and Sir Richard Sutton of Prestbury. It is believed to have taken its name from an ancient knocker in the shape of a nose which formerly belonged to a house in Stamford by the name of Brasenose Hall.

Brasidas, a Spartan general, distinguished in the Peloponnesian War; his most celebrated action, the defeat at the expense of his life, in 422 B.C., of the flower of the Athenian army at Amphipolis, with a small body of helots and mercenaries.

Brass, an alloy of copper and zinc in the proportion of two to one.

Brasses, sepulchral tablets of a mixed metal, called latten, inlaid in a slab of stone, and insculptured with figures and inscriptions of a monumental character; the oldest in England is at Stoke d'Abernon, in Surrey.

Brassey, Thomas, a great railway contractor, born in Cheshire; contracted for the construction of railways in all parts of the world. (1805-1870).

Brassey, Thomas, First Earl, son of the preceding; born at Stafford and educated at Rugby and Oxford. Entered the Commons as Liberal M.P. for Hastings (1868-1886), and was Civil Lord of the Admiralty for part of that time. Wrote many works on naval questions, and was president of the Institute of Naval Architects from 1893 to 1895. Works: *British Seamen* and *The British Navy*. Toured the world with Lady Brassey in their yacht the *Sunbeam*, an account of which was written by Lady Brassey. Created a baron in 1886, Earl Brassey and Viscount Hythe in 1911. (1836-1918).

Brassica, a genus of plants of the Cruciferae order, 85 species of which are known, 7 in Britain. Many are cultivated as table vegetables. The cabbage and all its varieties are included, also the turnip, rape, etc.

Bratislava, town and river-port of Czechoslovakia, on the Danube, here crossed by a bridge. Its German name is Pressburg, and Magyar name Pozsony. A Hungarian town before the War, it was the crowning-place of the Kings of Hungary, and had a royal palace, now in ruins. Seat of a University and a Court of Justice. Petrol refining, tanning, and the making of tobacco, furniture, and machinery are carried on. Pop. 93,000.

Braun, Karl Ferdinand, Austrian physicist, born at Fulda. Director of Physical Institute, Strassburg, from 1895. In 1898 patented a system of radio-telegraphy utilising coupled circuits both in transmitters and in receivers. Invented method of increasing sending energy at will, and one of the first means of sending in a particular direction. With Marconi obtained Nobel Prize for physics, 1909. Died an internecine enemy in New York. (1850-1918).

Braun, Otto, Prussian statesman, born at Königsberg, son of a railway man, became a printer and lithographer. Led E. Prussian landworkers' movement. Social-democratic member of Prussian Chamber, 1913. Prime Minister of Prussia, 1920-1921, 1921-1925, 1925-1932. The last two terms were as head of a coalition with Centre. Was proposed for candidature for presidency of republic on Ebert's death, 1925, but was outvoted within party. Relieved of office on coming of Hitler, 1933. (1872-)



Bravura, a musical term indicating a passage of great speed, compass, or brilliance which calls for special skill on the part of a singer.

Brawling, creating a disturbance in a church either by quarrelling or by wilfully interrupting the service. During the Reformation an Act was passed making the offender liable to a fine not exceeding £5 or imprisonment for not more than 2 months.

Bray, a Berkshire village famous for Simon Aleyn, its vicar from 1540 to 1588, who, to retain his living, scrupled to change his principles; the well-known song makes him live during the five reigns from Charles II. to George I. Pop. 3,000. Also the name of a market town of Co. Wicklow, Ireland (Elire), 12 m. S. of Dublin. Its beautiful position by the sea beneath Bray Head, and its vicinity to the Wicklow Hills, make it a popular seaside resort. Pop. 8,000.

Brazil, the largest S. American State, almost equal to Europe, with an area of 3,275,510 sq. m. and a population of 48,000,000; occupies the eastern angle of the continent, and comprises the Amazon basin, the table-lands of Matto Grosso, and the maritime highlands with the valleys of the Parana and San Francisco.

Great stretches of the interior are uninhabitable swamp and forest lands, forests tenanted by an endless variety of brilliantly plumed birds and insects. The coasts are often humid and unhealthy, but the upper levels have a fine climate. The red soil (*terra roxa*) of the hillsides is well drained and fertile, and great coffee plantations are numerous.

Almost all the country is within the tropics. The population at the seaports is mostly white; inland it is negro, mulatto, and Indian. Vegetable products are indescribably rich and varied; timber of all kinds, rubber, cotton, and fruit are exported; coffee and sugar are the chief crops. The vast mineral wealth includes diamonds, gold, mercury, and copper. Recently, at Itabira, a new iron-ore deposit was discovered promising to be the richest in the world, and at Bahia most of the world's monazite is mined. The most important manufacturing industry is cotton-weaving.

Inland communication is mostly by waterways, including the Rr. Parana, Madeira, San Francisco, and Iguaçu; while the great Central Railway, State-owned, joins up Uruguay, Argentina, and Paraguay. Most of the trade is with Britain and America. The language is Portuguese, the religion Roman Catholic; education is backward, and government unsettled.

Discovered in 1500, the country was annexed by Portugal; the Portuguese King, expelled by the French in 1808, fled to Brazil, which became a separate kingdom in 1815, and an empire in 1822. The Emperor, Pedro II., was driven out in 1889, and a republic established on the federal system, which has been harassed since by desultory civil war.

The industries are chiefly agricultural, though only a small fraction of the soil is under cultivation, and the country imports large quantities of wheat and flour. The crop of greatest importance is coffee, comprising 78% of the world's output. The chief states concerned in the industry are São Paulo, Rio de Janeiro, Espírito Santo, and Minas Geraes. Another great natural product is rubber, especially in the Acre territory and the States of Amazonas and Para. Other important forest exports are pine, quinine and nut-oil, and ipecacuanha.

Brazil Nut, the seed of the *Bertholletia excelsa*, a species of tropical S. American tree of the order Lecythidaceae.

The triangular nuts are packed together in a thick, hard, globular fruit. This fruit is closed at one end by the hardened calyx and it is here that the seedlings escape when they germinate. To obtain the nut for commercial purposes the fruit is opened with an axe.

Brazil-wood, a wood obtained from certain species of *Casalpinia* (trees of order Leguminosae) found in Brazil, of great value for dyeing red, the colouring principle being named *Brasilin*. The pods of *Casalpinia coriaria* from Venezuela and the *W. Indica* are used for tanning.

Brazza, an island in the Adriatic on the Dalmatian coast of Yugoslavia; is richly wooded; noted for its wines; yields marble. Pop. 20,000.

Breach of Promise, the non-fulfilment of a promise to marry. When such a promise is broken without just and sufficient reasons, according to law, an action may be brought to recover damages by the injured person. A promise of marriage is not binding if it be obtained under false pretences, or if important particulars concerning the life or circumstances of one of the contracting parties have been concealed. As a rule an action is brought by the woman, based upon loss of money due to purchase of furniture and trousseau in preparation for the marriage. No plaintiff in any action for breach of promise of marriage can secure a verdict unless her (or his) evidence is corroborated by some other material evidence.

Bread, food prepared from dough made from a cereal flour of wheat, rye, millet, barley, oats, maize, etc. Early types of bread were made from flour and water and were "unleavened." Present-day bread, however, is lightened, or leavened, by a process of fermentation set up by the introduction of yeast or barm. The "rising" is due to the liberation of bubbles of carbon dioxide in the interior, and the bread is rendered easier of digestion and more palatable. Baking-powders are often employed for this purpose, including sodium bicarbonate, tartaric acid, and latterly phosphoric acid or alum, and potassium bisulphate.

White bread, which is more popular, though less nourishing, than "brown" or wholemeal, is prepared from the huskless centre of the wheat-grain, but in brown bread the whole of the grain is used. Aerated bread is made by first dissolving carbon dioxide under pressure in water, the flour being mixed while still under pressure. Bread is sold by weight in Britain. It is also prescribed by law what substances may be used and what adulterants may not be used in the making.

Breadalbane, a mountainous district of W. Perthshire, Scotland, covering an area of over 1,000 sq. m. In it are Lochs Tay and Rannoch, and several high peaks of the Grampians, Ben Lawers (3,843 ft.) being the highest. Its lochs and rapid streams give excellent fishing, and there are deer-forests and much game.

Breadfruit-

Tree, *Artocarpus incisa*, a South Sea island tree producing a fruit which, when roasted, is used as bread.

Bread - Tree,

the name of several species of *Encephalartos* whose pith, rich in starch, is made into meal by the Kaffirs. The tree is an African genus of Cycadaceae.



BREADFRUIT

Breakspere, Nicholas, the only Pope; elected as Adrian IV.; born at Abbots Langley, Hert., entered monastic life in France, created cardinal in 1146, Pope in 1154. (1100-1159).

Breakwater, a work constructed in serve as a protection against the violence of the waves. The name may also be given to any structure which is erected in the sea with the object of breaking the force of the waves and producing a calm within its limits. They are usually constructed by sinking loads of unwrought stone along the proposed line and allowing it to find its angle of repose under the action of the waves. When the mass reaches the surface, or near it, it is surmounted with a pile of masonry, sloped outwards in such a manner as will best enable it to resist the action of the waves.

The great breakwaters are those at Cherbourg and Marseilles in France, Plymouth, Portland, and Holyhead in Britain, Alexandria in Egypt, and Delaware Bay in N. America. In less important localities floating breakwaters are occasionally used. These are built of strong, open woodwork, partly above and partly under the water, divided into several sections and secured by chains attached to fixed bodies. The breakers lose nearly all their force in passing through the beams of such a structure. A breakwater of this kind may last for twenty-five years.

Probably the best-known breakwater is the famous mole at Zeebrugge, Belgium, the scene of the daring exploit of the British Navy during the Great War, when Zeebrugge harbour, a submarine base, was blocked. Modern material employed in breakwater construction is usually concrete or Portland cement.

Bream, the name of several species of the family Cyprinidæ and the sea-breams (or boops, q.v.) of the family Sparidae being quite distinct.

The former are carp-like fishes having elongated anal fins. The latter are mostly edible.



BREAM (FRESH-WATER)

Breastplate, a metal plate, usually of iron or steel, formerly worn as protection in ancient warfare. They are now worn in the British Army only by the Horse Guards as part of their full-dress uniform.

Breasts, the mammary glands of animals from which the young are fed. In woman they extend from the second rib to about the sixth rib below. In the centre is the nipple, which is surrounded by the areola. On the nipple are the milk-conveying ducts.

Breccia, a rock composed of angular fragments cemented together, which are not water-worn, but probably the debris from surrounding rocks which has fallen into water and been consolidated.

Brechin, a town in Forfarshire, Scotland, W. of Montrose, on the S. Esk, with a cathedral and an old round tower near it, 85 ft. high. Burned in 1645 by Montrose. Pop. 6,800.

Brecon, or Brecknock, a municipal borough and county town of Breconshire, Wales, in beautiful country at the junction of the Usk and Honddu. It has a ruined Norman castle, Norman churches and Roman and British remains near by. Here Mrs. Siddons was born. Woollen goods and hosiery are made. Pop. 5,000.

Breconshire or **Brecknockshire**, an inland, thinly-populated, mountainous county of S. Wales. The Black Mts. and the Brecon Beacons include the highest points. On the uplands sheep, cattle and ponies are reared, and in the valleys oats and other grains, turnips and potatoes are grown. Coal and iron are mined and there are iron works, tanneries, and factories for woollen goods and flannels. The Wye and Usk are the chief rivers, and Brecon, Brynmawr, and Builth Wells the chief towns. Area 469,381 acres. Pop. 58,000.

Breda, fortified town, the capital of N. Brabant; a place of historical interest; Charles II. resided here for a time during his exile, and issued hence his declaration prior to his restoration. Pop. 49,000.

Breech-loader, rifle invented (1867) by Jacob Snider, an American. It resulted from an open invitation by the British Government to individuals to submit proposals for the conversion of the Enfield rifle to the breech-loading principle. This invention was followed by the Martini-Henry breech-loading rifle.

Breeding. See *Genetics and Heredity*.

Brehon Laws, a body of judge-created laws that for long formed the common law of Ireland, existing from prehistoric times till Cromwell's conquest. The origin of the code is unknown.

Bremen, the chief seaport of Germany, after Hamburg; is on the Weser, 50 m. from its mouth, and is a free city, with a territory less than Rutlandshire. Its export and import trade is very varied; half the total of emigrants sail from its docks; it is the headquarters of the North German Lloyd Steamship Company. Textiles, tobacco, and paper industries add to its prosperity; was one of the principal cities of the Hanseatic League. Charlemagne made it an archiepiscopal see. There is a statue of Roland in front of the ancient town-hall. The Cathedral of St. Peter stands on the site of the old medieval cathedral. It entered the German Empire in 1867. Pop. 323,000.

Bremen, a free state of NW. Germany, of Bremen, its environs, and two detached portions, Bremerhaven and Vegesack. Agriculture is the chief industry. Area, 99 sq. m. Pop. 371,000.

Bremerhaven, the port of Bremen, on the estuary of the Weser, founded for the accommodation of large vessels in 1830, with a large hospice for emigrants. Pop. 26,000.

Brendan, St. See *Brandan*, St., Ireland.

Brenner Pass, pass in the central Tyrolean Alps, 4,500 ft. high, between Innsbruck and Bolzano, crossed by a railway, which facilitates trade between Venice, Germany, and Austria.

Brennus, a Gallic chief, who in 390 B.C., after taking and pillaging Rome, invested the Capitol for so long that the Romans offered him 1,000 lb. weight of gold to retire; as the gold was being weighed out he threw his sword and helmet into the opposite scale, adding *Vae victis*. "Woe to the conquered." A second Gallic chief of the same name invaded Greece 279 B.C., and though strongly opposed, secured the pass Thermopylae by treachery and advanced to Delphi, where he was defeated and took his own life.

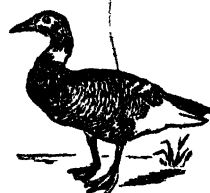
Brentano, Clemens, German poet of the romanticist school, dramatist and writer of short novels, born at Ehrenbreitstein, brother of Goethe's Bettina von Arnim; was a roving genius; his finest work is to be found in *Romanzen von Rosa Kranz*, published posthumously. (1778-1842).

Brentford, market town and county town of Middlesex, on the Brent, 10 m. W. of London, has figured in history and literature; has docks, and some manufactures. Pop. (with Chiswick) 63,000.

Brentford, 1st Baron (Sir William Joynson-Hicks), British politician; held many Government positions and was Home Secretary in Baldwin's 1924 Government, a post he held till 1929, in which year he was raised to the peerage. An ardent Low Churchman, he was largely responsible for the House of Commons' rejection of the new Prayer Book of 1927. (1865-1932).

Brent Goose (*Bronia bernicla*), a small, dark-coloured

goose, dark in neck and whitish-grey or dark grey or brown below. It breeds in Arctic regions and migrates southwards. It is common on the coasts of Britain, especially on the east.



BRENT GOOSE

Brentwood,

a market town of Essex, England, 10 m. SW. of Chelmsford. It has an old grammar school. Brewing and brick-making are carried on, and here is the county lunatic asylum and a Catholic cathedral. Pop. 25,000.

Brescia, a city of Lombardy, on the Mella and Garza, 50 m. E. of Milan, capital of a province of the same name, has two cathedrals, an art gallery and library, and a Roman temple of Vespasian excavated in 1822 and now a classical museum; its manufactures are woollens, fire-arms, silks, leather, and wine. Pop. (prov.) 710,000; (town) 121,000.

Breslau, the capital of lower Silesia, and third city in Prussia; an important commercial and manufacturing centre; is on the Oder, 150 m. by rail SE. of Frankfurt; it stands in the centre of the Baltic, North Sea, and Danube trade, and has a large woollen industry, silk, linen and cotton industries, and manufactures earthenware and machinery; also has a large grain market. Pop. 625,000.

Brest, a strongly fortified naval station in the extreme NW. of France, with a magnificent harbour, and one of the safest, first made a marine arsenal by Richelieu; has large shipbuilding yards and arsenal; its industries are chiefly related to naval equipment, with leather, waxcloth, and paper manufactures. Pop. 79,000.

Brest-Litovsk, a fortified town of the Bug, and important junction both of railways and inland waterways. It is the seat of an Armenian bishop. There is trade in flax and hemp, wood, grain, and leather. Pop. 56,000.

Brest-Litovsk, Treaty of, an agreement between Russia and Germany signed in March 1918, ending the War after a preliminary armistice the previous December.

Brétigny, a village of France in Eure-et-Loir, 6 m. SE. of Chartres. Here, in 1360, a treaty was drawn up by which Edward III. of England, in exchange for large territories in France and a ransom for the French King, John II., gave up his claim to the French crown.

Breton (language), one of the Celtic dialects of the Indo-European group. It is spoken in Brittany, NW. France, and is similar in many respects to the Welsh and old Cornish tongues. It consists of some main dialects, of which the original is that of Léon, where the Celts of Brittany still speak it.

The other dialects are Cornouailles, Trégor, and Vannes. The language is thought to have been taken to Brittany by the Britons who fled there in the 5th and 6th Centuries, and there is little variation from it in the language spoken in Lower Brittany to-day.

Bretwalda, a title apparently of some supremacy among the Anglo-Saxon kings, and bestowed upon a leader in war.

Breve, a note of music of the time value of two semibreves. It is sometimes written by two tied semibreves.

Breviary, a book containing the daily services in the Roman Catholic Church and resembling the English Prayer Book; differs from the "Missal," which gives the services connected with the celebration of the Eucharist, and the "Pontifical," which gives those for special occasions.

Brewing, the making of beer and ales, has been practised from very early times; in this country, the Brewers' Company was well established as long ago as the 15th Century. The manufacture of beer, as opposed to ale, was an importation into this country from Flanders, probably about 1400, but the new drink was slow in finding popular favour.

At the present time the words "beer" and "ale" are practically synonymous, but formerly "ale" signified the malt liquor prepared from malt, water, and ale-yeast only, the term "beer" referring to the liquor brewed with hops. "Beer" is sometimes taken to include stout and porter, while a distinction is always made between "ale" and "agor beer."

In broad outline the manufacture of beer is as follows. Selected barley of the variety known as "two-rowed" (because the ripe ear has two rows of grain) is mixed with a smaller proportion of the "six-rowed" variety, and the mixed grains are then soaked in water so that they may be ready for germination. The steeped barley is spread in heaps on the floor of the malting-house, which is dark, well ventilated, and maintained at a temperature of about 66° Fahrenheit.

Here germination begins, and the heaps are sprayed with water from time to time until the process has reached the desired stage—i.e., until some of the starch in the grain has been converted into sugar and dextrin (a gummy substance) and there has been a sufficient secretion of the enzyme or ferment diastase for the subsequent stage of mashing. The partially germinated grain or "malt" is then kilned—i.e., heated to such a temperature (160–170° F.) that the germ is killed but the diastase remains unaffected.

The malt is now coarsely crushed, and the "arist" or crushed malt is mixed to a thick gruel with hot water in the mashing machine. The mash next flows into the mash-tun, which is a large vessel having a perforated false bottom slightly above the actual bottom; the size of the perforations is such that the spent grains are held back when the liquid in the tun is run off. In the mash-tun the mash is mixed with warm water by "spargers" or revolving sprinklers, and the diastase performs its work of converting the remaining starch into sugars—chiefly maltose or malt sugar—and gum or dextrin. Soluble proteins are also formed.

The liquid or "wort" is afterwards run off from the mash-tun and boiled for about 2 hours in large copper vessels, varying amounts of hops being added according to the kind of beer to be brewed. Boiling serves to concentrate the wort, to sterilise it, and to destroy the albuminoid matter, as well as to destroy the diastase; at the same time the substances extracted from the hops impart flavour and bitterness to the liquor. The latter is next

cooled and strained, the cooling generally being effected by means of refrigerators, and the stage of fermentation is entered upon. After the yeast has been removed the beer is racked—i.e., run into casks ready for sale.

The characteristic difference between the typical English beer and the Continental lager beer is due to several factors. In the first place, the mashing processes are dissimilar, the Continental method being of the "decoction" type instead of the "infusion" type described above. Secondly, a different kind of yeast is employed, which sinks to the bottom during fermentation instead of remaining at the top.

In Great Britain an excise duty, graduated upon the specific gravity (which in turn depends on the alcoholic content, the greater the proportion of alcohol the smaller the specific gravity), is levied upon wort. The receipts from beer duties in 1937 amounted to £57,000,000. The world's largest breweries are those of Guinness and Co. in Dublin, Bass and Co. in Burton-on-Trent, and Schultheiss-Patzshofer in Berlin.

Brewster, Sir David, an eminent Scottish natural philosopher, born at Jedburgh; edited the *Edinburgh Encyclopedia*, a work on which Carlyle served his apprenticeship; specially distinguished for his discoveries in connection with the polarisation of light, his studies in optics, and for his optical inventions, such as the kaleidoscope and the stereoscope; wrote a *Life of Newton*, as well as *Lives of Euler, Kepler*, and other scientists; Principal of the United Colleges of St. Andrews, and afterwards of Edinburgh University. (1781–1868).

Brewster, William, born in Nottinghamshire, shire, England, leader of the Pilgrim Fathers in the *Mayflower*, which conveyed them to Plymouth, Massachusetts, in 1620. (1566–1644).

Brewster Sessions, the annual meetings of magistrates to hear applications for licences by retailers of intoxicating liquors, held during the first 14 days of February.

Brialmont, Henry Alexis, Belgian general and military engineer. Director of Antwerp fortifications and Inspector-General of Fortifications, 1875. Designed fortifications of Bucharest for Rumanian Government, 1883; those of Liège and Namur, 1887. (1821–1903).

Brian Boromhe, an Irish chief, who early in the 10th Century established his rule over a great part of Ireland, and made great efforts for the civilisation of the country; killed in 1014 by the Danes at Clontarf, said to have been the twenty-fifth battle in which he defeated them.

Briand, Aristide, French statesman, born at Nantes, son of a small Breton farmer. Began his career in Paris as a journalist and advocate. Edited *La Lanterne* and, later, *La Petite République*, and then with Jaurès founded *L'Humanité*; his writing always manifesting socialist and anti-clerical views. Only entered the Cabinet in 1900, when he was made Minister of Public Instruction. Yet later he was to become one of the foremost European statesmen of his time, being several times Premier of France, the arch-exponent of the idea of a super-state to ensure peace on the Continent, and the apostle of European federation. He was Foreign Minister when the Locarno Treaties were negotiated, and this and his other work for the reconstruction of Europe won him many honours, including the Nobel Peace Prize. A great orator, a born Parliamentarian, yet, above all, a good Frenchman. Wrote on the separation of Church and State. (1862–1932).

Briar (*Rosa rubiginosa*), a flowering plant belonging to the rose family.

It is well known as the sweet briar or eglantine and is common in England. The word is also sometimes used of other members of the rose family, e.g., of the dog rose. The briar-root is a hard wood obtained from a heath plant in S. France and used for the manufacture of pipes.



SWEET BRIAR

Briareus, a Uranian with 100 arms, son of Uranos and Gaia, i.e., Heaven and Earth, whom Poseidon cast into the sea and buried under Etna, but whom Zeus delivered to aid him against the Titans.

Bribery, the offer or receipt of a gift judgment or corrupt his conduct, and at one time frequently employed in business to solicit orders or secure contracts or appointments, and in public life to escape justice or influence election results. In business the bribe is called "commission." The law is strict on the matter, and the Act of 1906 (Prevention of Corruption) empowers a punishment, if guilty, of imprisonment up to 2 years and a fine of £500. In public life bribery and corruption, as defined by the Public Bodies' Corrupt Practices Act, 1889, entails a similar penalty. Bribery in connection with parliamentary elections is defined as bargaining for employment or reward in consideration of a vote and various penalties are incurred.

Brice, St., Bishop of Tours in the beginning of the 5th Century, and disciple of St. Martin. Festival, Nov. 13. (On St. Brice's day in 1002, by command of King Ethelred, a desperate attempt was made to massacre all the Danes in England; it was avenged by the Danish King, Sweyn.)

Brick (and **Brickwork**), the well-known substitute for stone in building and paving, usually a mass of clay mixed with sand, etc., shaped in a mould, usually 9" x 4 1/2" x 3", subsequently dried, either in the sun or baked in a kiln. Brick-making involves the processes of crushing, pugging (stirring), and moulding, and is performed in recent times largely by machinery. Shale (refuse of coal mines), when pulverised, makes durable bricks resembling the fire-clay bricks of Stourbridge. Ordinary building bricks are made extensively in Essex and Kent, Somersetshire and Bedfordshire, while the coal-field areas of the North of England produce fire-bricks. Bath-bricks are made principally of sand taken from the river at Bridgwater.

Brickwork is the art of the bricklayer, and consists of the arrangement or fitting together of bricks to form a wall, etc., so that the bricks mutually support each other when joined with cement. Wall foundations, always wider than the wall, are called "footings," and garden walls are usually buttressed at intervals of 10 or 12 ft. Mortar, the cement usually used in brickwork, is composed either of grey or white lime (grey is preferred) and sand mixed in a proportion of 1 to 2.

Bride of the Sea, Venice, so called in which her espousals were celebrated by the Doge casting a ring into the Adriatic.

Bridewell, a house of correction in Blackfriars, London, so called from St. Bridget's Well, near it; demolished in 1863.

Bridge, a construction which continues a ravine, or above other roads. Those carrying water are called aqueducts. The main types

of bridges are girder bridges, arch bridges, cantilever bridges, and suspension bridges, though many other types of construction are necessary, according to the circumstances of the site.

Girder Bridges.

A log over a stream is of the girder type, and two beams with crosspieces laid over them make the common highway bridge of this kind.



With steel beams and trusses very substantial bridges of this type can be built, but construction is limited to comparatively short spans. Many viaducts built to carry railways over valleys in various parts of the world are of this kind.

Arch Bridges are perhaps the most common and most beautiful. Construction consists of an arch or series of arches carrying the roadway. Almost any material may be used. Sydney Bridge has the largest arch in the world.

Cantilever Bridges are most successful for spanning great distances. Such erections can be built out from the balancing piers without scaffolding to support them, for the network of braces makes them self-supporting at each step of the work. The Forth Bridge, with two spans of 1,710 ft., is of this type. The cantilevers are the double brackets which project out on each side of the piers, one over the stream and the other towards the bank.

Suspension Bridges support the weight of the actual bridge by great cables held by suspension towers. The ends of the cables are anchored to concrete bases in the ground. The New York and Brooklyn Bridge is a good example; a recent construction of this kind is that over the R. Zambesi, opened in 1936. The type is specially suited to wide stretches where intervening piers are impracticable.

Another construction is the bascule bridge, built where a movable type is required. The Tower Bridge is of this kind. It opens like a jack-knife in the middle to allow free passage of the river to shipping. The movement is usually electrically operated. In others a central span turns on a pivot.

Pontoon Bridges consist of a path resting on floating supports, once boats, now metal pontoons. They are often used in military manoeuvres, and can be rapidly thrown across a stream and as rapidly removed.

In cantilever and arch bridges the securing of a good foundation is essential. Where the bed is soft, piers of wood are driven in by piling. When stone or concrete bases are used, the water is excluded by caissons in which a few courses of masonry are built, the whole being then sunk to the required position. In the Quebec Bridge the S. caisson is sunk to a depth of 110 ft. to solid rock. In the sandy bays of Indian rivers brick cylinders are used.

Bridge, a card game for four players, see Auction Bridge and Contract Bridge.

Bridge, Sir John Frederick, composer and organist, born at Oldbury, Worcs., was in choir-school of Rochester Cathedral. Organist: Trinity Church, Windsor, 1866-1869; Manchester Cathedral, 1869-1875; Westminster Abbey, 1875-1918. Knighted 1897. King Edward Professor of Music, London University from 1902. Conductor, Royal Choral Society, 1896. Composed sacred music; *Boadicea cantata*, 1880; settings for songs. (1844-1924).

Bridgehead, in military warfare, is a fortified position taken up at the farther side of a bridge to assure command of the passage of a river or canal.

Bridgeman of Leigh, William

Bridgeman, First Viscount, was grandson to second Earl of Bradford. Conservative M.P. Oswestry, 1906-1929. Parliamentary Secretary to Ministry of Labour from 1916; to Board of Trade from 1918. Secretary of Mines Dept. and P.O., 1920. Home Secretary, 1922-1924. First Lord of the Admiralty, 1924-1929. Viscount, 1929. Governor, British Broadcasting Corporation, 1933-1935. (1864-1935).

Bridgend, market town of Glamorgan-shire, Wales, 17 m. W. of Cardiff. Iron, coal and stone are worked, and there are tanneries, joinery works, brick-yards, etc. Pop. 10,000.

Bridge of Allan, a village on the R. Stirling, Scotland, with a mild climate and mineral waters. Pop. 3,000.

Bridge of Sighs, a covered way in from the Ducal Palace to the State prison, over which culprits under capital sentence were transported to their doom, whence the name.

Bridgeport, a thriving town and seaport of Connecticut, U.S.A., 58 m. NE. from New York. Sewing-machines, fire-arms, iron and bronze goods, etc., manufactured. Pop. 147,000.

Bridges, Robert, British poet. He became a doctor on leaving Oxford, retiring in 1882 to devote his time to poetry; produced numerous volumes of verse, including lyric and narrative poems, sonnets, etc., and essays; was appointed Poet Laureate in 1913. His chief works are *Eros and Psyche*, *Demeter: A Masque*, *Prometheus the Fire-giver* and *The Testament of Beauty*. (1844-1930).

Bridget, St., an Irish saint, born near Dundalk; entered a monastery at 14; founded monasteries; takes rank in Ireland with St. Patrick and St. Columba. Festival, Feb. 1 (453-523). Also the name of a Swedish saint in the 14th Century; founded the "Order of Syon" for monks and nuns.

Bridgetown, seaport and capital of Barbados, seat of the government and the bishop; suffers from hurricanes and fever. Pop. 15,000.

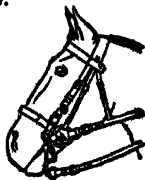
Bridgewater, Francis Egerton, Third Duke of, celebrated for his self-sacrificing devotion to the improvement and extension of canal navigation in England, in which he was aided by the skill of Brindley. (1736-1803).

Bridgewater, Francis Henry Egerton, Eighth Earl of, educated for the Church, bequeathed £8,000 for the best work on natural theology, which his trustees expended on the production of eight works by different eminent men, called "Bridgewater Treatises," all to be found in Bohn's Scientific Library. (1756-1829).

Bridgnorth, a town of Shropshire, England, on the Severn. Has nail and worsted factories. Pop. 5,000.

Bridgwater, a seaport town in Somersetshire, England, 29 m. SW. of Bristol. Bath-brick is manufactured and exported. Pop. 17,500.

Bridle, part of the harness of a horse fitting on to the head and mouth. A part called the bit fits into the mouth, and the whole is kept in place by means of a headstrap behind the ears, a front strap in front of the ears, a nose-band, and a throat-band. The reins are attached to the bit, and by varying strains on the bit control over the horse is maintained.



BRIDLE

Bridlington, a watering-place in Yorkshire, shire, England, 6 m. SW. of Flamborough Head, with a chalybeate spring. Pop. 19,700.

Bridport, an ancient market town of Dorset, England, 15 m. W. of Dorchester. Sailcloth, thread, twine, and nets are made, and some trade in timber, flax, and hemp is carried on from its little port of West Bay, 1 m. distant. Pop. 6,000.

Bridport, Sir Alexander Hood, Viscount, a British admiral, distinguished in several engagements, notably the "Glorious First of June." (1727-1814).

Brienzy, Lake of, in the Swiss canton of Bern, part of the R. Aar, 9 m. long, 2 m. broad, over 1,800 ft. above sea-level, and of great depth in certain parts; abounding in fish. Town of B., a favourite resort for tourists and centre of wood-carving district.

Brierley Hill, town of Staffordshire, England, in the Black Country. Coal, iron, and fireclay are worked, and there are important iron foundries and blast-furnaces, and other factories. Pop. 14,000.

Brieux, Eugène, French playwright, was afterwards on other papers. Académicien, 1909. Plays include: *Les Trois Filles de M. Dupont*, *La Robe Rouge* (in English *The Arm of the Law*), *Les Avariés* (in English *Damaged Goods*), *Maternité*, *Les Américains chez nous*, *La Famille Lavolette*. (1858-1932).

Brig, a square-rigged vessel with two masts. A brigantine is a small two-masted vessel, square-rigged on the fore-mast, fore-and-aft rigged on the other.

Brigade, a term applied to the union of regiments of infantry, cavalry, or artillery in one corps. In infantry usually four battalions; in cavalry of two or three regiments. Two or more brigades form a division.

Brigadier-General, the officer in command of a brigade, either of infantry, cavalry, or artillery. After the War the title Colonel-Commandant was substituted in the British army in its place, but since 1928 that has been replaced by "Brigadier."

Brigantes, a powerful ancient British tribe that occupied the country between the Humber and the Roman Wall.

Briggs, Henry, a distinguished English mathematician; first Savilian Professor of geometry at Oxford; made an important improvement on the system of logarithms, which was accepted by Napier, the inventor, and is the system now in use. (1556-1630).

Brighouse, municipal borough of Yorkshire, shire, England, in the W. Riding, 6 m. N. of Huddersfield. Woolens, cotton, silk and worsted are made, also carpets, wire, soap, machinery, etc. Pop. 20,000.

Bright, Sir Charles Tilston, engineer and electrician, a pioneer in telegraphy. He laid a cable across the Irish Sea in 1853, the first cable across the Atlantic from Ireland to Newfoundland in 1858, and the first cable to India, as well as inventing a number of improvements for land telegraphy. (1832-1883).

Bright, John, English statesman, son of a near Roodale; of Quaker birth and profession; engaged in manufacture; took an early interest in political reform; he joined the Anti-Corn-Law League on its formation in 1839, and soon was associated with Cobden in its great agitation; entering Parliament in 1843, he was a strong opponent of protection, the game laws, and later of the Crimean War; he advocated financial reform and the reform

of Indian administration; and on the outbreak of the American Civil War supported the North, though his business interests suffered severely; he was closely associated with the 1867 Reform Act, Irish Church Disestablishment, 1869, and the 1876 Irish Land Act; his Ministerial career began in 1868, but was interrupted by illness; in 1873, and again in 1881, he was Chancellor of the Duchy of Lancaster; he seceded from Gladstone's Government on the Egyptian policy in 1882, and strenuously opposed Home Rule in 1886; in 1880 he was Lord Rector of Glasgow University. (1811-1889).

Brightlingsea, district of Essex, England, on the Colne estuary. It has oyster-fisheries, makes ships and boats and is a yachting station. Pop. 4,000.

Brighton, a much-frequented watering-place in Sussex, England, 50 m. S. of London, of which it is a favourite resort; a place of fashionable resort ever since George IV. took a fancy to it; a fine parade extends along the whole length of the sea front; has many handsome buildings, an aquarium, a museum, schools of science and art, public library, and public gallery; the principal building is the Pavilion or Marine Palace, originally built for George IV., bought by the town for \$50,000 and now used as a museum and concert hall. Pop. 147,000. Also the name of a suburb of Melbourne, Australia.

Bright's Disease, a disease of the kidneys, so called from Dr. Richard Bright, who first investigated its nature. It is medically known as nephritis.

Bril Brothers, Matthew and Paul, landscape painters, born at Antwerp; employed in the 16th Century by successive Popes to decorate the Vatican at Rome; of them Paul, the younger, was the greater artist; his best pictures are in Rome.

Brill, a flat fish of the turbot family, though smaller, caught both in sandy bays and deep water off coasts of Britain and valuable for food.



Brillat-Savarin, Anthelme, a French gastronomist, author of *Physiologie du Gout*, a book full of wit and learning published posthumously; was professionally a lawyer and for some time a judge. (1755-1826).

Brindisi, a seaport of S. Italy, on the Adriatic coast; has risen in importance since the opening of the Overland Route as a point of departure for the East; it is 90 hours by rail from London, and 3 days by steam from Alexandria; it was the port of embarkation for Greece in ancient times, and for Palestine in medieval. Pop. 41,000.

Brindley, James, a mechanician and engineer, born in Derbyshire; at first a millwright; devoted his skill and genius to the construction of canals, under the patronage of the Duke of Bridgewater. (1716-1772).

Brioni, a group of small Italian islands, in the Adriatic, off Istria. Venice is largely built of stone from Brioni. Here the Genoese defeated the Venetians in 1379. Maggiore, the largest, is a holiday resort.

Brisbane, capital of Queensland, on the sea, the chief trading centre and seaport of the State; it has communication with Australian ports and London, and railway communication with Sydney, Melbourne, and Adelaide; prosperity began when the colony

to free settlement in 1842; it was founded from New South Wales and the city incorporated in 1859. Is the seat of Queensland University. Its fine Victoria Bridge across the Brisbane R. was built in 1897 to replace one destroyed by flood. Pop. 317,000.

Brisbane, Admiral Sir Charles, a naval officer of distinction under Lords Hood and Nelson; captured in 1796 Dutch warships, including three ships of the line, in Saldanha Bay, and in 1807 the island of Curaçoa; was made Governor of St. Vincent. (1769-1829).

Brisbane, Sir Thomas Mackdougall, British general, a man of science and an astronomer, born near Largs, Ayrshire; saw service as a soldier; was appointed Governor of New South Wales, to the profit of the colony; gave name to the capital of Queensland; catalogued over 7,000 stars; succeeded Scott as president of the Royal Society of Edinburgh, and was president of the British Association in 1834. (1773-1860).

Briseis, a young virgin priestess, who fell to the lot of Achilles among the spoil of a victory, but whom Agamemnon carried off from him, whereupon he retired to his tent and sullenly refused to take any further part in the Trojan war.

Brissot (de Warville), Jacques Pierre, a French revolutionary, born at Chartres, son of a pastry-cook; trained for the Bar, took to letters; became an outspoken disciple of Rousseau; spent some time in the Bastille; liberated, he joined the Girondists; became leader of a party of his own, named after him Brissotism, midway between the Jacobins and Girondists; fell under suspicion, was arrested, tried, and guillotined. (1754-1793).

Bristol, on the Avon, 6 m. from its mouth, and 118 m. W. of London, is the largest town in Gloucestershire, the seventh in England, and a great seaport, with Irish, W. Indian, and S. American trade; it manufactures tobacco, boots, and shoes; it has a cathedral, university, library, and many educational institutions; by a charter of Edward III. it forms a county in itself. It has extensive docks. Pop. (including Avonmouth port and Portishead dock) 402,000.

Bristol Channel, an inlet in SW. of England, between S. Wales and Devon and Cornwall, 80 m. in length, from 5 to 43 in breadth, and with a depth of from 5 to 40 fathoms; is subject to very high tides, and as such dangerous to shipping; numerous rivers flow into it.

Britain, the name given to England, Scotland, and Wales from the earliest times. Traces of the palæolithic and neolithic inhabitants of the country have been found in many places. Celtic civilisation and languages were brought to the country by invaders from the Continent before the close of the Bronze Age. These were in turn conquered by the Romans, the first Roman invasion being that of Julius Caesar in 55 B.C. The Romans, however, never displaced the Celtic peoples nor became absorbed by them, and when their legions were withdrawn Britain, or at least the low-lying part of Britain, fell a prey to the invading Angles, Saxons, and Jutes, who drove out, slaughtered, or absorbed the Celts.

Britannia, a name for Britain as old as the days of Caesar, when the island was inhabited by Celts, as Gaul also was.

Britannia Metal, a metallic alloy of tin and anti-mony with a small amount of copper; largely used for making cheap coffee pots, spoons, water-jugs, etc.

Britannia Tubular Bridge,

a railway and foot suspension bridge spanning the Menai Strait, Wales, designed by Robert Stephenson, and completed in 1850; consists of hollow tubes of wrought-iron plates riveted together, and took five years to erect. During heavy storms in 1936 it proved unsafe, and is being rebuilt at considerable cost.

British Association, an association, of Sir David Brewster's suggestion, founded in 1831, of men of all departments of science for the encouragement of scientific research and the diffusion of scientific knowledge. It holds its meetings annually, under the presidency of some distinguished scientist, now in this, now in that, selected provincial centre of the country, and sometimes in the Dominions. It is divided into 13 sections—mathematics and physics, chemistry, geology, geography, anthropology, zoology, physiology, engineering, agriculture, botany, education, economics and statistics, and psychology.

British Broadcasting Corporation. See Broadcasting.

British Columbia, a western fertile province of British N. America, extending between the Rocky Mts. and the Pacific, and from the United States on the S. to Alaska on the N., being 800 m. long and four times the size of Great Britain; rich in timber and minerals; rain is abundant and cereals do well. Vancouver Island is in the province. Cap. Victoria. Area 366,000 sq. m. Pop. 740,000.

British Empire, or **British Commonwealth of Nations,** occupies a quarter of the known surface of the globe, and its population a quarter of the human race. The Constitution rests upon no fundamental law, but is based upon self-government, self-support, and self-defence, the third principle of which is the outcome of the Imperial Conference, consisting of the prime ministers and other ministers of the U.K., Canada, Commonwealth of Australia, New Zealand, Union of South Africa, Ireland, Newfoundland, and the Secretary of State for India.

The British Empire comprises: (1) the United Kingdom, i.e., England, Wales, Scotland, and Northern Ireland, together with the Channel Is. and the Isle of Man. (2) Territories having Dominion Status, e.g., Canada, Newfoundland, Australia, New Zealand, Union of South Africa and Ireland (Eire). (3) Territories in which there is a governor representing the Crown, who nominates the council, e.g., Ceylon, Falkland Isles, Gibraltar, Straits Settlements, etc. (4) Those where there is a legislative assembly as well as an executive council nominated by the Crown, e.g., Bahamas, Jamaica, British Guiana. (5) Those where the governor has control over legislative and executive powers, e.g., St. Helena. (6) Protectorates, e.g., Swaziland, Somaliland, Uganda. (7) Spheres of Influence, e.g., in Arabia. (8) Mandatory Spheres such as Tanganyika, Palestine and former German colonies. (9) India, including the Indian States and British India for which the Government of India Act (1935) provided a Federation with Provincial autonomy limited by safeguards.

British Empire, Order of the, a distinction awarded to men and women for services to the Empire at home and abroad. Established 1917. Civil and military divisions were separated in 1918. There are six classes: Knights Grand Cross or Dames Grand Cross (G.B.E.); Knights Commanders (K.B.E.); Dames Commanders (D.B.E.); Commanders (C.B.E.);

Officers (O.B.E.); Members (M.B.E.), of which the first two rank as knighthoods.

British Expeditionary Force, landed in France on Aug. 16, 1914, under the command of Sir John French, the first British troops to take part in the Great War.

British Gazette, The, was published in the offices of the now defunct *Morning Post* for the duration of the General Strike of May, 1926 (q.v.), by the Government, with Winston Churchill as controlling editor.

British Isles, a geographical term for the NW. of Europe, including England and Wales, Scotland, and Ireland. Politically only Northern Ireland is included in the term since the establishment of Ireland (Eire), and it has been superseded in official use by "Great Britain and Northern Ireland."

British Legion, an organization of ex-servicemen established in 1921 by Earl Haig (q.v.), who remained its president until his death, and incorporated by Royal Charter in 1925. Its object is to take care of disabled and unemployed ex-soldiers. Many disabled men are employed in the manufacture of poppies for sale on Remembrance Day, Nov. 11.

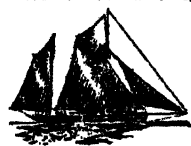
British Museum, a national institution in London for the collection of MSS., books, prints and drawings, antiquities, and objects of natural history, ethnology, etc.; founded as far back as 1700, though not opened in Montagu House, till 1759; a public lottery helped to raise the necessary funds.

Briton Ferry, a seaport of Glamorgan-shire, Wales, at the mouth of the Neath, now a ward in the borough of Neath. It has good docks owned by G.W.R., collieries and iron and steel works. Pop. 9,000.

Brittany, an old French province, land of the Bretons, comprising the peninsula opposite Devon and Cornwall, stretching westward between the English Channel and the Bay of Biscay; was in former times a duchy; a third of its inhabitants still retain their Breton language.

Brixham, a seaport, market town, and holiday resort of Devon,

England, on Torbay, opposite Torquay. It has fishing and ship-building industries. Here William of Orange landed in 1688 when he entered England. In a cave near have been found Old Stone Age remains. Pop. 8,000.



BRIXHAM TRAWLER

Brixton, a south-eastern suburb of London, England, on the Surrey side, noted for its remand prison.

Brno, a city of Czechoslovakia, generally known by its German name of Brünn (q.v.).

Broad Arrow, a stamp like an arrow-head to indicate Government property, and used on convicts' dress; originally a royal mark on stores used by authority of the Earl of Romney, a Master-general of Ordnance (1693-1702).

Broad-Bottom Ministry, a coalition ministry under Peelham, in office from Nov. 1744, to Mar. 1755, so called from the wide variety of parties represented in it.

Broadcasting, or the dissemination of news, musical and dramatic entertainment, etc., by wireless, in England began officially in 1921, but earlier attempts had met with success. In 1904 a speech was broadcast by Mr. Joseph Chamber-

lain from the Guildhall to certain playhouses by an electrophone system. In America broadcasting had been inaugurated two years previously, but the European situation after the War hindered the authorities in this country. The first station was at Chelmsford, and was licensed by the Post Office.

In 1922 the Marconi Company opened the London Station (2LO), and concerts were regularly transmitted. Other wireless concerns at this time included British Thomson-Houston, the General Electric, Metropolitan Vickers, and the Radio Communication Company. Collaboration came with the forming of the British Broadcasting Company in 1922, under the general management of Sir John Reith, with Mr. Arthur Burrows as director of programmes.

In 1925 Daventry 5XX was opened, and the company became the British Broadcasting Corporation. In 1926 the B.B.C. licence was extended for 10 years from Jan. 1, 1927, and a Royal Charter was granted, a board of Governors being appointed by the Government, under the chairmanship of Lord Clarendon, with Sir John Reith as Director-General. A new Charter came into force on Jan. 1, 1937, continuing the life of the Corporation for a further 10 years.

The B.B.C. organisation consists roughly speaking of a Head Office and 5 provincial regions—Midland Regional, Northern Regional, Scottish Regional, Western Regional, and Belfast. The Head Office administers the London region, which supplies the National programmes as well as the London Regional programme. The B.B.C. has a monopoly of broadcasting in this country, with public service as its fundamental idea. The principal source of revenue is a share (75 per cent.) of the licence fees collected by the Post Office from listeners, while further revenue comes from royalties on sets and parts sold to the public.

The need for controlling the wave-lengths used by different countries with the advent of powerful transmission caused the formation of an International Broadcasting Union in 1925, and annual meetings take place. Empire broadcasts are radiated from Daventry to the Dominions and the Colonies by short-wave transmission. Television programmes were regularly broadcast in England for the first time from a special transmitting station at Alexandra Park in Aug. 1936.

Broadmoor, a state lunatic asylum certified, after trial for murder, etc., as criminally insane. It is at Sandhurst in SE. Berkshire and was opened in 1863.

Broads, The Norfolk, are a series of inland lakes in the E. of that county, apparently formed by expansions of the rivers; they are favourite holiday resorts on account of their wealth of fine scenery, abundant vegetation, keen air, fishing, and boating attractions.

Broadsheet, or **Broadside**, a large containing a ballad, proclamation or other popular matter. In George IV.'s day they became pamphlets, known sometimes as chap books, and circulated among the poor.

Broadstairs, seaside resort of Kent, England, on the Isle of Thanet, 2 m. NE. of Ramsgate. Pop. (with St. Peter's) 15,000.

Broadway, important avenue of Manhattan, New York City, U.S.A., in its S. part a financial and business street, further N. a shopping centre.

Broccoli, a variety of cabbage (*Brassica oleracea*), of the Cruciferae family, producing its young flowers in compact masses called heads. It originally came from Italy.

Brochs, dry-stone circular towers, called also **Picts'** towers and **Duns**, with thick Cyclopean walls, a single doorway, and open to the sky, found on the edge of straths or lochs in the N. and W. of Scotland.

Brock, Sir Thomas, sculptor, born at Worcester; executed many notable monuments, including Lord Canning statue at Calcutta, statues of Sir Richard Owen and the Black Prince (at Leeds) and the National Memorial to Queen Victoria. (1847-1922).

Brocken, or **Blocksberg**, the highest peak (3,740 ft.) of the Harz Mts. in Germany, cultivated to the summit; famous for a "Spectre" so called; long an object of superstition, but which is only the beholder's shadow projected through, and magnified by, the mists.

Broglie, Albert, son of the following, a Conservative politician and littérateur, author of *The Church and the Roman Empire in the 4th Century*. He was Premier of France in 1873 and 1877. (1821-1901).

Broglie, Charles Victor, Duc de, a French statesman, born at Paris; a Liberal politician; was of the party of Guizot and Royer-Collard; held office under Louis Philippe; negotiated a treaty with England for the abolition of slavery; was an Orleanist, and an enemy of the Second Empire; retired after the coup d'état. (1785-1870).

Broglie, Victor François, Duc de, marshal of France, distinguished in the Seven Years War, being "a firm disciplinarian"; was summoned by royalty to the rescue as "war god" at the outbreak of the Revolution; could not persuade his troops to fire on the rioters; took command of the Emigrants in 1792. (1718-1804).

Brogue, a coarse and light kind of shoe made of raw leather, of one entire piece and gathered round the foot by a thong, formerly worn in Ireland and the Highlands of Scotland. The term also refers to a mode of pronunciation peculiar to the Irish.

Broke, Sir Philip Bowes Vere, rear-admiral, born at Ipswich, celebrated for the action between his ship *Shannon*, 38 guns, and the American ship *Chesapeake*, 49 guns, in June 1813, in which he boarded the latter and ran up the British flag; one of the most brilliant naval actions on record. (1776-1841).

Broken Hill, mining town of New South Wales, Australia. Here is the biggest silver mine in the world, and gold, lead, and zinc are also worked. Pop. 27,000.

Broker, a person employed in the negotiation of commercial transactions between other parties, generally engaged in the interest of one of the principals. There are separate brokers for nearly all the great articles of consumption. Ship brokers procure goods on freight or charter for ships outward bound and clear vessels at the customs, as well as acting as insurance brokers. Exchange brokers negotiate the sale and exchange of bills of exchange drawn upon foreign countries. A stock broker buys and sells for others stock in public funds and shares in the capital of joint-stock companies.

Bromberg (Polish *Bydgoszcz*), a busy town on the Brähe, in Poznan, Poland. Being a frontier town, it suffered much in times of war. Pop. 80,000.

Brome, Alexander, a cavalier, writer of songs and lampoons instinct with wit, whim, and spirit; of his songs some are amatory, some festive, and some political. (1620-1666).

Brome, Richard, an English comic playwright, contemporary with Ben Jonson, and a rival; originally his servant; his plays are numerous, and were characterised by his enemies as the swoonings of Jonson's study. (d. 1632).

Bromide, a salt of potassium, resembling bromine, the chloride formed by dissolving bromine in a solution of caustic potash or by decomposing bromide of iron by carbonate of potassium. It is used in photography, but with more importance in medicine as a gentle anodyne to promote sleep, in large doses for epilepsy.

Bromine, a liquid element of a dark red colour and a disagreeable smell, extracted from bittern, a liquid which remains after the separation of salt. Symbol Br; Atomic weight 79.92.

Bromley, a borough in Kent, England, 10 m. S.E. of London, where the Bishops of Rochester had their palace. Pop. 47,700.

Brompton, SW. district of London, England, in Kensington, also called S. Kensington; a once rustic locality, which became a fashionable district, with several museums and the Oratory.

Bromsgrove, a market town of Worcestershire, England, 12 m. N.E. of Worcester. Nails and buttons are made. Pop. 10,000.

Bronchitis, inflammation of the bronchial tubes which form part of the windpipe system. It is generally caused in young children and old persons by exposure to cold, especially a sudden chill, but attacks can be brought on by inhaling dust or cotton fibre and other irritants. Its symptoms are irritation in the nose, causing frequent sneezing, watering of the eyes, shivering, headache, and a feeling of oppression in the chest. A cough sets in with paroxysms, accompanied by much thick mucus. The breathing becomes noisy, owing to the lining of the bronchi becoming thick.

Bronte, a town in Sicily, on the W. slope of Etna, which gave Nelson his ducal title. Pop. 20,000.

Brontë, the name of three sisters, Charlotte, Emily and Anne,

daughters of a Yorkshire clergyman of Irish extraction: Charlotte, born at Thornton, Yorkshire; removed with her father, at the age of four, to Haworth, a moorland parish, in the same county, where she lived most of her days; spent two years at Brussels as a pupil-teacher; on her return, in conjunction with her sisters, prepared and published a volume of poems under the pseudonyms respectively of Currer, Ellis, and Acton Bell, which proved a failure. Nothing daunted, she set to novel writing, and her success was instant: first *Jane Eyre*, then *Shirley*, and then *Villette*, appeared, and her fame was established. In 1854 she married her father's curate, Mr. Nicholls, but her constitution gave way, and she died (1816-1855). Emily (Ellis), two years younger, poet rather than novelist; wrote *Wuthering Heights*, a remarkable production, showing still greater genius, which she did not live to develop. (1818-1848). Anne (Acton), four years younger, also wrote two novels, very ephemeral productions. (1820-1849).

Brontosaurus, a large dinosaur, remains of which have been found in Wyoming, U.S.A. It was a type of now extinct reptile, had a length of 80 ft., weighed over 30 tons, and lived in swampy places, being herbivorous, unlike some other species of dinosaur.



CHARLOTTE
BRONTË

Bronx, The, a borough of New York City, separated from Manhattan by the Bronx R. Formerly it was a district in Westchester county. In it is Bronx Park, with its fine zoological gardens, and also the buildings of New York University. Pop. 1,265,000.

Bronze, an alloy of copper, tin, and zinc in varying proportions. The metal used for British coins contains 95 per cent. copper, 4 per cent. tin, and 1 per cent. zinc.

Bronze Age, an age in the history of many races when weapons and tools were made of bronze.

Bronzing, the name given to the process whereby articles of metal, wood, porcelain, plaster, etc., are given a bronze-like superficial appearance. Various methods are used, according to the nature of the material.

Brooch, a fastening for the dress consisting of a clasp fitted with a hinged pin. The use of such fastenings is of the greatest antiquity, and many have been of great beauty.

Brooke, Sir James, Rajah of Sarawak, born near Bath; entered the Indian army; was wounded in the Burmese war, returned in consequence to England; conceived the idea of suppressing piracy and establishing civilisation in the Indian Archipelago; sailed in a yacht from the Thames with that object; arrived at Sarawak, in Borneo; assisted the Sultan in suppressing an insurrection, and was made rajah; brought the province under good laws and swept the seas of pirates, for which he was rewarded by the English Government; was appointed Governor of Labuan; finally returned to England and died, being succeeded in Sarawak by a nephew. (1803-1868).

Brooke, Rupert, British poet. Educated at Rugby and Cambridge; lived near Grantchester. In 1914 he received a commission in the Naval Division, and died of blood-poisoning in hospital at Scyros in April 1915. His *Collected Poems*, containing the well-known war sonnets, South Sea poems, and earlier work, all displaying the promise of his great gifts, were issued in 1925. (1887-1915).

Brooke, Stopford, preacher and writer, born in Donegal; after other clerical appointments became incumbent of Bedford Chapel, Bloomsbury, and Queen's chaplain; seceded from the Church, but continued to preach in Bloomsbury; wrote the *Life of F. W. Robertson of Brighton*, a *Primer of English Literature*, *Theology in the English Poets*, and a *Life of Milton*, all works evidencing critical ability of a high order. (1832-1916).

Brooklands, the famous racing track used for motor-car racing and testing engines as well as for attempts at world speed records. It has a circuit of 3½ m. and a width of 100 ft. It was opened in 1907.

Brooklyn, a borough of New York, on Long Island; separated from Manhattan by the East R., a mile broad, and connected with it by a magnificent suspension bridge, the largest in the world, as well as by some 12 lines of ferry-boats plied by steam; the Williamsburg Bridge (118 ft. wide), joining the borough with Manhattan and Broadway, is the largest of its kind. Has 10 m. of water-front, extensive docks and warehouses, and does an enormous shipping trade; has the chief navy yard in U.S.A.; manufactures include glass, clothing, chemicals, metallic wares, and tobacco; has many fine buildings, parks, and pleasure-grounds. Has two fine recreation grounds: Prospect Park (nearly 600 acres in extent) and Washington Park. Pop. 2,560,000.

Brookwood, a district in the parish of Woking, Surrey, England. Here is the London Necropolis cemetery, and a crematorium, the first to be built in England; here also is a pauper lunatic asylum.

Broom, the name of several species of leguminous plants, native to Europe and the Mediterranean. The Common Broom (*Cytisus scoparius*) found in England is an evergreen shrub with scale leaves. It grows in poor soil and bears bright yellow flowers. The fruit is explosive. Besoms are made from the branches.

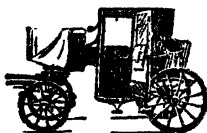
Broomrape, a parasitic plant of the genus *Orobanchæ*, whose roots prey on those of other plants. *O. ramosa* is found on hemp. *O. major* on centaurea, *O. minor* on clover.

Brother Jonathan, a nickname for an American citizen corresponding to "John Bull." George Washington used to say, "we must consult Brother Jonathan," meaning John Trumbull, a Governor of Connecticut.

Brothers, Richard, born in Newfoundland, a mystic and "prophet"; he was one of the founders of the belief that the English people represent the ten lost tribes of Israel. (1757-1824).

Brougham, a covered carriage for four persons, with a box seat for

the driver and a footman, with one or two horses; a coupé, for two persons, was called a doctor's brougham. It was designed by Lord Brougham.



BROUGHAM

Brougham,

Henry, Lord Brougham and Vaux, born in Edinburgh, and educated at the High School and University of that city; admitted to the Scottish Bar in 1800; excluded from promotion in Scotland by his liberal principles, he joined the English Bar in 1808, speedily acquired a reputation as a lawyer for the defence in Crown libel actions, and by his eloquence in the cause of Queen Caroline, 1820, won universal popular favour; entering Parliament in 1810, he associated with the Whig Opposition, threw himself into the agitation for the abolition of slavery, the cause of education, and law reform; became Lord Chancellor in 1830, but 4 years afterwards his political career closed; together with Horner, Jeffrey, and Sidney Smith, one of the early contributors to the *Edinburgh Review*, also one of the founders of London University, and the Society for the Diffusion of Useful Knowledge; a writer on many themes, but his violence and eccentricity reduced his influence; spent his last days at Cannes, where he died. (1778-1868).

Broughton, Lord. See *Hobhouse*.

Broughton, Rhoda, novelist, her best work *Not Wisely but Too Well*; wrote also *Cometh Up as a Flower, Red as a Rose is She*. (1840-1920).

Broughty Ferry, a watering-place, and a favourite place of residence of Dundee merchants. Pop. 5,000.

Broussa (Brous or Bursa), a city in the extreme NW. of Turkey, at the foot of Mt. Olympus, 12 m. from the Sea of Marmora; the capital of the Turkish empire till the taking of Constantinople in 1453; abounds in mosques and is celebrated for its baths. Pop. 72,000. Capital of a vilayet of the name. Pop. 441,000.

Brouwer (or Brasser), Adriaen, a Dutch painter, mostly of low, vulgar life, which, as familiar with it, he depicted with great spirit. (1605-1638).

Brown, Sir Arthur Whittan, British aviator, born at Glasgow. With Sir John Alcock (q.v.) he first flew across the Atlantic in an aeroplane from Newfoundland to Ireland in June, 1919. (1866-).

Brown, Ford Madox, an English painter, born at Calais; his subjects nearly all of a historical character, one of which is "Chaucer reciting his Poetry at the Court of Edward III." anticipated Pre-Raphaelitism. (1821-1893).

Brown, John, American slavery abolitionist; settled in Kansas, and resolutely opposed the project of making it a slave state; in the interest of emancipation, with 18 others, seized on the State armoury at Harper's Ferry in hope of a rising, entombed himself armed in it, was surrounded, seized, tried, and hanged. It was of him that the song *John Brown's Body* was written, which served the Union forces as a marching song in the Civil War. (1800-1859).

Brown, John, a Highlander, born at Crathie in Aberdeenshire, who became gillie to the Prince Consort during the reign of Queen Victoria and later personal servant to Victoria herself at Balmoral, Buckingham Palace, and Windsor, where he died. (1825-1883).

Brown, John, Scottish physician and author, born at Biggar, educated in Edinburgh High School and at Edinburgh University; author of *Horæ Subsericeæ, Rab and his Friends, Pet Marjorie*, *John Leech*, and other works. (1810-1882).

Brown, John, founder of the Brunonian system of medicine, born in Berwickshire; reduced diseases into two classes, those resulting from redundancy of excitation, and those due to deficiency of excitation; author of *Elementa Medicinæ*. (1735-1788).

Brown, Lancelot ("Capability Brown"), landscape-gardener and architect, born in Northumberland, was a kitchen gardener at Lord Cobham's Stowe. Laid out grounds at Kew and Blenheim. (1715-1783).

Brown, Robert, a distinguished botanist, born at Monrovia, son of an Episcopal clergyman; accompanied an expedition to survey the coast of Australia in 1801, returned after 4 years' exploration, with 4,000 plants, mostly new to science, which he classified and described in his *Prodromus Floræ Novæ Hollandiæ*; became librarian to, and finally president of, the Linnean Society. (1773-1858).

Brown Willy, the highest peak (1,375 ft.) in Cornwall, England, 10 m. NE. of Bodmin.

Browne, Charles Farrar, a humorist and satirist, known by the pseudonym of "Artemus Ward," born in Maine, U.S.A.; his first literary effort was as a "showman" to an imaginary travelling menagerie; travelled over America lecturing, carrying with him a whimsical panorama as affording texts for his numerous jokes, which he brought with him to London, and exhibited with the same accompaniment with unbounded success; he spent some time among the Mormons, and wrote humorous accounts of that community. (1834-1867).

Browne, Hablot Knight, artist born in London; illustrated Dickens' works, *Pickwick* to begin with, under the pseudonym of "Phiz," as well as the works of Lever, Alsworth, Fielding, and Smollett, and the Abbotsford edition of Scott; he was skilful as an etcher and an architectural draughtsman. (1815-1882).

Browne, Robert, founder of the Brownists, born in Rutland; the first seceder from the Church of England, and the first to found a Church of his own on Congregational principles, which he did at Norwich, though his project of secession

proved a failure, and he returned to the English Church; died in jail at Northampton, where he was imprisoned for assaulting a constable; he may be accounted the father of the Congregational body in England. (1550-1633).

Browne, Sir Thomas, physician and religious thinker, born in London; resided at Norwich for nearly half a century, and died there; was knighted by Charles II.; "was." Professor Saintsbury says, "the greatest prose writer perhaps, when all things are taken together, in the whole range of English"; his principal works are *Religio Medici*, *Inquiries into Vulgar Errors*, and *Hydriotaphia, or Urn-Burial*. (1605-1682).

Browne, William, English pastoral poet, born at Tavistock; author of *Britannia's Pastorals* and *The Shepherd's Pipe*, a collection of eclogues, and *The Inner Temple and Masque*, or the story of Ulysses and Circe, with some exquisitely beautiful opening verses, "Steer hither, steer," among them; was an imitator of Spenser, and a parallel has been instituted between him and Keats. (1591-1645).

Brownhills, an urban district in Staffordshire, England, not far from Lichfield. Coal is mined in the neighbourhood. Pop. 18,000.

Brownian Movement, the motion observed in the particles of a colloidal solution when seen under a microscope; the motion is due to molecular vibrations. The phenomenon was first observed by Robert Brown, a botanist, in 1827.

Brownie, a good-natured household elf, believed in Scotland to render obliging services to good housewives. The name has been adopted by the junior section of the Girl Guides, once called Rosebuds.

Browning, Elizabeth Barrett, née Barrett, poetess, born at Carlton Hall, Durham; a woman of great natural abilities, which developed early; suffered from injury to her spine; went to Torquay for her health; witnessed the death by drowning of a brother, that gave her a shock the effect of which never left her; published in 1838 *The Seraphim*, and in 1844 *The Cry of the Children*; married Robert Browning in 1846, who immediately took her abroad, settling in Florence. *Sonnets from the Portuguese* appeared in 1850, *Casa Guidi Windows* in 1851, and in 1855 *Aurora Leigh*, "a novel in verse," and in 1860, *Poems before Congress*; ranks high, if not highest, among the poetesses of England; she took an interest all through life in public affairs; her work is marked by musical diction, sensibility, knowledge, and imagination. (1806-1861).

Browning, John M., an American inventor, born in the State of Utah, U.S.A., who patented many inventions and improvements of firearms including the Colt machine-gun and the revolver named after him. (1854-1926).

Browning, Robert, poet, one of the two greatest in the Victorian era, born in Camberwell; early given to writing verses; prepared himself for his literary career by reading through Johnson's Dictionary; his first poem *Pauline*, published in 1833, which was followed by *Porphyria* in 1835, *Sordello* in 1840; after a time, in which he was not idle, published, with some of his *Dramatic Romances and Lyrics*, in 1855 his *Men and Women*, and in 1868 *The Ring and the Book*, his longest poem, and more analytic than poetic;



ROBERT BROWNING

this was succeeded by a succession of others, finishing up with *Asolando*, which appeared the day he died at Venice; was a poet of great subtlety, deep insight, creative power, and strong faith; lies buried in Westminster Abbey; of Browning it has been said by an eminent writer, "Timor mortis non conturbabit," the fear of death did not trouble him. *James Lee*, *Rabbit Ben Bera*, and *Prosperio* are among the greatest poems of the century. His creed was an optimism of the brightest, and his restful faith "God's in His heaven, All's right with the world." (1812-1889).

Brown-Séquard, Charles Edward, physiologist, born in Mauritius, of American parentage; studied in Paris; practised in New York, and became a professor in the Collège de France; made a special study of the nervous system and nervous diseases, and published works on the subject. He was the first to show that organs can supply to blood secretions which affect other parts of the body. See *Hormones*. (1817-1894).

Broxburn, a town of Linlithgowshire, Scotland, 11 m. W. of Edinburgh. Here are large shale oil-works. Pop. 8,000.

Bruce, a family illustrious in Scottish history, descended from a Norman knight, Robert de Bruis, who came over with the Conqueror, and who acquired lands first in Northumberland and then in Annandale.

Bruce, James, traveller, called the "Abyssinian," born at Kinnaird House, Stirlingshire; set out from Cairo in 1768 in quest of the source of the Nile; believed he had discovered it, though his quest took him to the head waters of the Blue Nile; stayed two years in Abyssinia, and returned home by way of France, elated with his success; felt hurt that no honour was conferred on him, and for relief from his chagrin wrote an account of his travels in 5 quarto vols., the general accuracy of which, as far as it goes, has been attested by subsequent explorers. (1730-1794).

Bruce, Robert, King of Scotland, died Edinburgh, in homage for a time to Edward I. but joined the national party; member of a regency of four with Comyn for rival; stabbed Comyn in a quarrel at Dumfries, 1306, and was that same year crowned king at Scone; was defeated by an army sent against him, and obliged to flee to Rathlin, Ireland; returned and landed in Carrick; cleared the English out of all the fortresses except Stirling, and on June 24, 1314, defeated the English under Edward II. at Bannockburn, after which, in 1328, the independence of Scotland was acknowledged, as well as Bruce's right to the crown; suffering from leprosy, spent his last two years at Cardross Castle, on the Clyde, where he died in the thirty-third year of his reign. (1274-1329).

Bruce, Rt. Hon. Stanley Melbourne, Australian statesman. Educated at Cambridge, where he won a rowing Blue in 1894; he returned to Europe during the Great War to serve with the forces, and won the M.C. In 1923 he became Nationalist Prime Minister of Australia, and was defeated in Sept. 1929 on his Bill to abolish federal jurisdiction on wage arbitration cases. P.C., C.H., 1923. Became Resident Minister in London in Joseph Lyons' first Cabinet (1932) and, later, High Commissioner for Australia in London. President, Council of League of Nations, 1936. (1883-).

Bruce, William Speirs, polar explorer, son of an Edinburgh surgeon. With Scottish expedition to Antarctica, 1892; Coats's to Nova Zembla, etc., 1893; Prince of Monaco's to Spitzbergen, 1898, 1899, and 1906. Zoologist with Jackson-Harmsworth expedition to Franz Josef Land, 1898-1897. Commanded Scottish National Antarctic ex-

pedition, 1902-1904, discovering Coats's Land. Surveyed Spitzbergen between 1806 and 1912. (1867-1921).

Brucine, an alkaloid, allied in action to strychnine, though much weaker, being only a twenty-fifth of the strength.

Bruges, cap. of W. Flanders, in Belgium, intersected by canals crossed by some 50 bridges, whence its name, "Bridges"; one of these canals connects it with Ostend, another with Zeebrugge; many of them are now, however, as well as some of the streets, little disturbed by traffic, and in a decayed condition; has a number of fine churches, one specially noteworthy, the church of Notre-Dame; it has several manufactures, textile and chemical, as well as distilleries, sugar-refineries, and ship-building yards. It was used by the Germans during the Great War as a submarine base, the North Sea being reached by way of the canal to Zeebrugge; to block the route the British raided Zeebrugge Mole on April 23, 1918. Pop. 52,000.

Bruises, contusions, caused by injuries from a blow or pressure without breaking the skin, accompanied by discoloration as the result of the rupture of small blood-vessels. Bruises range from a black eye to badly crushed muscles. Swelling is sometimes considerable, especially in lax parts, such as the eye. Successive blows can result in paralysis following the bruising, and abscesses sometimes form. Soft skin easily bruises and marked discoloration is not necessarily a sign of any severe injury.

Brumaire, the 18th, the day on which from Egypt, overthrew the Directory and established himself in power. Equivalent in the French Revolutionary Calendar to Nov. 9, 1799.

Brummell. See Beau Brummell.

Brunanburh, the scene of a great and decisive battle (937) between Athelstan, King of Wessex, and a united force of Danes, Scots, and Northern Celts; the site doubtful, variously placed in Scotland, Northumberland, and Yorkshire; the victory commemorated in the *Anglo-Saxon Chronicle*.

Brunck, *Richard François*, an able scholar, and critic, born at Strassburg; edited several classical works, played a perilous part in the French Revolution; was imprisoned, and, on his release, had to sell his library in order to live. (1729-1803).

Brune, *Guillaume Marie*, French marshal, saw service in the Vendean war and in Italy, distinguished himself under Napoleon in Italy and Holland; submitted to Bourbons in 1814; joined Napoleon on his return from Elba; was appointed to a post of command in the S. of France, but had to surrender after Waterloo, and was attacked by a mob of Royalists at Arignon as he was setting out for Paris, and brutally murdered, his body being thrown into the Rhône. (1763-1815).

Bruneau, *Louis Charles Bonaventure Alfred*, French composer, born in Paris, studied under Massenet. Compositions, chiefly operas founded on Zola's works:—*Le Rêve*, *L'Attaque du Moulin*, one of the best war operas; *Messidor*; *L'Ouvragin*; *L'Enfant-Roi*. (1857-1934).

Brunel, Borneo. The interior is mainly jungle containing valuable timber, and cutch, rubber and sago are produced. In the capital Brunel (pop. 12,000) on the R. Brunel, silverware is made, other native industries being brass-founding, boat-making, and cloth-weaving. Area 2,500 sq. m. Pop. 50,000.

Brunel, *Isambard Kingdom*, son of the father in his engineering operations, in particular the Thames tunnel; was engineer of the Great Western Railway; designed the *Great Western* steamship, the first to make regular voyages across the Atlantic; was the first to apply the screw propeller to steam navigation; designed with Scott Russell the *Great Eastern*; constructed bridges and naval docks. (1806-1895).



I. K. BRUNEL

Brunel, *Sir Marc Isambard*, engineer, born in Rouen, entered the French navy, emigrated to the United States; was chief engineer of New York; settled in England, and invented many mechanical tools; constructed the Thames tunnel, begun in 1825 and finished in 1843. (1769-1849).

Brunelleschi, *Filippo*, Italian architect, born in Florence, trained as goldsmith, studied at Rome; returned to his native city, built the Duomo or Cathedral, the Pitti Palace, and the churches of San Lorenzo and Spirito Santo. (1379-1446).

Brunhilda, a man-like queen in the *Nibelungen Lied* who offered to marry the man who could beat her in feats of strength, was deceived by Siegfried into marrying Gunther, and meditated the death of Siegfried, who had married her rival Kriemhilda; this she accomplished by the hand of Hagen. Also a queen of Austrasia, who, about the 7th Century, had a lifelong quarrel with Fredegunde, Queen of Neustria, the other division of the Frankish world, which at her death she seized, but was overthrown by Clothaire II., Fredegunde's son.

Bruni, *Leonardo*, Italian humanist and historian, born at Arezzo, hence called Aretino; was papal secretary; settled in Florence, and wrote a history of it; did much by his translations of Greek authors to promote the study of Greek. (1369-1444).

Brunn (now *Brno*), an ancient city, capital of Moravia, Czechoslovakia, beautifully situated, with large manufactures; woolsens the staple industry of the country; about one-half of the population Czechs; seat of a Czech University. Pop. 265,000.

Bruno, *Giordano*, a bold and fervid original thinker, born at Nola, in Italy; a Dominican monk, attached himself to Calvin for a time, went to Paris, attacked the scholastic philosophy, had to leave France; spent two years in England with Sir Philip Sidney, propagated his views in Germany and Italy, was arrested by the Inquisition, and after 7 years spent in prison was burned as a heretic; he was a pantheist, and regarded God as the living omnipresent soul of the universe, and Nature as the living garment of God. (1548-1600).

Bruno, St., born at Cologne, retired to a lonely spot near Grenoble with 6 others, where each lived in cells apart, and they met only on Sundays; founder of the Carthusian Order of Monks, the first house of which was established in the desert of Chartreuse (1030-1101). Festival, Oct. 6.

Brunonian System, a system which regards and treats diseases as due to defective or excessive excitation, as sthenic or asthenic. See Brown, John.

Brunswick, a Free State (formerly duchy) of N. Germany, made up of 9 detached parts, mostly in the upper basin of the Weser; is mountainous, and contains part of the Harz Mts.; climate and crops are those of N. Germany generally. Pop. 513,000. Brunswick, the capital, a busy commercial town, once a member of the Hanseatic League, which fell into comparative decay after the dwindling of the League; on the Oder, 140 m. SW. of Berlin; an irregularly built city, it has a cathedral, and manufactures jute, chemicals, and machinery. Pop. 167,000.

Brunswick, Frederick William, Duke of, brother of Queen Caroline; raised troops against France, which, being embarked for England, took part in the Peninsular War; fell fighting at Ligny two days before the battle of Waterloo. (1771-1815).

Brusa. See Broussa.

Brush, Charles Francis, American electrician, inventor of the Brush dynamo, and series arc-lamp, 1878. Registered many other patents. Founded Brush Electric Company in Cleveland, U.S.A. (1849-1929).

Brussels, on the Senne, 27 m. S. of Belgium, in the heart of the country. The old town is narrow and crooked, but picturesque, and is dominated by the Palace of Justice; the town-hall is a magnificent building. The new town is well built, and one of the finest in Europe. There are many parks, boulevards, and squares; a cathedral, art gallery, museum and library, university, and art schools. It is Paris in miniature. The manufactures include lace, linen, silk, ribbons, cotton goods, and paper; a ship-canal and numerous railways foster commerce. German troops captured the city on Aug. 20, 1914, and King Albert returned in Nov. 1918. Pop. (with suburbs comprising 15 distinct communes) 900,000.

Brussels Sprouts, one of the cultivated varieties of cabbage, having an elongated stem 3-4 ft. high with small, clustering heads like miniature cabbages.

Brussiloff, Alexei Alexeevich, Russian general, of noble family, served in Russo-Turkish War, 1877-1878. Director, cavalry school, St. Petersburg, 1900. In Great War invaded Galicia, 1914, 1915. Succeeded Ivanov in command of armies S. of Pripet Marshes, 1916. In June 1917 became Commander-in-Chief under the Provisional Government. Took no part in Bolshevik revolution; but during it was wounded by explosion at his flat. (1853-1928).

Brutus, Lucius Junius, traditional founder of Republic of Republican Rome, in 6th Century B.C.; affected idiosyncrasy (whence his name, meaning stupid); it saved his life when Tarquin the Proud put his brother to death; but when Tarquin's son committed an outrage on Lucretia, he threw off his disguise, headed a revolt, and expelled the tyrant; was elected one of the two first Consuls of Rome; sentenced his two sons to death for conspiring to restore the monarchy; fell in a hand-to-hand combat with Aruns, one of the sons of the banished king.

Brutus, Marcus Junius, nephew of Cato, was persuaded by Cassius and others to believe that Caesar aimed at the overthrow of the republic; joined the conspirators, and was recognised by Caesar among the factionists as party to his death; forced to flee from Rome after the event, was defeated at Philippi by Antony and Augustus but escaped capture by falling on his sword. (85-48 B.C.).

Bruyère, Jean de la, a French writer of *Charactères de Théophraste*, a satire on various characters and manners of his time; was attached to the household of the Prince de Condé. (1645-1696).

Bryan, William Jennings, American statesman, born in Salem, Illinois; trained for the Bar and practised at it; entered Congress in 1891 as an extreme Free Silver man; lost his seat from his uncompromising views on that question; was twice nominated for the Presidency in opposition to McKinley, but defeated. (1860-1925).

Bryant, William Cullen, American poet; his poems were popular in America, the chief, *The Ages*, published in 1821; was 50 years editor of the *New York Evening Post*; wrote short poems all through his life, some of the later his best, particularly *Thanatopsis*. (1794-1878).

Bryce, Rt. Hon. James, First Viscount, historian and politician, born at Belfast; Fellow of Oriel College, Oxford; trained for the Bar; for a time professor of Civil Law at Oxford; entered Parliament in 1880; was member of Gladstone's last Cabinet; from 1907 to 1913 he was Ambassador in America. His chief literary productions, *The Holy Roman Empire* and *The American Commonwealth*. (1838-1922).

Bryn-mawr, an urban district and market town of Brecknockshire, Wales, 8 m. SW. of Abergavenny. Here are large iron works. Pop. 7,000.

Bryony, a common name for a family (Vitaceae) called Bryonia. White Bryony (*B. dioica*) is found in English hedges. It is poisonous, but has a medicinal value as a purgative and emetic. The cucumber is a relative. The Black Bryony (*Tamus communis*), a climbing plant also found in English hedges, belongs to the order Dioscoreaceae. It also is poisonous.



WHITE BRYONY

Bubonic Plague, a disease carried exclusively by the rat flea. It was this plague which killed 25 million people in Europe in the Black Death of the 14th Century. During the first decade of the present century nearly a million people died annually from this disease, but it has decreased since.

Bucaramanga, a town of Colombia, on the Lebrija R., capital of the province Santander. It has a coffee market and there are gold, copper, and iron mines in the vicinity. Manufactures include tobacco and hats. Pop. 80,000.

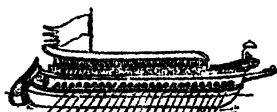
Buccaneers, an association of piratical adventurers, chiefly English and French, in the 16th and 17th Centuries, with their headquarters in the Caribbean Sea, organised to plunder the ships of the Spaniards in resentment of the exclusive right the latter claimed to the wealth of the S. American continent, which they were carrying home across the sea. Their name was taken from the "boucan," or dried meat, which they prepared on their island refuges in the Indies.

Buccleuch, a glen 18 m. SW. of Selkirk, Scotland, with a strong hold of the Scott family, giving the head the title of earl or duke.

Buccleuch (title). David Scott became baron of Buccleuch, Selkirkshire, 1488. His great-grandson, Sir Walter Scott, was killed by Kerr in Edinburgh, 1552. Sir Walter's great-grandson, Sir Walter,

deliverer of Kinmont Willie from Carlisle, was made Lord Scott of Buccleuch, 1605. (c. 1585-1611). His son Walter was made Earl of Buccleuch, 1610. James, Duke of Monmouth (q.v.), married Anne Scott, Countess in her own right, took the surname Scott, and was made Duke of Buccleuch, 1663. On the death of "Old Q." 1810, the dukedom of Queensberry came to Henry Scott, third Duke of Buccleuch. (1746-1812). Walter John Scott, eighth duke, born 1894, succeeded 1935. Lady Alice Montagu-Douglas-Scott (b. 1901), his sister, married the Duke of Gloucester (Prince Henry), Nov. 6, 1935.

Bucentaur, the state galley, worked by 168 rowers, in which the Doge of Venice



BUCENTAUR

by 168 rowers, in which the Doge of Venice used to sail on the occasion of the annual ceremony of wedding the Adriatic Sea by casting a ring in it, the ceremony marking Venice's rule over the seas.

Bucephalus (i.e., ox-head), the horse which Alexander the Great, while yet a youth, broke in when no one else could, and on which he rode through all his campaigns; it died in India from a wound. The town, Bucephala, on the Hydaspes, N. India, was built near its grave.

Bucer (Butzer), Martin, a German Reformer, born in Alsace; originally a Dominican, adopted the Reformed faith; differed in certain matters from both Luther and Zwingli, while he tried to reconcile them; invited by Craumer to England, he became professor of Divinity at Cambridge, where he died. (1491-1551).

Buchan, a district in the N.E. of Aberdeenshire, Scotland, between the Rs. Deveron and Ythan; abounds in magnificent rock scenery. The Comyns were earls of it till they forfeited the title in 1309.

Buchan, Alexander, the son of a Scots weaver, who started life as a schoolmaster, and later gave up his time to the study of the weather. He discovered the "Buchan's Cold Periods," 6 in number, which occur in February, April, May, June, August, and November; secretary of the Scottish Meteorological Society and connected with the Meteorological Office in London. (1829-1907).

Buchan, John (First Lord Tweedmouth), novelist. Of Scottish birth, he went in for law, served in France in the Great War, and became a Conservative M.P. in 1927. *Frederick John*, published in 1910, was his first novel to catch attention, and *Greenmantle*, probably his most popular, has been followed by several romances. Lord High Commissioner to the Church of Scotland in 1933 and 1934. Appointed Governor-General of Canada in 1935 and raised to the peerage. P.C. 1937. (1875-).

Buchanan, George, a most distinguished scholar and humanist, born at Killearn, Stirlingshire; became tutor to James V.'s illegitimate sons; imprisoned by Cardinal Beaton for satires against the monks, escaped to France; driven from one place to another, imprisoned in a monastery in Portugal at the instance of the Inquisition, where he commenced his celebrated Latin version of the Psalms; came back to Scotland, was appointed in 1562 tutor to Queen Mary, principal of St. Leonard's College at St. Andrews, and moderator of the General Assembly, in 1576 tutor to James VI., and

had several offices of State conferred on him; wrote a *History of Scotland*, and *De Jure Regni*, against the tyranny of peoples by kings; died in Edinburgh, was buried at the public expense in Greyfriars churchyard. (1506-1582).

Buchanan, James, statesman of the United States, was ambassador in London in 1853, became President in 1856, the fifteenth in order, at the time when the troubles between the North and South came to a head, favoured the South, after Lincoln's election in 1860 to the Presidency, retired into private life. (1791-1868).

Buchanan, Robert Williams, a writer in prose and verse, born in Warwickshire, educated at Glasgow University; his first work, *Undertones*, a volume of verse published 1860; wrote *The Wandering Jew*, which attacks the Christian religion, and a number of novels, of which *God and the Ant* and *The Shadow of the Sword* are the best; also some plays. (1841-1901).

Bucharest, capital of Rumania, pic-Dimbovitza, a tributary of the Danube, in a fertile plain, 180 m. from the Black Sea; there is a Catholic cathedral and a university; it is the emporium of trade between the Balkans and Austria; textiles, grain, hides, metal, coal, and cattle are the chief articles in its markets. Has a daily air service to Paris and Istanbul. Pop. 640,000.

Büchner, Ludwig, German physician and materialist, born at Darmstadt; lectured at Tübingen University; wrote a book entitled *Kraft und Stoff*, i.e., Force and Matter, and had to retire into private practice as a physician on account of the materialistic philosophy which he insisted on teaching. (1824-1899).

Bucket-shop, a term used to a broker not a member of the Stock Exchange, and therefore not subject to its rules and penalties. Deals are made in stocks and shares of a speculative character and often involve swindling. There are "outside" brokers, of course, who carry on a perfectly legitimate business. The word originated from the small lift or "bucket" by which members of a gambling exchange reach a Chicago office.

Buckfastleigh, an urban district of Devon, England, 5 m. NW. of Totnes. Here an abbey was founded in Saxon times, and has recently been restored by a community of French Benedictines. Pop. 2,000.

Buckhaven, a seaside resort of Fifeshire, Scotland. It has a harbour used by fishing-boats; fishing-nets are made and coal is exported. Pop. (with Methil, with which it forms a burgh), 18,000.

Buckhound, a name of a staghound for buck-hunting. Buckhounds under a master were kept by royal persons, but the hunt was abolished in 1801.

Buckie, a fishing town of Banffshire, Scotland, on Moray Firth, the centre of the fishing district between Banff and Findhorn. It has a fine harbour. Pop. 9,000.



THE DUKE OF BUCKINGHAM

Buckingham, George Villiers, Duke of, favourite of James I. and Charles I., born in Leicestershire; rose under favour of the former to the highest

offices and dignities of the State; provoked by his conduct wars with Spain and France; fell into disfavour with the people; was assassinated at Portsmouth by Lieutenant Felton, on the eve of his embarking for La Rochelle. (1592-1628).

Buckingham, George Villiers, Duke of, son of the preceding; served under Charles I. in the Civil War, was at the Battle of Worcester; became minister of Charles II.; a profligate courtier and an unprincipled man. (1627-1688).

Buckingham, James Silk, traveller near Falmouth; conducted a journal in Calcutta, and gave offence to the East India Company by his outspokenness; had to return to England, where his cause was warmly taken up; by his writings and speeches paved the way for the abolition of the Company's charter. Wrote *Travels in Mesopotamia*, a book full of archeological information, but owing something to Diodorus Siculus. (1786-1855).

Buckingham and Chandos, Richard Plantagenet Temple-Nugent-Brydges-Chandos-Grenville, Second Duke of, son of First Duke, succeeded 1839. Known as Earl Temple. 1813-1822; Marquess of Chandos, 1822-1839. M.P. Bucks., 1818-1839. Introduced, into Reform Act clause enfranchising tenants-at-will paying £50; Privy-Seal, 1841-1843. Bankrupt, 1847. Wrote on agricultural distress, and memoirs of court-life. (1797-1861).

Buckingham Palace, the London residence of the King, built in 1703, and considerably enlarged since, a new front being erected in 1913.

Buckingham Palace Conference, was held in July 1914 at the instance of King George, to see whether some way could be found to meet Jister's objections to the Asquith Home Rule Bill (q.v.). The conference broke down after three days.

Buckinghamshire, English S. midland county, lying E. of Oxford, W. of Bedford and Hertford, is full of beautiful and varied scenery, hill, dale, wood, and water. The Thames forms the southern boundary, the Ouse flows through the N., and the Thame through the centre. The Chiltern Hills cross the county. Agriculture is the prevailing industry; dairy produce, cattle and poultry raising, and sheep rearing the sources of wealth. Pop. 271,400. County town, Aylesbury. The small town of Buckingham, on the Ouse, is 50 m. NW. of London. Pop. 3,000.

Buckland, Francis (Frank), naturalist, son of the succeeding, studied medicine; devoted to the study of animal life; was inspector of salmon fisheries; wrote *Curiosities of Natural History, Natural History of British Fishes*, etc.; contributed largely to journals such as the *Field*, and edited *Land and Water*, which he started in 1866. (1826-1880).

Buckland, William, a distinguished geologist, born at Tiverton, Devon; had a predilection from boyhood for natural science; awoke in Oxford University an interest in it by his lectures on mineralogy and geology; he was president of the British Association in 1832; exerted himself to reconcile the teachings of science with the accounts in Genesis; was made Dean of Westminster by Sir Robert Peel. (1784-1856).

Buckle, George Earle, man of letters, editor of *Times*, 1884-1912, born at Tiverton, near Bath. Deceived into U.E.

publishing Pigott's forgery (which accused Parnell of being responsible for outrages in Ireland), tendered resignation 1889; for 23 years longer struggled against paper's ill-fortune, culminating in its sale to Northcliffe. Completed, 1920, *Life of Disraeli* begun by Monypenny; edited Queen Victoria's *Letters*. (1854-1935).

Buckle, Henry Thomas, historian of civilisation; born at Lee, Kent; son of a shipowner; was too delicate for regular schooling. Travelled widely and learned to read 19 languages. Published 2 volumes of *History of Civilisation in England*, which were intended as part of a greater plan, but which was never completed. It had a tremendous contemporary reputation. (1821-1862).

Buckmaster of Cheddington, Stanley Owen Buckmaster, First Viscount, Lord Chancellor, 1915-1916, was son of a science master at St. Kensington. Called to Bar, 1884. K.C., 1902; Chancery practice. M.P. (Lib.) Cambridge, 1906-1910; Kelghley, 1911-1915. Solicitor-General, 1913-1915. Ennobled 1915. Viscount, 1933. Opposed capital punishment and advocated divorce law reform. (1861-1962).

Buckram, a term once used to describe in church vestments. To-day, a stiff wide-meshed cotton or linen material for stiffening belts, collars, etc., also book covers.

Buckskin, a kind of soft leather made originally from deer-skin, but now usually from sheep skins. The name is also given to a twilled woollen material without pile.

Buckthorn, the common name of the certain shrubs of the Rhamnaceae order. The common or purging buckthorn (*Rhamnus cathartica*) berries are of medicinal value and sap-green is manufactured from the juice. Another English variety is the Alder buckthorn (*R. frangula*), the bark of which (official) is also of value as a cathartic and the wood of which yields an excellent charcoal.



Buckwheat

(*Fagopyrum esculentum*), a plant allied to the rhubarb, and cultivated especially in America for its flour. The flower produces honey, and in England poultry food is made from the grain. It also serves for green fodder.

Bucolics, a name for pastoral poetry, of which Theocritus may be said to be the founder. Virgil used the word as an alternative name for his Eclogues, and critics have suggested that he wished to compare favourably with Theocritus.

Budapest, a twin city, the capital of Hungary, on the Danube; Buda (Ger. Ofen) on the right bank and Pesth on the left, the two cities being connected by a suspension bridge, the former standing on a rocky elevation and the latter on level ground. Pop. 1,061,000.

Buddha, founder of Buddhism about the 6th Century B.C., born a Hindu, of an intensely contemplative nature, son of a ruler of the Sakyas in N. India; retired into solitude when about 30; consulted religious books, could get no good out of them, till at the end of ten years, having abstracted himself more and more from everything external,

as he sat brooding under the Bo-tree alone with the universe, the light of truth rose upon him, and he became Buddha, i.e., the Enlightened; he became a preacher to others of what had proved salvation to himself, continuing to do so for 40 years, and dying of dysentery when nearly 80.

Buddhism, the religion of Buddha, a religion which, eschewing all speculation about God and the universe, set itself solely to the work of salvation, the end of which was the merging of the individual in the unity of being, and the "way" to which was the mortification of all private passion and desire, which mortification, when finished, was the Buddhist Nirvana. Buddha wrote nothing himself, but some 300 years after his death his teachings assumed a canonical form, being collected in the Tripitaka, or "triple basket."

Buddhism from the first was a proselytising religion; it at one time overran the whole of India, and is understood to be the religion of 340 millions of the human race to-day. The sacred writings of Buddhism are in three parts: (1) for the laity; (2) for the devotees and (3) a metaphysical section. The principal texts are the Chinese and Japanese translations of Sanskrit MSS. and the books of Ceylon Buddhists in the Pali language.

Buddhism embraces Four Sublime Verities: (1) that Suffering exists; (2) that it is caused by Desire; (3) that there is a way to end it, and (4) that this way consists in following the 8-fold path of Right Doctrine, Right Purpose, Right Discourse, Right Behaviour, Right Purity, Right Thought, Right Lowliness, Right Rapture. In India Buddhism has declined after about a thousand years before a popular preference for Brahminism.

Budding, a process in horticulture whereby plants are reproduced and new varieties bred. The general process is to take a bud from the tree which it is wished to propagate (the parent plant) in July or August and insert it in a T-shaped cut in the bark of the stock-plant near the ground. This is tightly bound with raffia and left for the bud to unite with the stock-plant. In order to divert the strength of the plant into the bud the stock-plant is cut away the next spring just above the bud. It is essential that the bud shall be transferred to a closely related stock—e.g., roses to roses, apples to pears, apricots to plums, etc.

Bude, seaside resort of N. Cornwall, England. Pop. 4,000.

Budejovice (formerly **Budweis**), a trading town in Bohemia, Czechoslovakia, Black lead pencils, porcelain, chemicals, etc., manufactured. Pop. 44,000.

Budget, the annual account of national finances submitted to the House of Commons every April by the Chancellor of the Exchequer, and so called from the "bougette" or leather bag he used to carry. The statement falls into two parts: an account of the results of expenditure and revenue, and an estimate for the next 12 months.

Budleigh Salterton, a seaside resort of S. Devon, England, 4 m. E. of Exmouth. Pop. 3,000.

Budweis. See **Budejovice**.

Buenos Aires, federal capital of the Argentine Republic, stands on the right bank of the broad but shallow R. Plate, 150 m. from the Atlantic; it is a progressing city, improving in appearance, with a cathedral, several Protestant churches, a university and military school, libraries and hospitals; printing, cigar-making, cloth and book manufacture are the leading industries; it is the principal Argentine port, and the centre of export and import

trade; the climate is mild and moist; a great deal of the foreign trade is conducted through Montevideo, but it monopolises all the inland trade. The entrances to the docks require constant dredging owing to the shallowness of the R. Plate. The city has 5 boulevards, along which are imposing buildings and spacious parks. Pop. 2,230,000. Also the largest province of the Argentine Republic, its coast-line extending between the mouths of the Plate and Rio Negro. Fertile and well-watered, enabling vast numbers of cattle and sheep to be reared. Pop. (excluding the federal capital) 13,300,000.

Buffalo, a ruminating horned animal, resembling an ox, but larger and

more powerful, native to India and Central and S. Africa. The Indian buffalo is as a rule domesticated as a beast of burden and in cultivation of rice-fields. It has spread to Egypt and S. Europe. The Cape buffalo of S. Africa is larger and fiercer than the Indian variety, and has short, flat horns. Its skin affords material for native shields. The water-buffalo of the Philippine Is. is a smaller species.



CAPE BUFFALO

Buffalo, a city of New York State, U.S.A., at the E. end of Lake Erie, 300 m. due NW. of New York; is a well-built, handsome, and healthy city; the railways and the Erie Canal are channels of extensive commerce in grain, cattle and coal; while immense ironworks, tanneries, breweries, and flour-mills represent the industries; electric power for lighting, traction, and factories is supplied from Niagara. Pop. 573,000.

Buffon, **George Louis Leclerc, Comte de**, a great French naturalist, born at Montbard, in Burgundy; his father one of the *noblesse de robe*; studied law at Dijon; spent some time in England studying the English language; devoted from early years to science, though more to the display of it, and to natural science for life on being appointed keeper of the Jardin du Roi (now Jardin des Plantes); assisted by Daubenton and others, produced 15 vols. of his world-famous *Histoire Naturelle* between the years 1749 and 1767. The saying "Style is the man" is ascribed to him, and he has been measured by some according to his own standard. Neither his style nor his science is rated of any high value now. (1707-1788).

Bug, a parasitic insect of which there are over 20,000 species. They feed on the juices of plants or the blood of animals. Many kinds are winged, and the chief characteristic is the biting or sucking mouth-organs. Many types possess stink-glands which emit an unpleasant smell. They multiply rapidly.

Bug, two rivers of E. Europe, the S. or Black Sea Bug, flowing S. through the Ukraine, the W. or Polish Bug, N. through the Ukraine and Poland, to the Vistula.

Buganda, a province of the Uganda Protectorate NW. of Lake Victoria, a native kingdom under a "Kubaka" and governed by three native ministers and a native assembly or "Lukiko."

Bugeaud de la Piconnerie, **Thomas**, marshal of France, born at Limoges, served under Napoleon; retired from service till 1839; served under Louis Philippe; contributed to the conquest of Algiers; was made Governor-General and created Duke for his victory over the forces of the Emperor of Morocco at the Battle of Isly in 1844. (1784-1849).

Buggy, a word of Indian origin applied to various types of carriage, a light, four-wheeled, hooded vehicle in the U.S.A.; a two-wheeled carriage with no hood in England, but with a hood in India.

Bugle, a wind instrument of copper with brass soldered to exposed parts. Widely used in armies, because of its penetrating note, for conveying various orders by certain calls.

Bugloss, the popular name for certain plants, common in England, which have rough, bristly leaves resembling an ox tongue, hence the name. It appears as a weed particularly in cornfields. *Lycopsis arvensis* is the small bugloss; *Echium vulgare* the viper's bugloss.

Buhl, ornamental work for furniture, which takes its name from the inventor (see below), consisted in pliering or inlaying metal with tortoiseshell or enamel, or with metals of another colour; much in fashion in Louis XIV.'s reign.

Buhl, or *Boule*, Charles André, an Italian cabinet-maker, inventor of the work which bears his name. (1642-1732).

Building Society, a society formed of raising subscriptions from the members for a stock or fund from which to grant advances upon freehold or leasehold property by means of mortgage, and to provide a means of investment of small savings. Building Societies were originally intended to assist the working classes to purchase dwelling-houses, and their growing usefulness produced an Act in 1836 for their encouragement and protection. Membership is now no longer restricted to the working classes. A Terminating Building Society fixes a date, according to its rules, for the termination of its activities, or it may cease to function when all the members have received advances. Permanent Building Societies, as the name indicates, have no terminating clause in their rules.

The majority of Building Societies are incorporated by certificate from the Registrar of Friendly Societies, who is also Registrar of Building Societies. Many restrictions as to the inflow of new money for investment were relaxed during 1934. Rate of interest to investors is about 3½% free of income-tax. The extraordinary growth in Building Societies of recent years is due to the housing shortage following the war and a more popular desire on the part of wage-earners to own their houses.

Altogether there are over 900 Building Societies in Great Britain. The amount advanced by all Building Societies in 1936 was £140,000,000. The total resources of the Societies amount to no less than £655,000,000.

Building Stone, stone quarried from the earth for constructional purposes. Such stone should be able to resist weather, carry the weight of the building, and be cut with reasonable ease. The most suitable are granite, sandstone and limestone. Granite is used largely in Aberdeen, is strong and impervious to moisture. Sandstone, of which the best is Craigleith stone, is white or yellow and easily dressed. Limestone weathers easily and includes Portland stone, which furnished much of the material for St. Paul's Cathedral and the Houses of Parliament, Bath stone and marble.

Builth Wells, a spa and market town of Breconshire, Wales, 15 m. N. of Brecon. It has saline, chalybeate, and sulphurous springs. Pop. 1,700.

Bukoba, port and district of Tanganyika Territory, E. Africa, on the W. bank of Lake Victoria. It is 3,750 ft. above sea-level and stands amidst large coffee plantations. It is the natural harbour

of the Ruanda district, but the port is much exposed during rough weather, though better landing facilities have now been provided.

Bukovina, a mountainous, forested and fertile district of Rumania, bounded on the W. by the Carpathian Mts.; formerly an Austrian duchy; the scene of much fighting during the Great War, being occupied by Russia. Cap. Cernauti (Czernowitz). Area 4,000 sq. m. Pop. 900,000.

Bulawayo, or *Buluwayo* (lit. "the town of Matabeleland, S. Rhodesia, very near the kraal of Lobengula, King of the Matabele; connected by rail with Cape Town and Beira. Its Government House was formerly the property of Cecil Rhodes, of whom there is a large bronze statue by John Tweed in Main Street. Near are the Matopopo Hills, where are buried Rhodes and Jameson. Pop. 33,000 (13,000 Europeans).

Bulb, a modified leaf-bud, formed on a ground, plant or beneath the surface of the ground, emitting roots from its base. It is formed of fleshy leaf-scales or of closely-packed concentric coats or layers of leaves, containing a reserve supply of food. Many spring flowers are bulbs, including the narcissus, daffodil, etc. They are to be distinguished from the corms, such as the crocus, in which the swollen part is a thickening of the stem.

Bulbul, a family of thrush-like birds belonging to the Pycnonotidae family, common to Abyssinia, India and Malaya. They are usually poor in flight, frequent jungles, gardens, etc., and are as much admired in the E. for their song as the nightingales among ourselves.

Bulford, village of Wiltshire, England, 2 m. N.E. of Amesbury. A stone said to be similar to those of Stonehenge lies in the Avon. Here is a large military camp. Pop. (incl. military) 4,000.

Bulgaria, a Balkan kingdom, with hills and fertile plains in the N., mountains and forests in the S.; Turkey and Greece the southern boundary, Yugoslavia the western, the Danube and the Dobruja (Rumania) the northern, while the Black Sea washes the eastern shores. The climate is mild, the people are industrious; chief exports are tobacco, eggs, fruit and cereals; vines, cotton, beetroot (for sugar) and roses (for attar of roses) are also grown. The production of silkworm cocoons is also considerable. Sofia, the capital, is the seat of a university. Varna, on the Black Sea, is the principal port. Bulgaria was cut out of Turkey and made independent in 1878, and E. Roumelia incorporated with it in 1885. In 1896 Bulgaria declared her independence of Turkey, and Prince Ferdinand (abdicated 1918) became Tsar of the Bulgarians. Bulgaria entered the Great War in Oct. 1915, on the side of the Central Powers. With the help of a powerful Austro-German army, she overran Serbia. In 1918 the Bulgarian army was defeated and an armistice signed on Sept. 30, 1918. The present Tsar, Boris III., is Ferdinand's son. Area 39,800 sq. m. Pop. 6,000,000.

Bulkheads, a term generally used for the partitions which divide the interior space of a ship. Usually they are water-tight and built transversely. They serve to restrain the inrush of water when damage results to a ship either in naval action or by collision. Many are automatically closing. Certain standards are laid down by Lloyd's. The term also includes the sea-wall which lines the shore and from which jetties, etc., protrude, and partitions in mines and tunnels.

Bull, an edict of the Pope, so called from *Bull*, a leaden seal (Latin *bullā*) attached to it.

Bull, John, a humorous impersonation of the collective English people, conceived of as well-fed, good-natured, honest-hearted, justice-loving, and plain-spoken; the designation is derived from Arbuthnot's satire, *The History of John Bull* (1712), in which the Church of England figures as his mother.

Bull, Ole Bornemann, a celebrated violinist, born in Bergen, Norway, pupil of Paganini; mostly performed his own compositions, and made tours in Europe and America with immense success. (1816-1880).

Bulldog, a species of dog used during the Middle Ages in bull-baiting. It is said to have descended partly from the mastiff. They are safe and good-natured, especially with children. White is the standard colour, though there are brindle, fawn and brown varieties. The lower jaw protrudes, and the face is set well back. The chest and legs are well developed, and the neck is short and thick.

Bullen, Frank Thomas, author, served at sea on whaling-ships, and wrote several notable books on sea life, among them *The Cruise of the Cachalot*, *The Log of a Sea Waif*, and *Creatures of the Sea*. (1857-1915).

Buller, General Sir Redvers Henry, served in China, Ashanti, South Africa, Egypt and the Soudan, with distinction, in the 60th King's Royal Rifles; held staff appointments, and was for a short time Under-Secretary for Ireland. On the outbreak of the Boer War he was made commander of the British forces, but was superseded by Lord Roberts owing to the number of reverses; he later relieved Ladysmith, and in 1901 he was retired on half-pay. (1839-1908).

Bullet, a projectile discharged from small arms such as a gun, rifle or revolver. At first a heavy, ball-shaped lead shot, the bullet was improved when gun-barrels were rifled or grooved, and a greater degree of accuracy as well as range resulted. The bullet of to-day is pointed, and consists of a lead core enclosed in a case of harder metal. Dumm-dum or expanding bullets are forbidden in civilised warfare.

Bull-fighting, a sport popular with the Latin races, especially in Spain, and consisting of a combat between men and bulls. Bulls are specially bred for fighting, and the best are Andalusian and Castilian. The most famous bull-ring is at Madrid—the Plaza de Toros. Mounted picadors, armed with lances, attack the animal until it is goaded to a sufficient frenzy. The banderilleros further excite it by planting banderillas (barbed darts with gaily coloured ribbons) in its neck. Finally the bull is distracted by the waving of red and yellow capes and a matador on foot armed with a sword stabs it to death by severing the vertebrae of the neck. In Spain the sport has necessarily waned during the Civil War. The worst abuses are avoided in France.

Bullfinch, a bird of the finch (Fringillidae) family, common in England. Its head and neck are thicker than those of other finches. It frequents wooded districts of N. and Middle Europe, feeds on seeds in autumn and fruit-tree buds in spring; breeds in England.

Bull Frog (*Rana palustris*), a large species of frog found in N. America, 8-12 in. long, of a dusky brown colour. The croaking uttered by it in the breeding season when the males congregate resembles the lowing of cattle.

Bullinger, Heinrich, a Swiss Reformer, born in Aargau; friend and successor of Zwingli; assisted in drawing up the Helvetic Confession; was a correspondent of Lady Jane Grey. (1504-1575).

Bullion, uncoined silver or gold, in bars, plate or other forms, but the term is frequently employed to signify the precious metals, coined and uncoined, especially with reference to imported and exported bullion.

Bull Run, a stream in Virginia, U.S., 25 m. from Washington, where the Union army was twice defeated by the Confederate, July 1861 and Aug. 1862.

Bulls and Bears, a term used on the Stock Exchange referring to those speculators who, in the former case, buy stock in order to sell it, before it must be subscribed or paid for, at a profit. In the latter case, the term means those who sell stock before they have bought it, hoping for a fall in price before settlement.

Bull Terrier, a dog larger than a terrier, possessing a strain of the bulldog. Its coat is short, close, and fine, and the colour is generally white. The dog has great strength and courage.

Bülow, Bernard, Prince von, Chancellor of the German Empire; early entered the Foreign Office. Was secretary to several embassies and Chargé d'Affaires to Greece during the Russo-Turkish War. He rejoined the Kaiser for his indiscreet *Daily Telegraph* interview in 1908 and resigned in 1909 as a result of a budget defeat. During the Great War he was recalled as Ambassador to Italy. (1849-1929).

Bülow, Friedrich Wilhelm, Baron von, a Prussian general; served his country in the war with Revolutionary France; defeated the French under the Empire in several engagements, and contributed to the victory at Waterloo, leading the column that first came to Wellington's aid at the decisive moment. (1755-1816).

Bülow, Karl von, German general. He distinguished himself in the Franco-Prussian War and was in charge of the 2nd German Army, which invaded Belgium in 1914; retired in 1916 after the Battle of the Aisne. (1846-1921).

Bulrush, the popular name in England of several species of marsh plants, the inflorescence of which is the familiar dense spike. The principal species are two of the genus *Typha*, *T. latifolia* and *T. angustifolia*, and the *Scirpus lacustris*, the stems of which are sometimes used for matting and caning chair seats.

Bulwark, that part of the side of a ship which projects above the deck, affording protection against heavy seas, bullets, etc.

Bumboat, a term for small boats, generally managed by women, which ply between vessels and the land, carrying provisions, stores, etc. Erroneously applied to the native trading-boats often seen in the East on the arrival of a liner.

Bunbury, a seaport and summer resort of W. Australia, in Wellington Co. Coal, tin, agricultural produce and timber are exported from its fine harbour in Koombah Bay. Pop. 6,000.

Buncombe, a district in N. Carolina, U.S.A., the representative of which many years ago delivered a dull speech in the U.S. Congress, whence the phrase to "talk Buncombe," i.e., to please one's constituency.



BULL TERRIER

Bundaberg, a river port and town of Queensland, Australia, on the Burnett, 10 m. from its mouth. Sugar is grown and made, and it exports chiefly sugar, treacle and timber. Pop. 11,000.

Bundelkhand, a territory in India, Provinces and Central Provinces, including a number of small states; has been extensively irrigated at great labour and expense. Diamonds are found.

Bungalow, a one-storied dwelling, usually with a thatch roof and a verandah, in use in India by Europeans. In England a house with one floor, or a light structure for holiday occupation.

Bungay, market town of Suffolk, England, on the Waveney. Flour-milling, malting and printing are carried on. It has an ancient castle and two interesting old churches. Pop. 3,000.

Bunhill Fields, an old cemetery off London, first used by dissenters in 1665, and containing the graves of Bunyan, Defoe, Isaac Watts and William Blake.

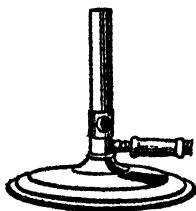
Bunion, a swelling consisting of a membranous sac, called a bursa, over the head of the bone at the base of the great toe. The most common cause is ill-fitting footwear.

Bunker Hill, an eminence of 112 ft., now included in Boston, U.S.A., the scene on June 17, 1776, of the first great battle in the American War of Independence.

Bunsen, Robert Wilhelm, distinguished German chemist, professor of Chemistry at Heidelberg; invented the charcoal pile, the magnesium light, and the burner named after him; discovered the antidote for arsenical poisoning, hydrate of iron, and studied the caecodyl compounds. He founded the study of spectrum analysis, discovered the salts of rubidium, and isolated metallic magnesium, and lithium. (1811-1899).

Bunsen Burner, invented by R. W. Bunsen, is a burner in which a determined amount of air

can be admitted to mingle with the gas before combustion. The result is a non-luminous flame leaving no deposit. It is largely used in chemical operations and for incandescent gas-burners, etc. The airholes on the side, the opening of which can be adjusted by means of a revolving regulator, are its essential features.



BUNSEN BURNER.

Bunter, a series of rocks forming the Bunter, lowest division of the Triassic System, consisting of red sandstones and conglomerates; found in Germany and the English Midlands.

Bunting, a group of birds (the *Emberizinae*) of the Fringillidae (Finch) family, well represented in the British Is., the Corn-, Yellow-, Reed-, and Snow-buntings breeding there and a number of other species being found as visitors.

Buntingford, market town of Hertfordshire, England, 10 m. N. of Ware, the centre of the Puckeridge Hunt. Pop. (rural dist.) 5,000.

Bunyan, John, author of the *Pilgrim's Progress*, born in Elstow, near Bedford, the son of a tinker, himself followed that humble craft; after an early conversion

was imprisoned for preaching to his poor neighbours, a confinement which extended first and last over twelve and a half years, and it was towards the close of it, and in the precincts of Bedford jail, in the spring of 1676, that he dreamed his world famous dream, the *Pilgrim's Progress*; encouraged by the success of it—for it leapt into popularity at a bound—Bunyan wrote some sixty other books, but except this, his masterpiece, not more than two, *Grace Abounding* and the *Holy War*, continue to be read. (1628-1688).

Buoy, any floating body employed to mark a point out the particular situation of a ship's anchor, a shoal, the direction of a navigable channel, etc. They are made of wood, or more commonly to-day of wrought-iron plates riveted together and forming hollow chambers.

Burbage, Richard, English tragedian, born in London, associate of Shakespeare, took the chief rôle in *Hamlet*, *King Lear*, *Richard III.*, etc. (1567-1619).

Burckhardt, John Ludvig, traveller, born at Lausanne, sent out from England by the African Association to explore Africa; travelled by way of Syria; acquired a proficiency in Arabic, and assumed Arabic customs; pushed on to Mecca as a Mussulman pilgrim—the first Christian to risk such a venture; returned to Egypt, and died at Cairo just as he was preparing for his African exploration; his travels were published after his death. (1784-1817).

Burdekin, river of Queensland, Australia, emptying into Upstart Bay after a course of 350 m.

Burdett, Sir Francis, a popular member of Parliament, married Sophia, the youngest daughter of Thomas Coutts, a wealthy London banker, and acquired through her a large fortune; becoming M.P., he resolutely opposed the Government measures of the day; advocated radical measures of reform, many of which have since been adopted; was prosecuted for a libel, fined £1,000 for condemning the Peterloo massacre, and imprisoned 3 months; joined the Conservative party in 1836, and died a member of it. (1770-1844).

Burdett-Coutts, Angela Georgina, daughter of Sir Francis Burdett, inherited the wealth of Thomas Coutts, her grandfather, which she devoted to all manner of philanthropic as well as patriotic objects; was made a peeress in 1871; received the freedom of the City of London in 1874, and in 1881 married Mr. William Lehmann Ashmead-Bartlett, an American, who obtained the royal licence to assume the name of Burdett-Coutts. (1814-1906).

Burdock (*Arctium lappa*), a plant of the Compositae order, often found growing by roadsides. The leaves (bracts) are hooked and woody, and assist in dispersing the fruit when it is ripe by clinging to the fur of animals, etc. It occurs in Europe and Asia, and is common in England.

Bureaucracy, a form of government where every special need is controlled and supplied by officials. The term is used to imply criticism of a Government which allows its departments to assume too great an authority, in which sense "red tape" is also often employed.

Burette, a graduated, cylindrical tube fitted with a tap, used in practical chemistry for delivering measured quantities of liquids.



BURDOCK

Burgas, one of the chief seaports of Bulgaria, on the Black Sea; exports include wheat, wool, etc. Pop. 38,000.

Burgenland, a province of Austria, bordering on Hungary, chiefly agricultural. Area 1,532 sq. m. Pop. 299,000. Cap. Eisenstadt.

Burger, *Gottfried August*, a German lyric poet, author of the ballads *Lenore*, which was translated by Sir Walter Scott, and *The Wild Huntsman*, as well as songs; led a wild life in youth, and a very unhappy one in later years; died in poverty. (1747-1794).

Burgess, a citizen of a borough, sometimes called a burgher. First mentioned with significance in 1264 at the formation of Simon de Montfort's Parliament, when two burgesses from each borough were included in its composition. To-day a burgess is qualified by his inclusion on the roll of burgesses as a rate-paying occupier of a house or business premises. Women are eligible as burgesses. The receipt of poor relief does not disqualify a burgess from any voting privilege. An honorary burgess is one who for some public service is granted the freedom of the city or borough.

Burgh, *Hubert de*, probably born in Ireland. Advised John to sign Magna Charta. Justiciar of England from 1215. Defended Dover, 1217. Under Henry III. opposed Peter des Roches, Bishop of Winchester. Earl of Kent, 1227. Disgraced through intrigues of foreign clerics, 1232. (d. 1243).

Burglary, consists, at common law, in breaking and entering the dwelling-house of another in the night (i.e., between the hours of 9 p.m. and 6 a.m.) with intent to commit a felony. But it is extended by statute to include anyone who (a) shall enter a house with intent to commit any felony therein, or (b) being in such house, shall commit a felony in it; and in either case, breaking out of the house in the night. The breaking must be of some part of the house (e.g., an outer or an inner door or window) and may be constructive (e.g., the gaining admission under the pretext of taking lodgings); and the slightest entry (e.g., putting in a finger or a hooked stick) is sufficient. The dwelling-house need not be occupied at the time (e.g., the tenant may have locked it up and gone to the seaside for a holiday). The crime is always a felony, and punishable by penal servitude up to life. Simple cases of burglary can be tried at Quarter Sessions (q.v.). If the offence is committed by day, or if it be in some place other than a dwelling-house it is called housebreaking.

Burgomaster, the title of the chief municipal town, answering to the English Mayor. In German towns the *burgenmeister* is the president of the executive council. The Scottish "provost" is a similar title. In Swiss Cantons there is a *burgomaster*, and the title is employed in Belgium.

Burgos, a province of N. Spain in Old Castile extending from the Cantabrian Mts. in the N. to the Duero in the S. and crossed by ranges of mountains. It is well watered and heavily forested; corn and cattle-raising are the chief industries. Area 5,500 sq. m. Pop. 363,000.

The cap. of the province and ancient cap. of Old Castile is a town of the same name on the Arlanzón, 225 m. N. of Madrid by rail; boasts a magnificent cathedral of the Early Pointed period, and an old castle; was the birthplace of the Cid, and once a university seat; it has leather and woollen industries. Here on July 30, 1936, General Franco set up an insurgent Government under the title "Junta de Defensa Nacional." Pop. 43,000.

Burgoyne, *John*, English general, and distinguished as the last sent out to subdue the revolt in the American colonies; after a victory or two was obliged to capitulate to General Gates at Saratoga and fell into disfavour; defended his conduct with ability and successfully afterwards; devoted his leisure to poetry and the drama, the *Hetters* being his best play. (1723-1792).

Burgundy was, prior to the 6th Century, a Teutonic duchy of varying extent in the SE. and E. of France; annexed to France as a province in the 6th Century. In the 9th Century it again became an independent kingdom, but on the death of Rudolph III. was reduced to the status of a duchy, and returned finally to the French crown in 1361. The country is noted for its wines.

Burgundy wines, the produce of the vineyards situated in the depts. of Yonne, Saône-et-Loire, and Côte-d'Or, in France. Beaune is the centre of the trade. The alcoholic strength is about 12 per cent., and the ordinary wines are stouter, rougher, and sweeter than claret. The finest have a velvety softness.

Burhanpur, a town in the Central Nimar district, 280 m. N.E. of Bombay; was at one time a centre of the Mogul power in the Deccan, and a place of great extent; is now in comparative decay; formerly famous for its muslins, silks and brocades, which are still produced in small quantities. Captured by Gen. Wellesley in 1803 and ceded to Britain in 1860. Pop. 35,000.

Burial Acts, laws relating to burial, of interment consolidated by the Burial Laws Amendment Act of 1880. Amendments were made in 1900. Under these Acts a coroner's order or registrar's certificate is to be delivered to the burial authorities, and the person who carries out the burial must give notice to the registrar within 7 days. The time of burial must be between 10 a.m. and 6 p.m. between April 1st and Oct. 1st, or between 10 a.m. and 3 p.m. between Oct. 1st and April 1st.

Buridan, *Jean*, a scholastic doctor of the 14th Century, born in Artois, and famous as the reputed author, though there is no evidence of it in his works, of the puzzle of the hungry and thirsty ass (called after him *Buridan's Ass*), between a bottle of hay and a pail of water, a favourite illustration of his in discussing the freedom of the will.

Burke, *Edmund*, orator and philosopher, writer, born at Dublin, and educated at Dublin University; entered Parliament in 1765; distinguished himself by his eloquence on the Liberal side, in particular by his speeches on the American war, Catholic emancipation, and economic reform; his greatest oratorical efforts were his speeches in support of the impeachment of Warren Hastings; he was a resolute enemy of the French Revolution, and eloquently denounced it in his *Reflections*; wrote in early life two small but notable treatises, *A Vindication of Natural Society*, and another on our ideas of the Sublime and Beautiful, and some time after planned the *Annual Register*, to which he was to be the last chief contributor. (1729-1797).

Burke, *Sir John Bernard*, genealogist, author of the *Peerage and Baronetage of the*



EDMUND BURKE

United Kingdom; produced, besides editing successive editions of it, a number of works on aristocratic genealogies. (1814-1892).

Burke, Robert O'Hare, Australian explorer, born in Galway; conducted an expedition across Australia, but on the way back both he and his two companions perished after terrible sufferings from privation and drought. (1820-1861).

Burke, William, a notorious murderer, native of Ireland; executed in 1829 for wholesale murders of people in Edinburgh by suffocation, after intoxicating them with drink. Their bodies he sold for dissection to an Edinburgh anatomist of the name of Knox, whom the citizens mobbed; he had an accomplice (William Hare) as bad as himself, who, becoming informer, was pardoned. His crimes gave rise to the expression "to burke."

Burleigh (or Burghley), William Cecil, Lord, a great statesman, born in Lincolnshire, educated for the legal profession, and patronised and promoted by the Protector Somerset; managed to escape the Marian persecution; Queen Elizabeth recognised his statesmanlike qualities, and appointed him Chief Secretary of State, an office which, to the glory of the Queen and the good of the country, he held for forty years, till his death. He was made a baron in 1571 and in 1572 succeeded the Marquess of Winchester as Lord High Treasurer. His administration was conducted in the interest of the common weal without respect of persons. (1521-1598).

Burlesque, the art of distorting, exaggerating, and ridiculing a work of art in a humorous manner in writing, acting, or speech, to be distinguished from satire, in which the element of malice is present, and parody, which is a closer imitation of style and manner.

Burlington House, a public building in Piccadilly, London, headquarters of several learned societies; here each year the Royal Academy holds its annual exhibition of pictures. It consists of old Burlington House, bought by the State in 1854, and New Burlington House built subsequently.

Burma, until 1937 a province of British India, now separated, the executive authority being vested in a Governor (acting on behalf of the Crown) and an Advisory Council of Ministers. There is a bi-cameral legislature, the Lower Chamber being elective, the Upper partly elective (from the lower Chamber) and partly nominated by the Governor. The country lies E. of the Bay of Bengal, and is bounded landward by Bengal, Assam, Tibet, China and Siam; the country is mountainous, drained by the Irrawaddi, Salween, and Sittang Rs., whose deltas are flat, fertile plains; the heights on the Chinese frontier reach 15,000 ft.

The climate varies with the elevation, but is mostly hot and trying; rice is the chief crop; the forests yield teak, gum, and bamboo; the mines, iron, copper, lead, silver and rubies.

Burma is now divided into 7 administrative divisions under Commissioners (4 in Lower Burma and 3 in Upper). The Shan States in the E. of Upper Burma, the Arakan Hills and a few other districts are under special administration. Lower Burma consists of the coastal tract from Bengal to Siam. Upper Burma, cap. Mandalay, an empire nearly as large as Spain, was annexed in 1886. Area (including the Shan States, etc.) 291,600 sq. m. Pop. 15,000,000. Cap. Rangoon.

Burnaby, Frederick Gustavus, a traveller of daring adventure, born at Bedford, a tall, powerful man; Colonel of the Royal Horse Guards; travelled with Gordon in the Sudan; distinguished

for his ride to Khiva in 1875 across Tartary, of which he published a spirited account, and for his travels, the next year, in Asia Minor and Persia, and his account of them in *On Horseback through Asia Minor*; killed, pierced by an Arab spear, at Abu Klea; a daring aeronaut, he crossed the Channel to Normandy in a balloon in 1882. (1842-1885).

Burnard, Sir Francis Cowley, editor of *Punch*, of *Punch*; studied for the Church, and became a Roman Catholic; an expert at the burlesque, and author of a series of witty papers entitled *Happy Thoughts*, wrote several plays, of which *Black-eyed Susan* is the best known. (1836-1917).

Burne-Jones, Sir Edward, artist, of Welsh descent; came early under the influence of the Pre-Raphaelite movement; he was one of the foremost, if not the foremost, of the artists of his day; imbued with ideas that were specially capable of art-treatment; William Morris, Dante Gabriel Rossetti and he were bosom friends from early college days at Oxford, and Rossetti's influence is evident in his early work. The Tate and other public galleries possess some of his finest paintings. (1833-1898).

Burnes, Sir Alexander, born at Montrrose, his father a cousin of Robert Burns; was an officer in the Indian army; appointed Resident at Kabul; was murdered, with his brother and others, by an Afghan mob. (1805-1841).

Burnet, Gilbert, born at Edinburgh, of an old Aberdeen family; professor of Divinity in Glasgow; afterwards preacher at the Rolls Chapel, London; took an active part in supporting the claims of the Prince of Orange to the English throne; was rewarded with a bishopric, that of Salisbury; wrote the *History of the Reformation*, an *Exposition of the Thirty-nine Articles*, and the *History of His Own Times*. (1643-1715).

Burnett, Mrs. Frances Eliza Hodgson, novelist, born in Manchester, resident for a time in America; wrote *That Lass o' Lowrie's*, *Little Lord Fauntleroy*, and several other novels, characterised by shrewd observation, pathos and descriptive power. (1849-1924).

Burney, Sir Cecil, Admiral of the Fleet. He first saw service in 1832, and was in charge of the Atlantic Fleet in 1911. In 1914 he was in command of the Channel Fleet, and later acted as second in command of the Grand Fleet, in which capacity he served at Jutland. Second Sea Lord, 1917; Admiral of the Fleet, 1920. Created a Baronet, 1921. (1858-1929).

Burney, Frances. See *D'Arbly, Madame*.

Burnham, Sir Edward Levy-Lawson, son of Joseph Moses Levy, printer. Assumed uncle's name of Lawson, 1875. Took over management of *Daily Telegraph* from his father, 1895. A Liberal paper, it became 'Unionist' that year. (1833-1916).

Burnham, Sir Harry Lawson Webster, *Levy-Lawson*, First Viscount and Second Baron, called to Bar, 1891. M.P., 1885-1892; 1893-1895 and 1905-1906; 1910-1916. Also served on the L.C.C. Mayor of Stepney, 1908-1909. Succeeded to Baroncy, 1916. Viscount, 1919. Sold *Daily Telegraph*, 1927. (1862-1933).

Burnham Beeches, a wood of large girth in Buckinghamshire, England, 3 m. from Maidenhead. It was acquired by the City of London Corporation in 1878 and is open to the public. Burnham, the village close by, has remains of an old abbey and the gateway to a former market place dated the middle of the 12th Century. Pop. 4,100.

Burnham-on-Crouch, a town of Essex, England, on the N. estuary of the Crouch; a yachting resort; has oyster beds. Pop. 3,416.

Burnham-on-Sea, Somerset, England, 7 m. N. of Bridgwater, with wide expanses of sand. Pop. 5,000.

Burnley, Lancashire, England, 27 m. N. of Manchester; with cotton mills, foundries, etc. Pop. 98,300.

Burnouf, Eugène, an illustrious Orientalist, born in Paris; professor of Sanskrit in the Collège de France; an authority on Zend or Zoroastrian literature; edited the text of and translated the *Bhagavata Purāna*, a book embodying Hindu mythology; made a special study of Buddhism; wrote an introduction to the history of the system. (1801-1852).

Burnous, Arabs, a hooded cloak worn by the hood resembling somewhat that worn by Capuchin friars. It is usually white, but occasionally brown and fawn.

Burns, Rt. Hon. John, politician and Socialist, born at Vauxhall, of humble parentage; trained to be an engineer, imbued with socialistic ideas from a fellow-workman, a Frenchman, a refugee of the Commune from Paris; became a platform orator in the interest of Socialism, and popular among the working class; was 4 times elected member of the London County Council for Battersea; and represented Battersea in Parliament, 1892-1918; was President of the Local Government Board, 1903, in Campbell-Bannerman's administration, a post which he held until 1914; became president of the Board of Trade in 1914, and resigned on the outbreak of war. Never joined the Labour Party; retired to private life, 1918. (1858-)

Burns, Robert, celebrated Scottish poet, born at Alloway, near Ayr, son of an honest, intelligent peasant, who tried farming in a small way, but did not prosper; began farming himself on his father's decease in 1784, but took to rhyming by preference; meditated emigrating to Jamaica, after publishing a few poems composed to raise money for that end, when friends and admirers persuaded him to stay; he was invited to Edinburgh; his poems were reprinted, and money came in; soon after he married, and took a farm, but, failing, accepted the post of excise-man in Dumfries; fell into bad health, and died in 1796, aged 37. Among his most famous poems are *The Cotter's Saturday Night*, *Tam o' Shanter*, *Hallowe'en*, and *The Two Dogs*. (1759-1796).



ROBERT BURNS

Burns and Scalds, injuries to tissue heat in burns, or moist heat in scalds. Burns are classified as follows: (1) where the skin is reddened and the condition rapidly heals; (2) where the outer skin is destroyed and a new skin forms without a scar; (3) where the true skin is partly destroyed and sloughing occurs with a possibility of septic complications; (4) where the true skin is wholly destroyed; (5) where the muscles have been destroyed and (6) where the bones are charred, needing amputation. Shock may be treated by stimulants, clothes should be removed with care and wounds treated with an antiseptic and a plicic acid dressing applied. Blood-poisoning is liable to set in and medical aid should be sought in serious cases.

Burtonisland, a seaport on the Firth of Forth, in Fifeshire, Scotland, 6 m. from Kirkcaldy. There is a good harbour with considerable shipping. Pop. 5,809.

Burr, one that has developed a hook-like process which catches in the fur of passing animals and aids in the distribution of the fruit. Also the name of a hard, siliceous rock much used for millstones.

Burr, Aaron, born at Newark, N.J., U.S.A. Called to the Bar; Attorney-General, New York State, 1789-1791. U.S. Senator, 1791-1797. Tied with Jefferson on first vote, presidential election, 1800. Vice-President, U.S.A., 1801-1805. Defeated in contest for governorship of N.Y. through influence of Alexander Hamilton, whom he killed in a duel, 1804. Arrested on suspicion of treason concerning Texas; acquitted 1808. (1756-1836).

Burritt, Elihu, a blacksmith, born in Connecticut; devoted to the study of languages, of which he knew many, both ancient and modern; best known as the unwearied advocate of Peace all over America and a great part of Europe; organised first international Peace Congress in 1848 at Brussels, and another at Paris the following year. (1810-1879).

Burry Port, an urban district of Carmarthenshire, Wales, 4 m. from Llanelli. Coal is exported. Pop. 5,700.

Bursa, the medical name of certain small sacs containing a clear, sticky fluid found in the body at places where friction would otherwise be present, e.g., round joints. Inflammation of a bursa is known as bursitis, one of the commonest examples being "housemaid's knee."

Bursar, the holder of an endowment in a Scottish University, now awarded after competitive examination. The term also applies to a student holding a scholarship with a grant of financial help from a municipal authority.

Burslem, a pottery-manufacturing town in Staffordshire, England, and the "mother of the Potteries"; manufactures porcelain and glass. It is now part of the borough of Stoke-on-Trent. Birthplace of Josiah Wedgwood, who is commemorated here in the Wedgwood Institute.

Burton, John Hill, historian and miscellaneous writer, born at Abodeen; an able man, trained for the Bar; wrote articles for the leading reviews and journals, *History of Scotland*, *The Book-Hunter*, *The Scot Abroad*, etc.; characterised by Lord Rosebery as a "dispassionate historian"; was Historiographer-Royal for Scotland. (1809-1881).

Burton, Sir Richard Francis, traveller, born in Hertfordshire; served first as a soldier in Sind under Sir C. Napier; visited Mecca and Medina as an Afghan pilgrim; wrote an account of his visit in his *Personal Narrative of a Pilgrimage*, etc.; penetrated Central Africa with Captain J. H. Speke, and discovered Lake Tanganyika; visited Utah, and wrote *The City of the Saints*; travelled in Brazil, Palestine, and Western Africa, accompanied through many a hardship by his devoted wife; translated the *Arabian Nights*; his numerous works on his travels show him to have been daring and adventurous. (1821-1890).

Burton, Robert, an English clergyman, born in Leicestershire; Scholar of Christ Church, Oxford; lived chiefly in Oxford, spending his time there for some 50 years in study; author of *The Anatomy of Melancholy*, which he wrote to alleviate his own depression of mind, a book which is a perfect mosaic of quotations on every conceivable topic, familiar and unfamiliar, from every manner of source. (1577-1640).

Burton-upon-Trent, a town in Staffordshire, England; brews and exports large quantities of ale, the water of the place being peculiarly suitable for brewing purposes. Pop. 49,500.

Bury, a manufacturing town in Lancashire, shire, England; 10 m. NW. of Manchester; originally a small place engaged in woollen production, but cotton is now the staple manufacture, in addition to paper-works, dye-works, etc. Sir Robert Peel and John Kay, inventor of the flying shuttle, were both natives of the town. Pop. 58,400.

Bury, John Bagnell, historian; son of a canon of Clogher; educated at Trinity College, Dublin; wrote concise histories of various stages of Roman Empire, and of Greece to death of Alexander; edited Gibbon; collaborated in *Cambridge Ancient History*. Professor at Dublin of Modern History, 1893-1904, and Regius Professor of Greek, 1898-1902. (1861-1927).

Bury St. Edmunds, a market town in Suffolk, England, 25 m. NW. of Ipswich, named after Edmund, King of East Anglia, martyred by the Danes in 870, in whose honour it was built; famous for its abbey, of the interior of which in the 12th Century there is a matchlessly graphic account in Carlyle's *Past and Present*. Pop. 16,700.

Busaco, of Beira, Portugal, where Wellington with 40,000 troops beat Massena with 65,000 in 1810.

Bushel, an English dry measure of capacity used for grain, potatoes, fruit, etc. It contains 4 pecks or 8 gallons.

Bushey, an urban district of Hertfordshire, shire, England, on the outskirts of Watford. Here is the Royal Masonic Institute for boys. Near by is Bushey Heath. Pop. 11,243.

Bushey Park, a Royal Park in Middlesex, England, on the Thames. In it there is the famous triple avenue of horse-chestnut trees which was planted by William III. The National Physical Laboratory is here. The grounds of Hampton Court Palace adjoin.

Bushido, the code of knighthood of Japan, setting forth the highest ideals of honour and courage, and still an influence among the Japanese people; literally, the word signifies "the way of the warrior."

Bushire, the chief port of Iran on the Persian Gulf, and a great trading centre. Pop. 18,000.

Bushmen, or *Boesmans*, aborigines of SW. Africa; a rude, nomadic race, at one time numerous, but now fast becoming extinct; they are small in stature and with scarcely any culture, their language being very defective.

Bushrangers, in Australia, gangs made up at first of convicts who escaped to the bush, and there associated with other desperadoes; these were succeeded by others who caused a great deal of trouble by their maraudings, attacks on gold escorts, and murders. Among the most notorious of these Australian bushrangers were the Kellys.

Busiris, in Greek mythology, a King of Egypt who used to offer human beings in sacrifice; seized Hercules and bound him to the altar, but Hercules snapped his bonds, and thereupon sacrificed Busiris himself.



BUSHMAN

Buskin, a kind of half-boot worn after the custom of hunters as part of the costume of actors in tragedy on the ancient Roman stage, and a synonym for tragedy.

Busoni, Ferruccio, Italian composer and pianist, born at Empoli, near Florence, played at a Vienna concert when nine. At 15 had his cantata *Il Sabato del Villaggio* performed at Bologna. Won Rubinstein prize; professor at St. Petersburg, 1890. Toured abroad considerably, but returned to Berlin, where he died. Chief opera *Die Brautwahl*. In year of death completed music drama *Dr. Faustus*. (1866-1924).

Buss, Frances Mary, shares with Dorothea Beale (q.v.) the honour of having laid the foundations of high-school education for girls. She founded the North London Collegiate School. (1827-1894).

Bustards, a group of birds (Otididae and deserts of Europe, Asia Minor, and N. Africa. They are large birds with thick legs and toes somewhat resembling the Ostriches, but powerful in flight.



GREAT BUSTARD

The Great Bustard (*Otis tarda*), the Little Bustard (*Tetrax tetrax*) and the Houbara Bustard (*Houbara macquensis*) are occasional winter visitors to England. The Great Bustard was formerly a resident. The largest species is the African Kori Bustard. The Great Bustard measures 8 ft. across the wings. The male bird has a peculiar way of bending its head back almost to the upturned tail when courting.

Butane, a gas yielded during the heating of petroleum and forming the principal constituent of liquid oxyacetylene used in freezing machines. Can be made by treating ethyl iodide with zinc at 300° C. It belongs to the hydrocarbons.

Butcher Bird, a name for the shrike family (Laniidae). In particular it applies to the true shrikes (genus *Lanius*) which impale the small animals (birds, frogs, mice, and bees and other insects), upon which they feed on thorns, thus creating a sort of larder of reserve food. Four species are visitors to England. The Red-backed (*Lanius collurio*), at least, breeds here. The woodchat does occasionally. The Great Grey and the Lesser Shrikes are also occasional visitors.

Bute, an island in the Firth of Clyde, Scotland, about 16 m. long and from 3 to 5 broad, N. of Arran, nearly all the Marquis of Bute's property, with his seat at Mount Stuart; separated from the mainland on the N. by a romantic winding arm of the sea called the "Kyles (the narrow) of Bute." Pop. 19,000.

Bute, John Stuart, Third Earl of, statesman, born of an old Scottish family; Secretary of State, and from May 1762 to April 1763, Prime Minister under George III., over whom he had a great influence; was very unpopular as a statesman, his leading idea being the supremacy of the King; spent the last 24 years of his life in retirement, devoting himself to literature and science. (1713-1792).

Buteshire, a county of Scotland comprised of the islands of Bute, Arran, Great Cumbrae, Little Cumbrae, Holy Isle, Inchmarraoch and Fladda. Area 219 sq. m. The inhabitants are largely engaged in agriculture (cattle and potatoes being main crops), cattle-raising and fishing.

The islands were taken from the Norwegians by Alexander III., King of Scotland. Pop. (estimated) 18,800.

Butler, Joseph, an eminent English divine, born at Wantage, in Berks; at first a Dissenter, conformed to the Church of England; became preacher at the Rolls, where he delivered his celebrated *Sermons*; was raised to the See of Bristol; made Dean of St. Paul's and finally Bishop of Durham; his great work was *The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature*. (1692-1752).

Butler, Josephine Elizabeth, social reformer, born at Glendale, Northumberland, daughter of John Grey of Dilston. Married, 1852, Rev. George Butler, headmaster of Liverpool College, 1866-1882. A befriender of friendless girls, agitated from 1869 against State regulation of prostitution. (1828-1906).

Butler, Samuel, born in Worcestershire, the son of a small farmer; author of *Hudibras*, a poem of about 10,000 octosyllabic lines, in which he subjects to ridicule the ideas and manners of the English Puritans of the Civil War and the Commonwealth; it appeared in three parts, the first in 1663, the second soon after, and the third in 1678; the book was an especial favourite with Charles II., who was never weary of quoting from it. (1612-1680).



SAMUEL BUTLER

Butler, Samuel, novelist, painter, and musical composer. He wrote in satirical vein on modern civilisation and largely inspired Bernard Shaw. *Erewhon*, published in 1872, his best-known work, in which he points his criticism by reversing the procedures of modern society (e.g., in the land of Erewhon criminals are sent to hospital and sick people to prison), is still read with considerable enjoyment. His *Way of All Flesh* foreshadowed the modern novel. (1835-1902).

Butt, Dame Clara, operatic singer, born in Sussex; made her début in London at the Albert Hall in the *Golden Legend* and in *Orfeo* at the Lyceum, after which appearances she was much in demand as a singer. (1872-1936).

Butt, Isaac, Irish patriot, distinguished for his scholarship at Dublin University; entered Parliament, and at length took the lead of the "Home Rule" party, but could not control it, and retired. (1813-1879).

Butte, the county seat of Silver Bow Montana, U.S.A., in the centre of a very rich mining district, copper being the chief output. Pop. 39,500.

Butter, a substance consisting of the fatty ingredients of milk, together with a small proportion of salt and other substances, and used as a food. It is made by separating the cream from milk and churning it until the particles adhere together in a fairly solid mass. Mechanical cream separators are now used, and the separation occupies only a few minutes. After separation the cream is "ripened" by allowing the multiplication of lactic bacilli to take place. It is then rapidly agitated in a churn until the butter forms, when it is "worked" to get rid of excess of water, by pressure. Most imported butter comes from Denmark, New Zealand, and Australia.

Buttercup, the name given to various species of *Ranunculus* (the Crowfoot family). Under the antique names

of Crowfoot, King-cup, Gold-cup, and other quaint but suggestive titles, these flowers were formerly much praised by our poets. *R. acris*, the common or meadow Buttercup, *R. bulbosus*, the bulbous buttercup, and *R. repens*, the creeping buttercup or crowfoot, are all common in England.

Butterfield, William, architect, was born and died in London. Built numerous churches; in London especially. All Saints', Margaret Street, St. Alban's, Holborn, are his work. Put in practice remarkable theories as to colour. In Oxford built Balliol College chapel, Keble College, and parts of Merton College. Designed churches for Australia, India, and S. Africa. (1814-1900).

Butterfly, the common name of all diurnal Lepidoptera, lepidopterous insects. The family is a very extensive one. The insects undergo a series of transformations before reaching the perfect state. The female lays a large quantity of eggs, which produce larvae, commonly called caterpillars. After a short life these assume a new form and become chrysalids or pupae. Within the covering the insect develops, to emerge as the active and brilliant butterfly. They suck nectar from plants and are short-lived. The largest butterflies are found in the tropics. They differ from moths by having their wings erect when at rest and by the possession of knobbed antennae. Some of the species simulate a remarkable likeness to other objects, such as green leaves, flowers, bark, etc., a feature (known as "mimicry") which serves to protect them from enemies. The order Lepidoptera, to which they belong, is usually divided into Lepidoptera Rhopalocera (the butterflies) and the Lepidoptera Heterocera (the night-flying moths).

Buttermere, a lake in Cumberland, England, 8 m. SW. of Keswick. It is 330 ft. above sea-level and $1\frac{1}{2}$ m. long and $\frac{1}{2}$ m. wide. It is situated among beautiful scenery.

Buttermilk, the fluid residue remaining after butter has been taken from cream. It is usually given as food to pigs, but is a nourishing drink easily digested. Some inferior cheeses often contain buttermilk.

Butterwort, a plant of the *Pinguicula* genus, three species of which grow in Britain. It grows in damp places and is carnivorous. The leaves secrete a sticky fluid to which insects adhere. When stimulated the leaves curl over and enclose the insect, which is then digested by an acid ferment. *P. vulgaris*, *P. lusitanica*, and *P. alpina* occur in Britain.

Buttress, in architecture, especially Gothic, a projection on the outside of walls to give additional support and prevent them from spreading under pressure from the roof. Flying buttresses are often arched.

Butyric Acid, an acid originally obtained from butter and also present in perspiration. It is a colourless liquid, smells like rancid butter, and is prepared by the fermentation of certain sugars.

Buxton, a high-lying town in Derbyshire, England, noted for its calcareous and chalybeate springs, and a resort for invalids; is also famous for its rock crystals, its stalactite cavern, and its fine scenery. Pop. 15,400.

Buxton, Sir Sydney Charles Buxton, Earl, grandson of Sir Thomas Fowell Buxton, Member, London School Board, 1876-1882. Liberal M.P. Peterborough, 1883-1885; Poplar division of Tower Hamlets, 1886-1914. Under-Secretary for Colonies, 1892-1895. Postmaster-general, 1906-1910. President, Board of Trade, 1910-1914; G.O.M.G., 1914. Governor-

General, S. Africa, 1914-1920. Viscount Buxton, 1914; Earl, 1920. (1853-1934).

Buxton, Sir Thomas Fowell, a philanthropist, born in Essex, made his fortune as a brewer; was conspicuous for his interest in benevolent movements, such as the amelioration of criminal law and the abolition of slavery; represented Weymouth in Parliament. (1786-1845).

Buzancy, a town in the Ardennes dept., France, 20 m. S. of Sedan. It was a German base during the Great War and fell to the American Army under General Pershing in the Allied general offensive in Oct. 1918.

Buzau, a town of Rumania, capital of a dept. of the same name, stands on the lt. Buzau. It is the seat of a bishop, and a market town for the petroleum, wheat, etc., which are produced in the neighbourhood. Pop. 36,000.

Buzzard, a genus of birds of the Hawk family, resembling eagles in their manner of flight and in their general habits. They prey on rabbits, mice, rats, moles, insects, etc. Some species are common in England—e.g., the common Buzzard (*Buteo buteo*). Other species are found in almost every part of the world.



COMMON BUZZARD

Byblis, in the Greek mythology a daughter of Miletus, in love with her brother Caeus, whom she pursued into far lands, till, worn out with sorrow, she was changed into a fountain.

Byfleet, a town in Surrey, 2½ m. from Woking. It has a 14th-Century church. Pop. 4,819.

By-law, a law made by an incorporated company, or other body for the regulation of its own affairs, or the affairs entrusted to its care. Town councils, railway companies, etc., enact by-laws which are binding upon all coming within the sphere of the operations of such bodies. By-laws must, of course, be within the scope of the charter of incorporation and in accordance with the law of the land, and the powers conferred by Parliament under the Act for the regulation of municipal corporations. By-laws passed under the Joint Stock Companies Act of 1862 must be registered as a condition of their being in force. By-laws of the Railway Companies are subject to the approval of the Board of Trade. A period of forty days must elapse before a by-law may be enforced. The term by-law is of Anglo-Saxon origin, "by" meaning "town."

Byng, George, Viscount Torrington, admiral, favoured the Prince of Orange, and won the navy over to his interest; commanded the squadron that took Gibraltar in 1704; conquered the Spaniards off Cape Passaro; was made First Lord of the Admiralty in 1727, an office he held continuously till his death. (1683-1733).

Byng, John, admiral, fourth son of the preceding; having failed to compel the French to raise the blockade of Minorca, was recalled, in deference to popular clamour, and, being tried and condemned as guilty of treason, was shot at Portsmouth, "pour encourager les autres," a fate it is now believed he did not deserve. (1704-1757).

Byng of Vimy, Baron, British general, saw service in the Sudan and the Boer War and in Nov. 1917, as Sir Julian Byng, led the great attack on the Hindenburg line (q.v.), his outstanding success being the capture of Vimy Ridge.

He also led the attack on Cambrai, 1917. For the greater part of the war he commanded the Canadian Corps, and was made Governor-General of Canada in 1921. In 1919 he was created a baron and granted £30,000 in recognition of his services. In 1928 he became Chief Commissioner of the Metropolitan Police. (1862-1935).

By-product, an article of commerce produced in the process of manufacturing the main article. In recent years they have become very important, and in some cases have exceeded in value the original product. They are of particular value in counteracting adverse market conditions which affect the main product. Chemical research has led to the conversion of what was formerly waste into marketable goods. When a large number of by-products result in value equaling or exceeding the main product they are all spoken of as joint-products. Legislation has sometimes been employed to insist upon the utilisation of waste products when they are likely to become offensive.

Byrd, Richard Evelyn, American aviator, born at Winchester, Va. Began aviation, 1917. Accompanied Floyd Bennett in flight over North Pole, 1926. Then made Commander. Flew New York to France, in 42 hours, 1927. Flew over South Pole, 1929. Explored Antarctic in 1935. (1888-).

Byrd, or Bird, William, the greatest musician of the time of Elizabeth, composed madrigals, music for the virginal (published in *Parthenia*) and much sacred music; *Non Nobis, Domine* is ascribed to him. (c. 1542-1623).

Byrom, John, poet and stenographer, born near Manchester; invented a system of shorthand, now superseded, which he had the sole right of teaching for 21 years; contributed as "John Shadow" to the *Spectator*; author of the pastoral, *My Time, O ye Muses, was Happily Spent*; his poetry satirical and genial. (1692-1763).

Byron, George Gordon, Sixth Lord, an English poet, born in London, son of Captain Byron of the Guards, and Catherine Gordon of Gight, Aberdeenshire; spent his boyhood at Aberdeen under his widowed mother, until he succeeded his grandfather in the title and estates and removed to Newstead Abbey, Notts.; was educated at Harrow and Cambridge, spending, when at the latter, his vacations in London, where his mother had taken a house; wrote *Hours of Idleness*, a poor first attempt, which called forth a severe criticism in the *Edinburgh Review*, which latter he satirised in *English Bards and Scotch Reviewers*, and soon afterwards left England and spent two years in foreign travel; wrote first part of *Childe Harold*; "awoke one morning and found himself famous"; produced the *Giaour*, *Bride of Abydos*, *Hebrew Melodies*, and other works. In his schooldays he had fallen in love with Mary Chaworth, but she had not returned his affection, and in 1815 he married Miss Milbanke, an heiress, who in a year left him never to return, when a storm raised against him on account of his private life drove him from England, and he never came back; on the Continent, moved from place to place, finished *Childe Harold*, completed several short poems, and wrote *Don Juan*; threw himself into revolutionary movements in Italy and Greece, risked his all in the emancipation of the latter, and, while fighting there, died at Missolonghi in a fit, at the age of 36. (1788-1824).

Byron, John, naval officer, grandfather of the poet, nicknamed from his misfortunes "Foulweather Jack"; accompanied Anson in his voyage round the world, but was wrecked in his ship the *Wager*; suffered almost unexampled hardships, of which he wrote a classical account on his safe return home; he rose to the rank of admiral,

and commanded the squadron in the W. Indies during the American War; died in England. (1728-1786).

Byzantine Art, a decorative style of art patronised by the Romans after the seat of empire was removed to the East. It has been described by Fairholt as "an engraftment of Oriental elaboration of detail upon classic forms ending in their debasement." When Constantine the Great adopted the Christian faith in Byzantium, the arts, in those days the hand-maids of religion, developed from the new Christian standpoint, and Byzantine Art may be called Early Christian.

It expressed itself in architecture, sculpture, painting and mosaic work, and reached its golden age in the reign of Justinian (A.D. 527-565). The churches of St. Sophia, SS. Sergius and Bacchus, and the Holy Apostles were erected during this period. The movement westwards is seen in the churches of St. Mark at Venice, St. Vitale at Ravenna, St. Front at Périgueux, etc.

The arch appeared, the dome became a feature, and classical columns were also developed. Internal ornament was a striking feature. The walls were sheathed with marble, the vaults being covered with coloured mosaics on a gold background. Painting, as well as mosaic, rose to great technical excellence. In design the forms are stiff, conventional, and the draperies rigid, with sometimes magnificent colour.

Byzantine Empire, called also the Lower or the Greek Empire; dates from A.D. 395, when, on the death of Theodosius, the Roman Empire was divided between his two sons, Arcadius and Honorius, the Eastern section falling to the share of the former, who established the seat of his government at Byzantium, later known as Constantinople (now known as Istanbul). The empire included Syria, Asia Minor, Pontus, Egypt, Thrace and Greece.

The Byzantine Empire proper may be said to have begun with the founding of the great city of Constantinople, where the character and ideals of the Roman Empire were continued for 1,000 years after the Western portion of the Roman Empire had perished. For centuries it formed a bulwark of Christianity against paganism, after Constantine had adopted that faith.

The empire suffered many onslaughts by barbarians, especially the Slavonic tribes of the Balkans, but endured. It was strengthened by the great emperor Justinian I. Vandal enemies were overcome and his code of Roman Law, the Justinian code, remained for centuries. Under his successors until Heraclius (610) a dark period followed of wars with the Lombards, Persia and the Saracens, and a period of anarchy. Heraclius was able to restore in some part the empire's greatness, but Asiatic provinces rebelled, and after his death the empire was beset with enemies. The Saracens conquered most of the Asiatic provinces and the Bulgars brought the empire to its knees. Egypt was conquered, N. Africa was lost, and twice the capital was besieged by Mohammedans.

By this time the Byzantine Empire had become essentially Greek, and under the Isaurian dynasty, which succeeded Heraclius, some measure of order and prosperity returned. Varying fortunes followed, the Bulgars being a source of constant danger. For a time the division of the empire and the states made it subordinate to the Latin emperors, the first of whom was Baldwin of Flanders. Meanwhile the Turks had gradually won possession after possession, and eventually the whole of the Balkan peninsula fell into their hands during the 14th Century. In 1453 the siege of Constantinople and its subsequent sacking occurred, and with it the Byzantine Empire ended.

Byzantium, the ancient name of Constantinople (Istanbul), founded by Greek colonists in 657 B.C.

Caaba, an ancient Arab temple, a small square structure in the grand mosque of Mecca, with a mysterious black stone, probably an aerolite, built in it, on which all pilgrims who visit the shrine imprint a kiss.

Cab, the name given to one-horse public cars, vehicles, being a contraction of "cabriolet." The first cab was licensed in 1835, and the two-wheel type invented by Joseph Hansom, and named after him, came soon after.

Cabal, a secret intriguing faction in a State, a name applied to a junta of five ministers of Charles II. in power from 1667 to 1673, the initials of whose names go to make up the word; their names were Clifford, Ashley, Buckingham, Arlington, and Lauderdale; derived from caballa (q.v.).

Cabbage, an edible vegetable native to Britain, and universally used as food. Varieties include the Savoy, Jersey, cauliflower, broccoli, Brussels sprouts, etc. Cultivated cabbage is very different from the wild kind, which is still seen on the Mediterranean coast. The botanical name is *Brassica oleracea* (Cruciferae family).

Cabbala, a secret science alleged to have been divinely imparted in remote times and preserved by tradition, by

means of which the Rabbis affected to interpret the mystic sense of the words, letters and very accents of the Hebrew Scriptures. The name comes from a Hebrew word suggesting "to receive," and denotes "that which is received" or tradition.

Cabet, Étienne, a French communist, born in Dijon; a leader of the Carbonari; author of the *Voyage en Icarie*, in description of a communistic Utopia, which became the textbook of a communistic sect called "Icarians," a body of whom set out in 1848 to carry out his schemes in America, but failed. Cabet himself went out in 1849, transferred the settlement to Nauvoo, but died at St. Louis broken-hearted. (1788-1856).

Cabinet, the, in Great Britain the centre of the executive power, consisting of the Prime Minister and his principal colleagues. In origin it is a committee of the Privy Council, and came into being at the same time as the office of Prime Minister when George I. came to the throne, unable to speak English. The modern tendency has been for Cabinets to increase in size and adhere to a policy of collective responsibility for individual actions and words.

To-day the Cabinet in England is a committee of the most influential members of the two Houses of Parliament, appointed by

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the Crown on the recommendation of the Premier, who has been commissioned to form a Cabinet. Most members are chiefs of government departments, exceptions being the Lord President of the Council, the Lord High Chancellor and the Lord Privy Seal.

The Ministers of the Crown Act, 1937, provides that there shall be not more than 14 Cabinet Ministers entitled to sit in the House of Commons and not fewer than three in the House of Lords. With the exception of the Prime Minister and First Lord of the Treasury and the Lord High Chancellor (£10,000 a year each), all receive £5,000 a year. The same Act provided that there shall be not more than 21 Under-Secretaries of State in the House of Commons.

The King, constitutionally, must take the advice of the Cabinet and accord to it his moral and social support. The Prime Minister alone has the exclusive right to see the sovereign personally on important affairs of state, but other Ministers may discuss with the sovereign departmental matters. The Cabinet is a secret body and no non-member may be present at its sittings, except very occasionally when some departmental official is summoned to give special information. Since 1916 minutes of Cabinet proceedings have been preserved.

Cable, a large, strong rope or chain, such as is used to hold a vessel at anchor. It is usually made of hemp or steel. A ship's cable is usually 120 fathoms or 720 ft. in length. An electric-cable is composed of one or more copper wires enclosed in a compound of gutta-percha and resinous substances. This cover is called insulation. A lead covering is often superimposed on the insulation to keep out moisture, etc. Outside the lead is a layer of specially wound steel wire covered with jute, etc., to prevent corrosion.

Cabot, Giovanni (John), a Venetian pilot, born at Genoa, settled in Bristol, entered the service of Henry VII., and discovered Cape Breton I., Nova Scotia, about 1497; sailed in 1498 on another expedition and reached Greenland, Baffin Land, Newfoundland, and Nova Scotia. (1450-1498).

Cabot, Sebastian, son of the preceding; accompanied his father to N. America; sought service as a navigator in Spain, and though a projected expedition to Newfoundland did not mature, was appointed Pilot Major. He rejected also an offer of employment by Wolsey, and returned to Spain; attempted under Charles V. to plant colonies in Brazil, with no success, for which he was imprisoned and banished; was the first to notice the variation of the magnetic needle, and, as founder of the Merchant Adventurers, to open up to England trade with Russia. (1474-1557).

Cabral, Pedro Alvarez, a Portuguese navigator; sailing for the Indies, drifted on the coast of Brazil, on which he planted the Portuguese flag, 1500, and of which he is accounted by some the discoverer; continued his course, and established a factory at Calicut. This was destroyed by the Moslems, however, and after bombarding Calicut he established a new factory at Cochim. He returned to Portugal in 1501 with a cargo of great value. (1460-1526).

Cabrera, Ramon, Count, a Spanish general, born at Tortosa, Catalonia, a zealous supporter of the claims of Don Carlos, took up arms in his behalf and fought with considerable bravery and ferocity until driven into France; after some months' imprisonment he came to England, where he died after a further abortive effort. In 1875 he advised the supporters of Don Carlos to adhere to Alfonso XII. (1810-1877).

Caceres, a Spanish province in the N. of Extremadura; the name also of its capital, famous for its bacon and

sausages. The province is noted for its pasturage (pigs, sheep and goats reared). Phosphates are produced. Pop. (prov.) 468,700; (town) 23,500.

Cachalot, or **Sperm Whale**, the largest of the toothed whales, often

attaining 60 ft. in length with a head of abnormal size; hunted for the oil obtained from its blubber, for spermacetti,

CACHALOT

and the ambergris found within its intestine. It feeds chiefly on cuttle-fish and is found in warm waters from Iceland to the Antarctic.

Cachar, a great tea- and rice-growing district in Assam. Pop. 500,000.

Cache, name given in North America to a hole in the ground for hiding provisions when they prove cumbersome to carry, or as a source of supply for others.

Cachet, *Lettre de*. See *Lettre de Cachet*.

Cactus, prickly exogenous plants, varying in form and size, and often of abnormal shape; found mostly in Mexico, California and S. America. They are grouped together in the natural order Cactaceae, in which there are some 25 genera and 1,000 species. In general, they are plants with thick, fleshy stems and leaves in which respiration is reduced to a minimum and water is stored, often in great quantities—features which are most essential in arid climates. They usually bear a solitary flower, which is as a rule large and brilliantly coloured.

Cacus, a mythological brigand of gigantic stature, the son of Vulcan, who occupied a cave in Mount Aventine, represented by Virgil as breathing smoke and flames of fire; stole the oxen of Hercules as he was asleep, dragging them to his cave tail foremost to deceive the owner; strangled by Hercules in his rage at the deception quite as much as the theft.

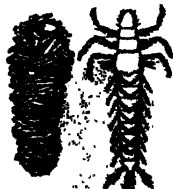
Cadamosto, a Venetian in the service of Portugal, discovered the Cape de Verde Is. in 1482, and sailed as far as the mouth of the Gambia; wrote the first book giving an account of modern voyages, published posthumously. (1432-1477).

Cadbury, George, philanthropist and Quaker and Liberal, he was the head of the important cocoa firm bearing his name, in connection with which he was a pioneer of industrial welfare in establishing the model village of Bourneville. He also owned the *Daily News* (1839-1922).

Caddis Fly, an order of insects (Trichoptera) allied to the

dragonfly. The grub lives in ponds and streams, enclosed in a sheath of sticks, gravel, sand, etc., which serves as a protection for the soft body. The adult is a four-winged insect feeding on plant-juices. Many species are found in England.

Cade, Jack, an Irish adventurer, headed an insurrection in Kent, in 1450, in the reign of Henry VI.; accompanied with his following on Blackheath; demanded of the king redress of grievances; was answered by an armed force, which he defeated; entered the city; the citizens retreating, he had to flee, but was overtaken and slain.



CADDIS FLY:
CASE AND LARVA

Cader Idris, a mountain in Merionethshire, Wales, S. of Dolgelly. It rises 2,920 ft. and commands a beautiful view embracing Cardigan Bay.

Cadet, a younger or youngest son of a noble family; also the name given to a young man in training for the rank of an officer in the Navy or Army. In Britain military cadets are trained at Woolwich or Sandhurst; naval cadets at Dartmouth, and air force cadets at Cranwell. A naval cadet holds the lowest grade as a candidate for a commission in the Royal Navy. A Cadet Corps is a body of youths trained (mostly at Public Schools) on military lines. Service is voluntary.

Cadi, an Arabic title of an inferior judge (in courts of summary jurisdiction) who was required to be a Muslim of adult years, free, of upright character, and learned in the Koran.

Cadiz, a fertile maritime province of Spain, in Andalusia; mountainous in the N. and W. Ceuta, in Morocco, is included in the province for administrative purposes. Chief products: olives, vines, fruit (oranges in particular), cork, fish. Area 2,834 sq. m. Pop. 506,000.

The capital of the province is a town of the same name, one of the chief commercial ports in Spain, standing at the NW. extremity of the Isle of León, and separated from the rest of the island by a channel crossed by bridges. It is 50 m. from Gibraltar, and carries on a large export trade. Has a naval wireless station. In 1936, at the outbreak of the Spanish Civil War, Cadiz became one of the insurgent strongholds. Pop. 75,000.

Cadmium, a chemical metallic element belonging to the same group as zinc. Symbol Cd, atomic number 48, atomic weight 112.41. It was discovered by Strohmeyer in 1817, and occurs naturally as its sulphide, CdS, in the mineral known as greenockite. It also occurs in most zinc ores, from which most of the cadmium of commerce is extracted. It is a soft, bluish-white metal, and is used as a protective plating on iron and steel, as an ingredient of various alloys (e.g., anti-friction bearings), as the cathode of the Weston standard voltaic cell, and, in the form of its sulphide, as a bright yellow paint ("cadmium yellow").

Cadmus, a semi-mythological person, age, founder of Thebes, in Boeotia, to whom is ascribed the introduction of the Greek alphabet from Phoenicia and the invention of writing: in the quest of his sister Europa, was told by the oracle at Delphi to follow a cow and build a city where she lay down; arrived at the spot where the cow lay down, he sent, with a view to its sacrifice, his companions to a well guarded by a dragon, which devoured them; slew the dragon; sowed its teeth, which sprang up into a body of armed men, who speared each other to death, all but five, who, the story goes, became the forefathers of Thebes.

Cadogan, Earls. (1) **William Cadogan**, an Irish barrister; attended the Duke of Marlborough throughout his campaigns; Colonel of "Cadogan's Horse," and Quartermaster-General, 1701. In 1712 accompanied Marlborough into retirement; reinstated by George I. and served against the Jacobites in the 1715 rebellion. Created an Earl, 1718. (1675-1726). (2) **George Henry Cadogan**, Fifth Earl of second creation (1800); succeeded father as Earl, 1873. Under-Secretary for War, 1875-1878; Lord Privy Seal, 1885-1892; Lord Lieutenant of Ireland, 1895-1902. (1840-1915).

Cadorna, Count Luigi, Italian general, born at Palianza, son of Count Raffaele Cadorna. His failure on the Isonzo front culminating in the disaster

of Caporetto (Nov. 1917), was chiefly due to circumstances beyond his control. Attended Allied Military Council, Versailles; but placed on half-pay, 1918. Published *The War on the Italian Front*, 1921. Marshal, 1924. (1850-1928).

Cadoudal, Georges, chief of the Chouans (q.v.), born in Brittany, the son of a farmer; took up arms to restore the Bourbons in the teeth of the Republic, but was defeated; refused to serve under Bonaparte, who would have enlisted him; came over from London, whither he had retired, on a secret mission from Charles X.; was arrested, and, after a short trial, condemned and executed, having confessed his intention to overthrow the Republic and put Louis XVIII. on the throne. (1774-1804).

Cadoxton, a town in Glamorganshire, S. Wales, situated in an iron- and coal-mining area. It has been absorbed by the town of Barry, where many find employment at the docks. Pop. 6,548.

Cadre, the framework of a regiment or corps, usually taken to refer to the permanent officers from the lance-corporal and subaltern to the highest rank, on whom the regiment or corps is centred and who form a nucleus for expansion in emergency.

Caduceus, originally a herald's wand in ancient Greece, it became the attribute of Hermes as messenger and herald of the Gods. As such it is usually represented as a winged rod entwined with two serpents.

Cæcum, a large closed pouch, the first part of the large intestine and opening into the colon. The appendix is attached to it.

Cædmon, an English monastic poet of the 7th Century, concerning whom our knowledge is derived from Bede's *Ecclesiastical History*, and the fragment of a hymn by whom, preserved by Bede, is the oldest specimen extant of English poetry. Wrote a poem on the beginning of things at the call of a voice from heaven, saying as he slept, "Cædmon, come sing me some song"; thereupon he began to sing the story of Genesis and Exodus, many other tales in the sacred Scriptures, and the story of Christ and the Apostles, and of heaven and hell to come.

Caen, a fine old Norman town, capital of the dept. of Calvados, France, on the R. Orne, about 65 m. SE. of Cherbourg; lace the chief manufacture; the burial-place of William the Conqueror. It is a well-built town and has fine old public buildings, a university and a large library. It is connected with the sea by canal, has considerable trade, and manufactures which include lace, cotton, etc. Pop. 58,000.

Caerlaverock, or **Carlaverock**, a village in Dumfriesshire, Scotland, on the Solway Firth. The ruins of the castle, formerly the seat of the Maxwells, Earls of Nithsdale, is near by at the mouth of the R. Nith. Pop. 850.

Caerleon, a small old town in Monmouthshire, England, on the Usk, 2½ m. NE. of Newport; celebrated by Tennyson in connection with Arthurian legend. It is a very ancient place, and contains baths, sections of walls, and other relics of Roman times. It is the site of a Roman fortress which has been excavated since 1926, and has the finest Roman amphitheatre in England. Pop. 2,300.

Caernarvon, a maritime county in N. Wales, with the highest mountains (including Snowdon) and grandest scenery in the Principality, and a capital of the same name on the Menai Strait; with the noble ruins of a castle, in which Edward II., the first Prince of Wales, was born. Area (county), 569 sq. m. Pop. (county) 121,000; (town) 8,500.

Caerphilly, a parish and market town of Glamorganshire, S. Wales, 7 m. from Pontypridd. It has wool and textile manufactures, ironworks, and is the centre of a coal-mining district. There are ruins of Caerphilly Castle, once the greatest stronghold in Wales. Pop. 35,760.

Cæsar, name of an old Roman family of the Julia gens claiming descent from the Trojan Æneas. The Emperors of Rome from Augustus to Nero of right inherited it (Augustus in virtue of the fact that he was the adopted son of Julius Cæsar), though the title, together with that of Augustus, was applied to succeeding emperors and to the heirs-apparent of the Western and the Eastern Empires. It survived in the titles of the German Kaiser and the Czar of Russia and in that of the sar of Bulgaria.

Cæsar, **Gaius Julius**, the greatest of Roman statesmen and soldiers, by birth and marriage connected with the democratic party; early provoked the jealousy of Sulla, then dictator, and was, by an edict of proscription against him, obliged to quit the city; on the death of Sulla returned to Rome; was elected to one civic office after another, and finally to the consulship. United with Pompey and Crassus in the First Triumvirate (60 B.C.); was appointed to the government of Gaul, which he subdued after nine years to the dominion of Rome; his successes awoke the jealousy of Pompey, who had gone over to the aristocratic side, and he was recalled; this roused Cæsar, and, crossing the Rubicon with his victorious troops, he soon saw all Italy lying at his feet (49 B.C.); pursued Pompey, who had fled to Greece, and defeated him at Pharsalus (48 B.C.); was thereupon elected dictator and consul for five years, distinguishing himself in Egypt and elsewhere; returned to Rome (47 B.C.); conceived and executed vast schemes for the benefit of the city, and became the idol of its citizens; was assassinated on the Ides (the 15th) of March, 44 B.C., at the age of 58. (102-44 B.C.).



JULIUS CÆSAR

Cæsarea, a village and seaport of Palestine, 30 m. N. of Joppa, built in honour of Augustus Cæsar by Herod the Great; now in ruins, though a place of note in the days of the Crusades. The modern spelling is Kaisariéh. Also **Cæsarea Philippi**, at the source of the Jordan, whence Christ turned to go up to Jerusalem, and so by His sacrifice perfect His disciples' faith in Him. To-day it is a village of Syria called Baniyas. Also the former name of Jersey.

Cæsarian Section, or **Operation**, the removal of the child from the mother's body through an opening cut in the abdominal wall, necessary sometimes when the child cannot be born in the natural way. It does not involve serious difficulties or dangers, and is often the means of saving the lives of both mother and child. Julius Cæsar is said to have been born thus.

Cæsium, a rare chemical metallic element, belonging to the same family (alkali metals) as lithium, sodium, potassium, and rubidium. Symbol Cs, atomic number 55, atomic weight 132.81.

Caffeine, or **Theine**, a white, crystalline compound known chemically as 1:3:7-trimethylxanthine, with the formula $C_8H_{10}N_4O_2$. It is the active principle in coffee, tea, kola, and maté, dry tea containing as much as 3½ per cent. It stimulates the action of the heart, has a restorative effect, and is somewhat diuretic. It has been pre-

pared synthetically, but is usually obtained commercially from tea or coffee.

Cagliari, capital of the Italian island of Sardinia, chief town of a province of the same name, and the chief port, on the S. coast, standing on the Gulf of Cagliari; lies on the slopes of a hill, and is on the site of an ancient Carthaginian town. Has a State University. Exports lead, zinc and salt. Pop. (prov.) 476,000; (town) 105,000.

Cagliostro, Count **Alessandro di**, impostor, his real name being Giuseppe Balsamo; born in Palermo of poor parents; early acquired a smattering of chemistry and medicine, by means of which he perpetrated the most audacious frauds; married a pretty woman named Loroza Feliciano, who became an accomplice, and wrung large sums from his dupes wherever he went; thrown into the Bastille for complicity in the Diamond Necklace affair; later he was arrested again and committed to the fortress of San Leone, where he died at 52, his wife having retired into a convent. (1743-1795).

Cagots, a race of uncertain origin in the Basque Provinces in the SW. of France and also found in Béarn, Gascony, and Brittany; treated as outcasts in the Middle Ages, owing, it has been supposed, to some taint of leprosy, from which, it is argued, they were by their manner of life in course of time freed.

Cahir, or **Caher**, a town in Co. Tipperary, Ireland (Eire), 11 m. from Clonmel, on the R. Suir, at the foot of the Galtee Mts., amidst beautiful scenery. Cahir Castle stands on an island in the river. Pop. 1,900.

Caiaphas, the High-Priest of the Jews was hailed and who found Him guilty of blasphemy.

Caicos, a group of small islands numbering 30 in all, of which only eight are inhabited. They were annexed to Jamaica in 1874 and with Turks Is. form a Dependency. Pop. 5,700.

Caillaux, **Joseph Marie Auguste**, French politician. Trained as a lawyer, he entered the Civil Service, and was elected to the Chamber of Deputies in 1898. He acted as Minister of Finance four times before the Great War, and from 1911 to 1912 he was Prime Minister. Arrested in 1918, he spent two years in prison on a suspicion of treason, but in 1925 he returned to politics as Finance Minister to handle the franc depreciation question, and held the same post again in 1926, making debt agreements with Britain and the U.S.A. Two years later he brought about the fall of the Poincaré Government. (1863-).

Caiman, or **Cayman**, the name of certain species of alligator (g.v.), differing from them in having a shield of bony plates in the skin of the under parts of the body. They are found in Central and S. America.

Cain, according to Genesis, the first-born of Adam and Eve, and, therefore, of the race. He murdered his brother Abel out of jealousy because Abel's sacrifice was accepted by God, whereas his own was rejected. For which he was condemned to be a fugitive and a vagabond on the earth, and a mark put on him lest any meeting him should slay him in ignorance. He left Eden and dwelt in the Land of Nod on the E. (Gen. iv.).

Caine, **Sir Thomas Henry Hall**, novelist, born in Cheshire, of Manx blood; began life as architect and took to journalism; author of a number of novels bearing on Manx life, such as *The Decemster* and *The Manxman*; his most famous novel, *The Christian*, his greatest but most ambiguous work, has been translated into most of the languages of Europe. (1853-1931).

Cainozoic, or Tertiary Period, of geologists, in which were deposited the rocks which contain fossils of the early forms of mammals. In England the age is represented by the London Clay, Barton, and Bagshot Beds (Eocene) and the Pliocene Beds which cover most of East Anglia. During this period we find an increasing number of fossils of birds and mammals, including those of some still surviving species.

Caird, John, an eloquent Scottish preacher, born at Greenock, Principal of Glasgow University, famous for a sermon entitled *The Religion of Common Life*, preached before Queen Victoria at Crathie in 1855; made a special study of the philosophy of religion, and wrote eloquently on it. (1820-1898).

Cairn, a heap of stones often, though not always, loosely thrown together, generally by way of a prehistoric sepulchral monument, and it would seem sometimes in execration of some foul deed. To-day they are sometimes erected as landmarks or as memorials. In the Middle Ages they frequently marked the resting-place of the coffin of a distinguished man on its way to the cemetery.

Cairngorm, a yellowish brown variety of rock-crystal, so called from being found, among other places, on one of the Scottish Grampians, in Aberdeenshire, bearing the name.

Cairns, seaport of N. Queensland, Australia, exporting from its excellent harbour mainly sugar, timber, fruit, and gold, tin, silver, etc. Pop. 13,000.

Cairns, Hugh MacCalmont, Earl, lawyer and politician, born in Co. Down, Ireland; called to the English Bar; entered Parliament, representing Belfast; became Lord Chancellor in Disraeli's Government in 1868 and again in 1874; appointed Solicitor-General and knighted, 1858. Lord Justice of Appeal, 1866. Became Baron Cairns of Garmoye, 1867; Viscount Garmoye and Earl Cairns, 1878; a fine parliamentary orator and one of the most distinguished lawyers of his day. (1819-1885).

Cairn Terrier, a type of short-haired and active, and grey, brindle, or sandy in colour. The coat is hard, but not coarse.

Cairo, capital of Egypt in Africa; on the right bank of the Nile, 12 m. S. of the head of the Delta, and 120 m. S.E. of Alexandria, covers an extensive area on a broad, sandy plain, and presents a strange agglomeration of ancient and modern elements. The modern city is the fourth founded in succession on the same site, and remains of the former cities are included in it, old walls, gateways, narrow streets, and latticed houses, palaces and many mosques, the most striking of which are those of Tulun, Kalaun, Barbuk, and of Sultan Hasan.

There are three gates of the city, Bab-en-Nasr, Bel-el-Futuh, and Bab-Zuweylich, which are fine examples of Mohammedan architecture. These, though much spoiled by time and tourists, still represent the brightest period of Saracenic art. The most modern part of the city consists of broad boulevards, with European-built villas, hotels, etc. There is a museum possessing a remarkable collection of Egyptian antiquities, especially Pharaonic relics, and a unique library containing over 100,000 volumes of Eastern literature. Modern improvements include new bridges over the Nile, new motor roads



CAIRN TERRIER

and suburbs. At one, Heliopolis, there is now an air station of the N. African air-route from Cairo to Cape Town. There is also a university with 2,000 students.

Extensive railway communication and the Nile waterway induce a large transport trade, and the town serves as a depot for goods of every variety from Sudan, Upper Egypt, India, Persia, Asiatic Turkey and for many European manufactures, but there is little industry, and what there is consists chiefly of cotton-weaving and printing, an industry established by Mehemet Ali in Bulak. There are also paper-mills and gunpowder works.

The population is mixed, consisting to-day of 1,064,567 persons. The townsfolk are half Arab, half Egyptian, while Copts, Turks, Jews, Italians and Greeks are numerous; it is a centre of Mohammedan learning, and since 1882 the centre of British influence in Egypt. During the Great War it was the administrative headquarters of the Allied leaders in the operations in Egypt and Palestine.

Caisson, in engineering, a chamber of laying the foundations of piers of bridges, quay walls, etc., to allow excavation in water-tight conditions.

Caithness, a level, except in the W. and S., and somewhat barren county in the N.E. of Scotland, with a bold and rocky coast; fishing the main industry, of which Wick is the chief seat; the inhabitants are to a great extent of Scandinavian origin, and English, not Gaelic, is the language spoken. Area, 685 sq. m. Pop. 25,600.

Caius College, Cambridge, originally called Gonville Hall, was re-founded in 1558 by Dr. John Caius. (1510-1573).

Cajamarca, an inland department of Peru, bounded on the N. by Ecuador. It is mountainous, watered by tributaries of the Amazon; chief industries cattle-raising and silver-mining. Area 12,500 sq.m. Pop. 212,760. The capital is a city of the same name with ruins of the palace of Atahualpa, the last of the Incas. Pop. 14,000.

Cajeput, a small evergreen tree (*Melaleuca leucadendron*) of the Myrtaceae order, with spikes of white flowers, a native of tropical Australia, the Malay Peninsula, and the Indian Archipelago, and often cultivated elsewhere in hot-houses. An aromatic oil is distilled from its leaves.

Calabar, a Southern province of Nigeria, the country flat and the climate unhealthy. Pop. 899,000. Also the chief town of the province. Exports consist chiefly of palm-oil and palm kernels. Pop. 15,000. New Calabar is a port 100 m. E. of Old Calabar.

Calabar Bean, African bean (the fruit of the *Physostigma venenosum*, a plant of the Leguminosae order), employed in medicine; known as the Ordeal Bean, having been used in W. Africa to test the innocence of people charged with witchcraft.

Calabash, the hard shell of the fruit-gourd trees of India and W. Africa, the epicarp of the *Crescentia cujute* (Bignoniaceae) being used in tropical America, that of the *Lagenaria vulgaris* (Cucurbitaceae) in India.

Calabria, a fertile dept. embraced in the Italy, and traversed by the Apennines; has tunny and anchovy fisheries; yields grains and fruits and a variety of minerals; is inhabited by a race of somewhat fiery temper; is much subject to earthquakes. Pop. 1,751,000. In Roman times it was the name of a district in the S.E. peninsula (the heel) of Italy, lying between the Adriatic and the Gulf of Taranto.

Calais, a fortified seaport in the dept. of Pas-de-Calais, France, on the Straits of Dover, where it is 21 m. across; was in possession of the English from 1347 to 1558, and the last town held by them on French soil; is one of the chief landing-places for travelers from England to the Continent, and has considerable export trade, as well as cotton and tulle manufactures. It was one of the landing-ports of the British Expeditionary Force in 1914. It has a population of 70,000.

Calamander, a rare and valuable cabinet-wood resembling rose-wood, derived from the *Diospyros quercifolia*, a tree of the Ebenaceae (Ebony) order, found in Ceylon; yields veneers of exceptional quality.

Calamine, a name for (1) zinc carbonate, (2) the native hydrous silicate of zinc, used as a pigment in painting pottery, and (3) an alloy of zinc, lead, and tin.

Calas, Jean, a tradesman of Toulouse, whose son committed suicide, and who was charged with murdering him to prevent his going over to the Catholic Church; was tried, convicted, and sentenced to torture and death on the wheel; after which his property was confiscated, and his children compelled to embrace the Catholic faith, while the widow escaped into Switzerland. Voltaire took up her case, proved to the satisfaction of the legal authorities in France the innocence of the victims, got the process revised, and Louis XV. granted a sum of money out of the royal bounty for the benefit of the family. (1698-1762).

Calaveras, an inland county of California, E. of San Francisco, rich in minerals, with copper and gold mines, and remarkable for its forests of giant pines, the *Sequoia gigantea*, which occur there, including some of the largest and oldest trees in the world.

Calcareous Rocks, those sedimentary rocks composed almost entirely of compounds of lime, especially the carbonate. They are abundant in all parts of the world as chalk or limestone. They are chiefly of organic origin, being formed of the remains of animals with lime skeletons. Some limestones have been laid down as the result of denudation of earlier calcareous rocks, whilst others contain a certain amount of non-calcareous matter. Some chalk beds contain many flints.

Calceolaria, a genus of ornamental plants of the order Scrophulariaceae. Most have yellow flowers, and most of those in cultivation are hybrids. They are of S. American, Mexico, and W. Indies origin. There are 200 species.

Calchas, the soothsayer who accompanied Agamemnon to the siege of Troy; enjoined the sacrifice of Iphigenia to propitiate the gods, foretold the length of the war, and advised the construction of the wooden horse, a device by means of which Troy was surprised and taken.

Calcination, a term in metallurgy for the process of burning or roasting an ore. It can be done either in an air-blast in order to obtain the oxide, or without air to free any volatile constituent.

Calcite, or Iceland Spar, a form of carbonate of lime, abundant as crystals in many igneous rocks. It exhibits the phenomenon of double refraction.



CALCEOLARIA

Calcium, a chemical metallic element, belonging to the same family as strontium, barium and radium. Symbol Ca, atomic number 20, atomic weight 40.07. First isolated by Sir Humphry Davy in 1808; it does not occur in nature as the free element, but is widely distributed in the form of its compounds—e.g., Calcium carbonate, CaCO_3 (limestone, chalk, marble), Calcium sulphate, CaSO_4 (gypsum, alabaster, anhydrite) and Calcium phosphate, $\text{Ca}_3(\text{PO}_4)_2$ (the main constituent of bones).

Calculating Machines, instruments for counting mechanically, now much used in banks, insurance offices, and large mercantile establishments. In a common type of machine the sums to be worked are set by means of keys like typewriter keys, and the machine adds columns of numbers, or of pounds, shillings and pence, and prints the result. The British mathematician, Babbage (1792-1871), planned many machines for more difficult operations. One, in unfinished form, may be seen in the S. Kensington Museum. Besides Babbage other inventors include Gunter (the sliding scale), Viscount Mahon, Charles Xavier, Thomas of Colmar and Burroughs. The ancient abacus, still in use among Eastern traders, is the simplest surviving form of mechanical aid to calculation.

Calculus, a branch of mathematics largely developed by J. Bernoulli (1645-1705), G. W. Leibnitz (1646-1716), and Sir Isaac Newton (1642-1727) and, in the 19th Century, by Karl Weierstrass (1815-1897). Though it has many subdivisions, it may be roughly defined as the methods by which we discuss the properties of continuously varying quantities.

A typical method and the necessity for it may be indicated by a simple example, the motion of a train along a track or of a planet in its orbit. If we know the successive positions of the moving body at successive short intervals of time, the differential calculus enables us to calculate the speed, the change of speed, the change of direction of motion (i.e., the curvature of the path), and the effective force acting on the body.

Conversely, given the force at every point, and the initial position and velocity, the rules of the integral calculus assist us in calculating the position and velocity of the body at any future time. Expressed somewhat crudely, the differential calculus has to do with the differentials (increments or decrements) of varying quantities; while the integral calculus is a process of summation or integration of those differentials.

In medicine a calculus is a stone-like body formed round a central core in any part of the body by the accretion of various substances, such as uric acid, phosphates, or calcium.

Calcutta, in India, on the left bank of the Hugli, the largest and westernmost branch of the Ganges delta, about 80 m. from the sea; it is the cap. of Bengal and formerly of the Indian Empire, and the residence of the Governor-General; the Government buildings, Bishop's College (now an engineering school), High Court, town hall, bank, museum, university, St. Paul's Cathedral, and many other English buildings have earned for it the name "city of palaces"; but the native quarters, though being improved, are still squalid, the houses of mud or bamboo.

An esplanade, numerous quays, an excellent water-supply, gas, electricity and tramway services add to the amenities; there are extensive dockyards, ironworks, timber yards, and jute mills; extensive railway and steamboat communications make it the chief emporium of commerce in Asia; ships of 5,000 tons enter the docks; founded in 1690, Calcutta was captured by Surajah Daulah, and

the "Black Hole" massacre perpetrated in 1756; became the capital of India in 1772; has suffered frequently from cyclones; the population are two-thirds Hindus, less than a third Mohammedan, and 4 per cent. Christian and number 1,190,000 (including Howrah) 1,485,000.

Calcutta Cup, the trophy for which England and Scotland compete annually at Rugby football, presented by the Calcutta Club.

Calcutta Sweep, a gigantic sweepstake, the chief prizes in which run into thousands of pounds, organised on the Derby each year by the Calcutta Club.

Calder, river in the W. Riding of Yorkshire, England. It rises near Burnley and joins the R. Aire at Castleford. It forms part of the canal system of England known as the Aire and Calder Navigation.

Calderon, Philip Hermogenes, painter, born at Poitiers, of Spanish ancestry, came to England aged 12. His masterpiece is "Her Most High, Noble and Puissant Grace" (a little princess). R.A., 1867; he painted 1891 "The Renunciation of St. Elizabeth of Hungary," which is now in the Tate Gallery. (1833-1898).

Calderon de la Barca, the greatest Spanish dramatist, born at Madrid; entered the army, and served in Italy and Flanders, producing the while dramas which were received with great enthusiasm; took holy orders, and became a canon of Toledo, but to the last continued to write poems and plays; he was a dramatist of the first order, and has been ranked by the more competent critics among the foremost of the class in both ancient and modern times. (1600-1681).

Caldey, an island of Pembrokeshire, Wales, 2½ m. S. of Tenby. It has an abbey of the Cistercian monks and an agricultural college.

Caleb, son of Jephunneh the Kenezite—understood to mean one of a pre-Israelitish tribe of S. Canaan, descended from Kenaz (Num. xxiii. 12) and adopted by or mixed with the tribe of Judah. He was colleague of Joshua in the spying expedition sent by Moses (Num. xiii. 6), and upon the conquest Hebron became his inheritance (Josh. xiv. 14). When 85 he conquered the Anakims there. (Josh. xv. 13-19).

Caledon, a town in the Cape Province, Union of S. Africa, 65 m. from Cape Town. It has mineral springs. The products of the district are agriculture, fruit, sheep and cattle. European population of town nearly 2,000. District, Europeans 11,000. The Caledon R. flows through the S. part of the Orange Free State to join the Orange R.

Caledonia, the Roman name for Scotland, land N. of the Wall of Antoninus, since applied poetically to the whole of Scotland.

Caledonian Canal, a canal across Scotland, executed by Telford, for the passage of ships between the Atlantic and the North Sea, 60 m. long, 40 m. of which consist of natural lakes; begun 1803; finished 1823; cost £1,300,000; has 28 locks; was constructed for the benefit of coasting vessels to save the risks they encountered in the Pentland Firth.

Caledonian Market, (strictly the Metropolitan Cattle Market), a market held in Caledonian Road, Holloway, London, and consisting of stalls, stands, etc., where almost every conceivable article of portable size can be purchased, especially second-hand goods. Prior to the advent of imported frozen and chilled meat, it performed its original function of a cattle-market.

Calendar, a distribution of the year register, containing in the form of a register, the order of days, weeks, months, festivals, etc., as they occur; so called from the Roman "Calends." The ancient Egyptians used one of 365 days, divided into twelve months of thirty days. The Jews use a Calendar dating from 3760 B.C., when, according to their tradition, the world was created. It varies in length from 354 to 384 days. The Greek Calendar divided the years into twelve lunar months, and an extra month was added every alternate year. The resultant error was rectified by omitting the extra month every seven or eight years.

The Roman Calendar of Romulus was of ten months, consisting of 304 days—38 weeks of eight days each. It was altered by Julius Caesar with the help of Sosigenes, and is called the Julian or Solar Calendar, and forms the basis of Calendars in Christian countries to-day, though a new style Calendar was adopted by a regulation of Pope Gregory XIII. in 1582 to meet a demand for greater accuracy in the date of Easter. The Mohammedan Calendar began with the flight of Mohammed from Mecca in A.D. 622, and is purely lunar.

Calender, a machine consisting of two revolving rollers, or more cylinders (calenders) revolving so nearly in contact that paper or cloth passed between them is smoothed or glazed by their pressure. The rollers are composed of compressed paper or steel.

Calends (**Kalends**), the first day of the Roman month.

Calgary, a flourishing town in the province of Alberta, Canada; an important junction on the Canadian Pacific Railway and centre of a corn and stock-raising district. It has saw-mills, tanneries, iron foundries. Pop. 84,000.

Calibration, the principle of scientific measurement of bores of tubes, originally of the bore or "calibre" of a gun where the dimensional measurement is not constant throughout the length of the tube. It is a method of correction, and is illustrated in the measurement of a thermometer tube which is first divided into equal distances between freezing and boiling points. The marks are then corrected by observing the length of the mercury column at different points, thus checking the slight variations which cannot be entirely prevented during manufacture.

Calibre, the internal diameter or bore of a gun. Larger guns are distinguished by their calibre and are referred to as 7-in. guns, 12-in. and so on.

Calico, a trade name for a cotton fabric, woven upon a simple system of equal numbers of fibres at right angles. The material is usually prepared in the "grey" state—i.e., the natural colour and is used for domestic purposes and often bleaching, dyeing, and printing applied for clothing and household uses.

Calicut, chief town on the Malabar coast, in the Madras Presidency of India, the first port at which Vasco da Gama landed in 1498, whence the cotton cloth first imported from the place got the name "calico." Exports include coconuts, coffee, tea and pepper. Pop. 82,000 (largely Moplahs).

California, the most south-westerly State in the U.S.A., occupies the Pacific seaboard between Oregon and Mexico, and is bounded landward by Nevada and Arizona. It is the second largest State, larger by a quarter than the United Kingdom. In the N. the rainfall is excessive and winters severe; in the S. there is little rain and a delightful climate.

Hay, wheat, barley, rice, oats, and maize are the most important products; the grape and all manner of fruits grow luxuriantly.

The live-stock industry (cattle and sheep) is also very important, and there are considerable fisheries and a big output of timber. It is the foremost State for gold and quicksilver, copper, lead, silver, zinc and many other minerals abound. It is one of the most important petroleum-producing states in the Union. The industries include fruit-canning and preserving and meat-packing. At Hollywood a film industry employing thousands of people has been established. The chief ports are San Francisco and Los Angeles. Sacramento is the capital. The Yosemite Valley, in the Sierra Nevada, through which falls the Merced R., is the most wonderful gorge of its kind in the world.

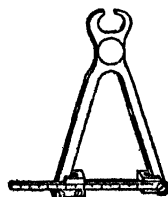
First settled in 1769, California was from its discovery down to 1846 politically associated with Mexico. Ceded by Mexico in 1848 to the U.S.A., the discovery of gold next year raised great excitement, and brought thousands of adventurers from all over the world. Admitted to the Union in 1850, the original lawlessness gradually gave way to regular administration, and progress has since been steady and rapid. Pop. 5,677,000.

California, Lower (*Baja California*), an extensive, mountainous, dry, and scarcely habitable peninsula, stretching southward from the State, in Mexican territory. Agriculture is carried on in some of the valleys, and pearl and whale fisheries support some coast towns. Copper is an important mineral product. Gold and silver are also mined. It is divided, for administrative purposes, into the two territories of the N. (Cap. Mexicali) and the S. (Cap. La Paz). Pop. 95,000.

Californian Poppy, a genus (*Eschscholtzia*) of perennial herbs of the poppy family, native of the valleys and foothills of the Sierra Nevada mountains and cultivated as an ornamental annual. The name is less often given to the *Platystemon*, another genus of Papaveraceae native to California.

Caligula (*Gaius Caesar*), Roman Emperor from A.D. 37 to 41, youngest son of Germanicus and Agrippina, born at Antium; having ingratiated himself with Tiberius, was named his successor; ruled with magnanimity at first, while he lived in the unbridled indulgence of every lust, but after an illness due to his dissipation, gave way to acts of cruelty and impiety; declared himself a god, and had divine honours paid to him, till a conspiracy was formed against him on his return from an expedition into Gaul, when he was assassinated. (12-41 A.D.).

Calipers, an instrument for measuring diameters (internal or external) of objects; some forms resemble a compass with bent legs. The micrometer calipers are used for minute dimensions of such instruments as the telescope and microscope.



CALIPERS

Caliph (*Caliphate*), the name assumed by the successors of Mohammed in the government of the faithful and in the high priesthood. The holder of the title is supreme in both civil and religious matters. The principal caliphates are: (1) the Caliphate of the East, established by Abubekr at Mecca, transferred to Bagdad by the Abassides (632-1258); (2) the Caliphate of Cordova, established at Cordova by Abd-el-Rahman (756-1031); (3) the Caliphate of Egypt, established by the Fatimites (909-1171). It was at Bagdad that Moslem civilisation achieved its final develop-

ment. The most celebrated of the Caliphs of Bagdad was Haroun al Raschid (Aaron the Just) (786-808), under whom learning, science and art flourished. The most brilliant period of the Western Caliphate was during the 9th and 10th Centuries. The Eastern Caliphate lingered on till 1258, when Bagdad was sacked by the Mongols. The title was abolished in 1924 in Turkey by the National Assembly of Angora, when Mustapha Kemal was re-elected President.

Callander, a market town and tourist resort of Perthshire, Scotland, near the Trossachs. It is the scene of Scott's *Lady of the Lake*. Pop. 1,570.

Callao, the chief port of Peru, 7 m. from Lima, with a fine harbour, the safest on the coast, if not in the world; its prosperity depends on trade, which is less than it was before the annexation of the nitrate fields to Chile. Chief exports include sugar, cotton, hides, wool, vanadium, etc. Pop. 70,000.

Callernish, a district in the W. of Scotland, the island of Lewis, Scotland, 13 m. from Stornoway; noted for its circles of standing stones, from 10 to 17 ft. in height, the whole being in cruciform arrangement.

Callimachus, Greek grammarian and poet, born in Cyrene; opened a school at Alexandria and had distinguished pupils; was keeper of the library there; of his writings, which are said to have been on a variety of subjects and very numerous, only a very few epigrams and hymns remain.

Calliope, the muse of epic poetry and eloquence, is represented with a tablet and stylus, and sometimes with a paper roll. See *Muses*.

Calms, The regions of calm weather at sea, just N. of the equator, on the confines of the trade winds. These calms, which last for weeks at a time, are also known as the doldrums.

Calne, ancient market town of Wiltshire, England, 5 m. S.E. of Chippenham. Bacon-curing is the chief industry. Pop. 3,000.

Calomel, HgCl, mercurous chloride, a preparation of mercury much used in medicine. It is prepared by sublimation of a mixture of mercury and mercuric chloride. It is used in a variety of ailments, as a purgative, a vermifuge, etc.

Calorescence, the name given by the Professor Tyndall to the production of light from the invisible rays beyond the red end of the spectrum. These rays are the hottest, and magnesium can be burned and platinum brought to white heat by them. The action of the platinum renders the invisible rays visible, hence, "calorescent."

Caloric Theory, a theory of heat which postulated a weightless fluid "caloric," the presence of which caused a body to be hot. When a hot and cold body were placed in contact it was supposed that "caloric" flowed from the hot to the cold body. The theory was abandoned in favour of the kinetic or dynamical theory, as the result of the conclusive experiments of Count Rumford (Benjamin Thomson) in 1798-1799.

Calorie, the name given by physicists to the unit quantity of heat; the heat required to raise one gram of pure water from 15° to 16° C.; for certain practical purposes the calorie is taken to be 1,000 times this value.

Calorimeter, an apparatus for measuring quantities of heat. In its simplest form—viz., a copper can containing water—the rise of temperature caused by the immersion of a hot body in the

water is employed to measure specific and latent heats. A more complicated apparatus is necessary in determining the calorific values of fuels.

Calpurnia, the last wife of Julius Caesar, daughter of the consul Piso, who, alive to the danger of conspiracy, urged Caesar to stay at home the day he was assassinated.

Calshot, promontory of Hampshire, England, at the W. extremity of Southampton Water, since the Great War an important seaplane station.

Calumet, among the American Indians a pipe for smoking, which, if accepted when offered, was an emblem of peace, and, if rejected, a declaration of war.

Calvados, a maritime dept. in N. of France, skirted by dangerous rocks of the same name, with a fertile soil and a moist climate. Area 2,197 sq. m. Pop. 401,000.

Calvary, the place of the Crucifixion, identified with a hill on the N. of Jerusalem, looked down upon from the city, with a cliff from which criminals were cast down prior to being stoned; also name given to effigies of the Crucifixion in Catholic countries, erected for devotion.

Calverley, Charles Stuart, a clever English parodist. Fellow of Christ's Church, Oxford; wrote *Fly Leaves* and *Verses and Translations*; his parodies were among the most amusing of the century. (1831-1884).

Calvin, or Cavin, John, the great Reformer, born at Noyon, in Picardy; devoted for a time to the law, was

sent to study at the university of Orleans, after having mastered Latin as a boy at Paris; became acquainted with the Scriptures, and acquired a permanently theological bent; professed the Protestant faith; proceeded to Paris; became the centre of a dangerous religious excitement; had to flee for his life from France; retired to Basel, where he studied Hebrew and wrote his great epoch-making book, the *Institutes of the Christian Religion*; making after this for Strasbourg, he chanced to pass through Geneva, was arrested as by the hand of God to stay and help on God's work in the place, but proceeded with such rigour that he was expelled, though recalled after three years; on his return he proposed and established his system of Church government, which allowed of no license in faith any more than conduct, as witness the burning of Servetus for denying the doctrine of the Trinity; for twenty years he held sway in Geneva, and for so long he was regarded as the head of the Reformed Churches in Scotland, Switzerland, Holland and France. Besides his *Institutes*, he found time to write Commentaries on nearly all the books of the Bible; was a man of masculine intellect and single-hearted devotion to duty. His greatest work was his *Institutes*, published in Basel in 1535-1536. It was written in Latin, and four years after translated by himself into French. (1509-1564).



JOHN CALVIN

Calvinism, the theological system of which is that it assigns all in salvation to the sovereign action and persistent operation of Divine Grace.

Calydon, a famous town of Aetolia, near the R. Evrosus, and reputed to have been founded by Calydon, son of Aetolia. The walls have a circuit of over two miles. Meleager and other heroes

hunted the famous Calydonian bear in the district, Artemis having sent it to lay waste the fields.

Calypso, in the Greek mythology a nymph, daughter of Atlas, Queen of the island of Ogygia, who by her fascinating charms detained Ulysses beside her for 7 of the 10 years of his wanderings home from Troy; she died of grief on his departure.

Calystegia, the bindweeds, a genus of plants of the natural order Convolvulaceae. Two species are found in Britain—viz., *C. soldanella* (sea bindweed), which is found on the coasts, and *C. Septium* (the larger bindweed), which is found in hedges and which is pollinated by the hawk-moth—the distribution of the two being almost the same. They are twining plants.

Calyx, the outside set of floral leaves, called sepals, and affording protection to the vulnerable parts of the flower. They are *caducous* if they fall before the flower opens, *deciduous* if afterwards, and *persistent* if they remain until the fruit is ripe.

Cam, formerly Granta, a river of Cambridgeshire, England, 40 m. long, which joins the Ouse near Ely. It is navigable to Cambridge, 15 m.

Camalodunum, the Roman name of Colchester, Essex, England, which is the site of a large Roman encampment.

Camargue, *Île de la*, an island in the delta of the Rhône, France, about 150 sq. m. in area, and producing wine and cereals and pasturage for sheep and cattle. It is low-lying, and much is lake and marshland.

Cambacérès, Jean Jacques Régis de, Montpellier; took a prominent part as a lawyer in the National Convention; after the Revolution of the 18th Brumaire, was chosen second consul; Napoleon made him High Chancellor of the Empire as well as Duke of Parma; his *Projet de Code* formed the basis of the *Code Napoléon*. (1753-1824).

Cambay, the name of a small Moham- medan Salute State in the Gujerat States Agency, India. The chief town of the State, Cambay is a seaport N. of Bombay, on a gulf of the same name, which is fast silting up, in consequence of which the place, once a flourishing port, has fallen into decay. Pop. 87,700.

Camberley, a residential district of Surrey, England, 7 m. SW. of Ascot. Here is the military Staff College, and near is Sandhurst.

Camberwell, London, S. of the Thames, returning four members to Parliament. It includes Peckham, Nunhead and Dulwich. Pop. 251,000.

Cambodia, a province of French Indo-China, occupying an area as large as Scotland, in the plains of the Lower Mekong. The coast-line is washed by the Gulf of Siam; the landward boundaries touch Siam, Laos, Annam, and French Cochín-China; in the N. are stretches of forest and hills; a branch of the Mekong flows backward and forms the Great Lake; most of the country is inundated in the rainy season, and rice, tobacco, cotton and maize are grown in the tracts thus irrigated; pepper, kapok, salted fish, cattle, hides and timber are also exported; foreign trade is done through the port Kampot. The capital is Phnom-Penh, on the Mekong. The kingdom was formerly much more extensive; remarkable ruins of ancient grandeur are numerous. It has been under French protection since 1863. Its present King is Sisowathmonivong. Pop. 2,806,000.

Cambon, Pierre Paul, French ambassador, sador in London 1898-1920. Selected to smooth matters with England by becoming ambassador there after the Fashoda incident, he signed the Anglo-French agreement of 1904, and in 1912 exchanged with Sir Edward Grey letters regarding co-operation in the event of war. (1843-1924).

Camborne, market town of Cornwall, England, in a district rich in copper, tin and lead. Here the first locomotive was made by Richard Trevithick. Pop. 14,000.

Cambrai, a city in the dept. of Nord France, on the Scheldt; famous for its fine linen fabrics, hence called cambrios. Pop. 28,000. It was the scene of intensive fighting in the Great War during two battles in Nov. 1917 and Oct. 1918.

In the first battle, a British offensive under General Byng commanding the 3rd Army was planned in order to prevent the transfer of German reinforcements to the Italian front. For the first time tanks were extensively used, and after a resolute resistance by the enemy at Bourlon Wood, Cambrai was taken. In vigorous counter-attacks, however, most of the ground was lost.

In the second battle, which formed part of the final offensive of the war, the recapture of Cambrai was allotted to General Horne with the 1st Army and a Canadian Corps under General Currie. After violent fighting, it was finally captured on Oct. 3.

Cambria, the ancient name of Wales, the Celtic race to which the Welsh belong.

Cambrian, a system of rocks forming the series, and containing many forms of primitive animal life. The deposits, consisting of grits, sandstones, shales and slates, present considerable uniformity over the whole earth. Rocks of this age are particularly abundant in Wales. The principal fossils are trilobites and brachiopods.

Cambric, a linen fabric made from the finest quality yarns, and extensively used in the manufacture of handkerchiefs, collars, underclothing, etc. It was first made at Cambrai, France, whence comes the name.

Cambridge, county town of Cambridgeshire, England, stands in flat country, on the Cam., 58 m. N. of London; an ancient town with interesting archaeological remains; there are some fine buildings, the oldest round church in England, Holy Sepulchre, and a Roman Catholic church. The glory of the city is the University, founded in the 12th century, with its colleges housed in stately buildings, chapels, libraries, museums, etc., which shares with Oxford the academic prestige of England. It lays emphasis on mathematical and scientific as Oxford on classical, culture. Among its eminent men have been Bacon, Newton, Cromwell, Pitt, Thackeray, Spenser, Milton, Dryden, Wordsworth, Tennyson and Darwin. Pop. 86,800.

Cambridge, a suburb of Boston, U.S.A., one of the oldest towns in New England; Old Cambridge is the seat of Harvard University; the town is the centre of the book-making trade; here Longfellow resided for many years. Pop. 114,000.

Cambridge, Adolphus Charles, first Marquess of eldest son of the Prince and Duke of Teck, whom he succeeded in 1900, and Princess Mary of Cambridge, and elder brother of Queen Mary. A soldier in the British army, he served in the S. African War, became Lieutenant-colonel of Life Guards, 1914. Renounced continental titles and assumed name of Cambridge, 1917, when he became Marquess of Cambridge. (1868-1927).

Cambridge, Adolphus Frederick, First Duke of, seventh and youngest son of George III.; served as volunteer under the Duke of York in the campaign of 1794-1795; became Duke of Cambridge, 1801, was appointed Field-Marshal in 1813; was made Viceroy of Hanover in 1816, and continued so till, in 1837, the crown fell to the Duke of Cumberland. (1774-1850).

Cambridge, George William Frederick, Charles, Second Duke of, son of the preceding, and cousin to Queen Victoria; born in Hanover; served in the army; became Commander-in-Chief in 1859 on the resignation of Viscount Hardinge; Field-Marshal in 1862; retired in 1895, was succeeded by Lord Wolseley. (1819-1904).

Cambridgeshire, an inland agricultural county of England, one of the chief grain-producing counties, wheat being the chief crop, barley, oats, potatoes and beetroot also being important. Dairy-farming is also carried on and sheep-raising. The county is very flat and marshy in the N., with a range of chalk-hills, the Gog-Magog in the S.; is rich in Roman remains. Pop. 140,000.

Cambridge University, contains the following colleges: Peterhouse, founded 1284; Clare College, 1326; Pembroke, 1347; Gonville and Caius, 1348; Trinity Hall, 1350; Corpus Christi, 1352; King's, 1441; Queen's, 1448; St. Catharine's 1473; Jesus, 1496; Christ's, 1505; St. John's, 1511; Magdalene, 1542; Trinity, 1546; Emmanuel, 1584; Sidney Sussex, 1596; Downing, 1800; Selwyn, 1882; and Fitzwilliam House, 1869. There are 2 colleges for women; Girton, founded 1869, and Newnham, 1875. Each college is a corporation by itself, governed by statutes sanctioned by the crown, and capable of holding landed or other property.

Cambuskenneth, a ruined abbey near Stirling, Scotland. The first Scots Parliament met here in 1326, and here James III. and his Queen were buried.

Cambuslang, a town of Lanarkshire, Scotland, on the Clyde, 5 m. SE. of Glasgow. Here are large steel works and collieries. Pop. 25,000.

Cambyes, King of Persia, succeeded his father, the great Cyrus; invaded and subdued Egypt, but afterwards suffered serious reverses, and in the end gave himself up to dissipation and vindictive acts of cruelty, from which not only his subjects suffered, but the members of his own family; d. 521 B.C.

Camden, a busy town in New Jersey, U.S.A., on the left bank of the Delaware, opposite Philadelphia; industries, which are varied, include shipbuilding. Pop. 119,000.

Camden, William, a learned English antiquary, born in London; second master, and eventually headmaster in Westminster School, during which time he gave proof of his antiquarian knowledge, which led to his appointment as Clarenceux King-at-Arms; author of *Britannia*, a historical and topographical account of the British Isles, and *Annals of Elizabeth's Reign*, written in Latin. (1551-1623).

Camel, a beast of burden used in Arabia, Central Asia, N. Africa and India. They are ungulates of the sub-order Artiodactyla (i.e., "even-toed") and section tylopoda (i.e.,



BACTRIAN CAMEL

"pad-footed"). The two characteristics which make them of such great value for desert travel are the structure of their feet, which are two-toed, hoft and wide-spreading, and the structure of the stomach, which contains a set of large cavities or water-cells enabling the animal to go three days at a stretch without water. There are two distinct species: the one-humped Arabian dromedary and the two-humped Asiatic bactrian. Their powers of endurance are well known, but they are vicious by nature, and are docile from stupidity rather than affection when trained by man. Some breeds will carry a load of 1,000 lb. The swiftest racing camels are Arabian. The flesh is edible and milk is nutritious, while the hair can be woven into clothing material.

Camelford, an ancient market town of Cornwall, England, 12 m. N. of Bodmin. Nearly are slate quarries. Pop. 1,500.

Camellia, a genus of evergreen plants with showy flowers and elegant, dark green, shining, laurel-like leaves, mostly natives of India, China, and Japan. There are eight species, *C. japonica* being a celebrated feature of Japanese and Chinese scenery, and the origin of many double varieties in British gardens. They belong to the tea order (Theaceae). Oil is obtained from some species.

Camelot, the ancient town where variously identified with Carleon-upon-Usk (q.v.); Winchester, in which town old entrenchments are associated with the legend; Queen's Camel, Somersetshire; and Camelford, Cornwall.

Cameo, a general name for all gems a gem composed of several different-coloured layers having a subject in relief cut on one or more of the upper layers, an under layer of a different colour forming the ground. For this purpose the ancients used onyx, sardonyx, agate, etc. The shells of various molluscs are now much used for making cameos, and they are also imitated on glass.

Camera, primarily a box used in photography (q.v.), fitted with a lens and focusing apparatus at the other; a development of the camera obscura by which, centuries ago, cellipses were observed.

For photography requiring delicate adjustments a stand-camera is used, but the popular hand-camera, which takes rollfilms, is employed for presswork and snapshots. A cap or shutter is fitted to the lens to regulate exposure, and the quantity of light to be admitted can be determined by "stops" of different sizes.

The various lenses include *rectilinear*, which correct errors of refraction, *achromatic* which correct the aberration of different-coloured rays, *aplanatic*, which counteract spherical aberration, and the modern *anastigmatic*, which ensure a wide field and a faithful image with rapidity of exposure.

Camera Lucida, an optical instrument, by means of which the image of an object may be made to appear on a light or white surface.

Camera Obscura, an optical contrivance, by means of which the images of external objects are exhibited distinctly on a surface in the focus of the lens.

Cameron, Sir David Young, British artist, born in Glasgow. He made a name for himself as an etcher, and later as a landscape-painter, especially of Scottish scenes. He was made A.R.S.A. in 1811, and B.A. in 1820, and was knighted in 1824. In 1833 he was appointed Painter-Linmer to the King's Household in Scotland. (1805-).

Cameron, Varney Lovett, African explorer, born near Weymouth; commanded the expedition sent to help Livingstone but met the natives who were bearing his body to the coast; traversed Africa all the way from E. to W. (1873-1875); explored Lake Tanganyika, and traced the sources of the Zambezi R.; wrote *Across Africa*; killed in the hunting field. (1844-1894).

Cameronians, (1) a Presbyterian body in Scotland who derived their name from Richard Cameron, contended like him for the faith to which the nation by covenant had bound itself, and even declined to take the oath of allegiance to sovereigns such as William III. and his successors, who did not explicitly concede to the nation this right. (2) Also a British regiment, originally raised in defence of Scottish religious rights; for long the 26th Regiment of the British line, now the Scottish Rifles.

Cameroon, (1) a wide estuary in the Bight of Biafra. (2) a mountain range, a volcanic group, the highest peak nearly 14,000 ft., NW. of the estuary.

Cameroons, a former German protectorate on the W. coast of Africa, between French Equatorial Africa and Nigeria, formerly known as the Oil Coast. It is on the whole high-lying, but has a strip of lowland near the coast. During the war possession of this territory was taken by French and British forces, and in July 1919 Germany renounced sovereignty. The greater part was then placed under a French League of Nations mandate, a strip on the E. border of Nigeria being placed under British mandate. The French mandate extends over 166,000 sq. m.; Pop. 2,200,000. The area of the British mandated territory is 34,000 sq. m. Pop. 817,000. The chief products are bananas, palm kernels, palm oil, ground nuts, etc.

Camilla, a virgin queen of the Volsci, noted for her preternatural fleetness on the race-course, and her grace. She gave Turanus assistance against Aeneas, and was mortally wounded in the breast by Aruns.

Camillus, Marcus Furius, a famous patrician of early Rome; took Veii, a rival town, after a ten years' siege; retired into voluntary exile at Ardea on account of the envy of his enemies in Rome; recalled from exile, saved Rome from destruction by the Gauls under Brennus, was five times elected dictator, and gained a succession of victories over rival Italian tribes; died at eighty of the plague, in 365 B.C.

Camisards, Huguenots of the Cevennes, who took up arms by thousands in revolt against Louis XIV., in which others joined, under Jean Cavalier their chief, after, and in consequence of, the revocation of the Edict of Nantes (1685); so called because they wore a *camise* (Fr. a chemise), or white blouse, over their armour; were partly persuaded and partly compelled into submission by Marshal Villars in 1704.

Camoëns, Luiz de, the poet of Portugal, born at Lisbon, studied at Coimbra; fell passionately in love with a lady of high rank in Lisbon, as she with him, but whom he was not allowed to marry; left Lisbon, joined the army, and fought against the Moors; volunteered service in India, arrived at Goa, and got into trouble with the Portuguese authorities; was banished to Macao, and consoled himself by writing his *Lusiads*; coming home was shipwrecked and lost everything but his poems; died neglected and in poverty; the title of his greatest work is properly *The Lusiads*, or the Lusitanians, i.e., the Portuguese, and is their national epic, called, not inaptly, the "Epos of Commerce." (1524-1580).

Camomile, a herb with medicinal W. Europe, and the Mediterranean districts. It belongs to the genus *Anthemis* of the order Compositae, the most important species being the *Anthemis nobilis*. The flower-heads contain oil, camphor and a bitter substance, and by infusion a bitter stomachic of value in the treatment of coughs and infantile colic is prepared.



CAMOMILE

Camorra, a secret society in Naples with wide ramifications, which was at first instituted for brigandage and smuggling, but which in 1848 adopted revolutionary political ideas and by sheer terrorism gained considerable political influence in the country; when steps were taken by Francis II. to suppress it, the members of it joined the revolutionary party, and had their revenge in the expulsion eventually of the Bourbons from Italy. A double murder by members, resulting in trial, at Viterbo, in 1911 of a large number of them virtually brought the end of the society.

Camp, a number of huts or tents forming shelter for troops on service or manoeuvres, and to-day including holiday accommodation for those who prefer the freedom of camp life. Military camps can afford lodgement only for comparatively small and mobile units, since baggage problems are a hindrance to organisation. Camps of military exercise consist of permanent barracks near a suitable exercise-ground; such camps are established at Salisbury Plain, Aldershot, Catterick, etc., for infantry, while artillery training camps exist elsewhere.

Campagna di Roma, an unhealthy, flat district round Rome, co-extensive with ancient Latium, infested with malaria, the unhealthiness of many of the towns having been noted by Livy, Cicero and Strabo. Steps to drain the district and to rid it of the malaria mosquito have been taken in recent years.

Campania, an ancient province in the W. of Italy, of great fertility, yielding corn, wine and oil in great abundance. It was of smaller extent than the present Italian dept. of Campania. Capua was the capital, the other chief towns being Naples, (Neapolis) and Salerno (Salernum); it was a favourite resort of the wealthy families of ancient Rome.

Campanile, a tower for bells constructed beside a church, but not attached to it; very common in Italian cities, the leaning tower of Pisa being one, and that of Florence one of the most famous. That of St. Mark's, Venice, collapsed in 1902 and was rebuilt in exact facsimile.

Campanology, bell-lore, the art of bell ringing, bell founding, etc. See Bells.

Campanula, a large genus of flowering plants of the natural order Campanulaceae. They are generally herbaceous, and bear bell-shaped flowers. They are common in temperate climates, in the Mediterranean districts, in N. America, and on mountains in the tropics. There are 300 species, of which eight are found in England and Scotland. *C. rotundiflora* being the harebell (or blue-bell of Scotland). *C. medium* is the biennial Canterbury bell.

Campbell, a celebrated Scottish Highland clan, the members of which have played an important rôle in English and Scottish history.

Campbell, Beatrice Stella (Mrs. Patrick Campbell), musician and actress, maiden name Tanner; established her reputation as an actress with her performance in the name part in Pinero's *Second Mrs. Tanqueray* at St. James's Theatre, 1893; subsequently appeared in Ibsen and other advanced drama. (1868-).

Campbell, Sir Colin, Lord Clyde, born in Glasgow, son of a carpenter; entered the army, and rose rapidly; served in China and the Punjab; commanded the Highland Brigade in the Crimea; won the day at Alma and Balaclava; commanded in India during the Mutiny; relieved Lucknow, and quelled the rebellion; was made field-marshal, with a pension of £2,000, and created Lord Clyde. (1792-1863).

Campbell, John, Lord, Lord Chancellor of England, born at Cupar, Fife; a son of the manse; destined for the Church, but embraced the study of law; was called to the bar; did journalistic work and law reports; was a Whig in politics; held a succession of offices both on the Bench and in the Cabinet; wrote the *Lives of the Chancellors* and the *Lives of the Chief Justices*. (1779-1861).

Campbell, Capt. Sir Malcolm, British motorist, who set up what was a world's speed record of 174 m.p.h. at Pendine in 1927, and another of 202 m.p.h. at Daytona, in 1928. At Daytona Beach in 1931 he reached a mean average speed of 246 m.p.h. In 1933, also at Daytona, he did 272 m.p.h. and 5 m. at 251 m.p.h. Also in 1935 he established a new world's record of 301 m.p.h. over a measured mile. Knighted 1931. He has had an active life; amongst other exploits has led a treasure-hunting expedition to Cocos I. (1884-).

Campbell, Thomas, poet, born in Glasgow; studied with distinction at the University; when a student of law in Edinburgh wrote *The Pleasures of Hope*; the success of the work, which was great, enabled him to travel on the Continent, where he wrote the well-known poems *Ye Mariners of England*, *Hohenlinden* and *The Exile of Erin*; married, and settled in London, where he did writing, lecturing, and some more poetry, in particular *The Last Man*; a pension of £200 was awarded him through the influence of Fox; he was three times elected Rector of Glasgow University. (1777-1844).

Campbell-Bannerman, Sir Henry, British statesman. He entered Parliament as a Liberal in 1868, holding his seat at Stirling Burghs till his death; first took office in 1871 as Financial Secretary to the War Office, and became Secretary for War in 1886. He succeeded to the leadership of the Liberal Party in 1899, and in 1905, on the fall of the Balfour administration, he became Prime Minister. (1836-1908).

Campbeltown, a town in Kintyre, Argyllshire, Scotland, with a fine harbour; is a great fishing centre, and has whisky distilleries. Pop. 6,300.

Campeche (Campechy), a southern state of Mexico bordering on the N. on the Gulf of Mexico and on the S. on Guatemala. It is in the tropics and unhealthy, sparsely inhabited, for the most part flat, and heavily forested in parts, though other parts offer good grazing ground. Chief exports, timber, hides, etc. The capital of the state is a seaport of the same name. Area (state), 19,600 sq. m. Pop. (state) 84,000; (town) 17,000.

Camperdown, a tract of sandy hills on the coast of N. Holland, near which Admiral Duncan defeated the Dutch fleet under De Winter in 1797.

"Camperdown," The, the name of the British battleship which rammed and sank the *Victoria* with great loss of life during manœuvres in the Mediterranean in 1893.

Camphor a colourless aromatic crystalline substance, distilled from the wood and leaves of the camphor laurel (*Cinnamomum camphora*). Camphor can be prepared synthetically from pinene, which is present in oil of turpentine.



CAMPFOR LAUREL

Campo-Formio,

a village near Udine, in Venetia, Italy, where a treaty was concluded between France and Austria in 1797, by which the Belgian provinces and part of Lombardy were ceded to France, and certain Venetian States to Austria in return.

Campos, a trading city of Brazil, in the province of Rio de Janeiro on the Parahyba R. Sugar is produced in the neighbourhood. Pop. 48,000.

Campsie, a district of Stirlingshire, Scotland, including Lennox town, near which is the picturesque resort of Campsie Glen. Pop. 5,000.

Campus Martius, a large plain of Rome, ornamented with statues, arches, columns, etc. It was sacred to Mars, and here were held military exercises and games and chariot races in honour of Mars. Here also the Comitia of the people was held.

Camwood, a wood obtained from a tree (*Baphia nifida* of the order Leguminosae), found in Brazil and Africa; yields a red dye and affords material for knife-handles, etc. The wood is white when first cut, but turns red on exposure to the atmosphere.

Cana, the village of Galilee in which Christ performed His first miracle (turning water to wine, see John ii). Here also He healed the nobleman's son (John iv). It was the birthplace of the Apostle Nathanael. The position of its site is disputed.

Canaan, the name of the fourth son of (Zidor), the progenitor of the Phœnicians, and of Heth and the Jebusite, the Amorite, and the founders of other peoples of the Palestine sea coast, whence the name was applied to the country itself, and eventually to the whole of Palestine W. of the Jordan.

Canaanites, a civilised race with dependent on agriculture; worshippers of the fertilising powers of nature; the original inhabitants of Palestine, from which they were never wholly rooted out.

Canada, The Dominion of, occupies America, the whole of the N. half of N. America with the exception of Alaska (U.S.A.) and Newfoundland and Labrador, and stretches from the Atlantic to the Pacific, from the United States to Alaska and the Arctic Ocean. It comprises a lofty and a lower tableland W. and E. of the Rocky Mts., the peninsulas of Labrador and Nova Scotia, and between these a vast extent of prairie and undulating land, with rivers and lakes innumerable, many of them of enormous size and navigable, constituting the finest system of inland waterways in the world. The Rocky Mt. system, which includes the Selkirk and the Coast Range, rises to 19,000 ft., but there are several gorges, through one of which the Canadian Pacific railroad runs. The area of the dominion is 3,466,000 sq. m. Pop. 10,380,000.

The chief rivers are the Fraser, Mackenzie, Saskatchewan, and St. Lawrence. Great Slave, Great Bear, Athabasca, Winnipeg, Manitoba, in the interior and Superior, Huron, Erie, and Ontario between Canada and the U.S.A. are the largest lakes. The climate is varied, very cold in the north, very wet west of the Rockies, elsewhere drier than in Europe, with hot summers, long, cold, but bracing and exhilarating winters. The corn-growing land is practically inexhaustible; the finest wheat is grown without manure, year after year, in the rich soil of Manitoba, Saskatchewan, and the western prairies, while an abundance of other cereals, including oats and barley, are produced.

The forests yield maple, oak, elm, pine, ash and poplar in immense quantities, and steps are taken to prevent the wealth of timber ever being exhausted; they cover an area of over 1½ million sq. m., and Canada is the world's greatest exporter of timber for newsprint. The most important timber areas are in N. Ontario, Quebec, and British Columbia, where Douglas Firs are a feature. Over 80 per cent. of the surplus is exported to the U.S.A.

Gold, coal, iron, and copper are widely distributed, and Nova Scotia, British Columbia, Quebec, N. and W. Ontario, Alberta, and the Yukon are the chief mining districts. Canada produces the greater part of the world's nickel and asbestos. Fisheries, both on the coasts and inland, are of great value and include the great canning industry of the salmon-bearing Rs. Fraser and Mackenzie, and the vast cod, haddock, and halibut fisheries off the Newfoundland coast, as well as the world's greatest lobster industry.

Agriculture and forestry are the most important industries; while fruit-farming flourishes in many parts, especially the Annapolis Valley of Nova Scotia, the St. John Valley of New Brunswick, the Niagara Peninsula of Ontario, and the Okanagan and other interior valleys of British Columbia. Apples are the most important orchard fruit, though peaches, pears, plums and cherries are abundant. A comparatively new industry in Canada is fur-farming.

A plentiful supply of water-power has assisted Canada's recent commercial progress. Most of the manufactures are connected with local products, and include flour-milling, meat-packing, butter, cheese, fish-packing, lumber, pulp, paper, cotton, wool, artificial silk, leather, agricultural machinery, motor-cars, soap, sugar and tobacco.

There are two great railway systems: the Canadian National and the Canadian Pacific. Each has a trans-continental line and a network of branch lines connecting urban and rural centres. The Hudson Bay railway, recently constructed, is of importance to the wheat traffic via Churchill, and brings the wheat fields 1,000 m. nearer Europe than by the St. Lawrence route. Wireless "beam" stations are operated at Drummondville, Quebec, for direct communication with Australia and Great Britain. The chief trade is with England and the U.S.A.

The Dominion is a federation of nine provinces and two territories. Each of the nine provinces (Quebec, Ontario, New Brunswick, Nova Scotia, Prince Edward I., British Columbia, Manitoba, Saskatchewan and Alberta) has its own Provincial Government administered by a Lieutenant-Governor and a Legislative Assembly. The Yukon is administered by a Comptroller and a Territorial Council of three, the Northwest Territories by a Commissioner, Deputy Commissioner and Council of five appointed by the Governor-General. The Dominion Parliament meets at Ottawa, the federal capital, and consists of a Senate and a House of Commons. The Governor-General is the Viceroy of the King. Nearly every province

has its university, that of Toronto being the most important. The largest town is Montreal; Toronto, Quebec, Hamilton, and Halifax are all larger than the capital.

Canadian Mounted Police,

Royal, an armed constabulary maintained by the Dominion Government for service anywhere in Canada, but primarily for enforcing the observance of law in the Yukon, the unorganised NW. Territories, Indian Reserves, and National Parks. At present the force numbers 2,700 officers and men, including 207 in the Marine section stationed in cruisers and patrol-boats on the Atlantic and Pacific coasts and inland waters. It was first organised in 1873, being then known as the North-West Mounted Police. The present title was adopted in 1920.

Canal, an artificial water-course for the transport of goods or passengers by boat, ship, or barge, or for purposes of drainage or irrigation. The most familiar are for navigation. They consist usually of a number of sections, each on one level throughout its course, but differing in relative height from the others. Access from one section to another is secured by means of locks, inclines, or lifts.

The lock is a water-tight compartment with gates at either end. When the gate at the upper end is closed and that at the lower end opened, the water falls to the level of the lower section of the canal. When the lower gate is closed and the upper opened, the water rises to the level of the upper reach. Rivers, the level of which is liable to fall to an inconveniently low level in summer, are frequently "canalised" by the construction of weirs which artificially restrain the waters and maintain the level. In such a case also access from one reach to another is by means of locks.

The canal system of Britain (including "canalised rivers") extends to nearly 4,000 m., of which more than one quarter is owned by the railways. The chief are the Caledonian, the Manchester Ship, the Crinan, the Clyde and Forth, the Gloucester and Berkeley, and the Grand Union. In recent years the inland canals have tended to fall into disuse owing to excessive road and rail competition. Other countries also have extensive systems, especially Holland, Belgium, France, Germany and Canada. Some of the many notable canals abroad are the Suez (104 m. long), the Panama (41 m.), the Corinth, the Kiel, the Welland (Canada), the Bruges, etc.

Canary, a singing-bird, a species of *finch*, native to the Canary Is. and Madeira, introduced into Europe in the latter part of the 15th Century. The colour in nature is green, but selective breeding has produced the popular yellow varieties. They breed readily with allied species of birds, especially with the goldfinch, siskin, linnet, etc., though the hybrids are usually sterile.

Canary Grass, a hardy grass (*Phalaris canariensis* of the order Gramineae) with beautiful flowering spikes in summer. The seed obtained from its fruit is used as canary food, hence the name.

Canary Islands, a group of mountainous islands with rocky coasts, and wild, picturesque scenery, in the Atlantic, off the NW. African coast, belonging to Spain, and for administrative purposes considered part of Spain. On the lower levels the climate is delightful, and sugar, bananas, and dates grow;

farther up there are zones where wheat and cereals are cultivated. The rainfall is low, and water often scarce. Sugar, wine, and tobacco are exported; the islands are a health resort of growing favour. Off these islands in 1797 Nelson sustained his one defeat, losing an arm; two of his flags are still hanging in Santa Cruz church. Chief ports are Las Palmas and Santa Cruz. Chief islands are Tenerife, Grand Canary, Palma, Hierro, Gomera. Area, 2,807 sq. m. Pop. 565,000.

Canberra, a tract of land, formerly the federal capital of Australia; ranks as the Federal Capital Territory, with an area of 940 sq. m. In 1927 the Duke of York (now King George VI.) performed the ceremony of opening the Parliament House there. Pop. (territory) 11,558; (town) 9,823.

Cancer, a term now applied to any malignant growth, including the two large groups carcinoma and sarcoma, in which the cancer attacks respectively the skin or lining tissues of the body and the connective tissues or flesh. Carcinoma are the more common and more dangerous.

The rapidity with which a malignant tumour becomes fatal depends first of all on its rate of growth, and secondly on the amount of harm done by its spreading through the blood or lymph to other parts of the body. Operation, to be successful, requires not only complete removal of the tumours and surrounding parts, but also of the glands in the region to which the tumour cells may have been carried. In cases treated in time this may be successful.

The causes of cancer are not properly understood. Irritation is responsible in the case of the "trade" cancers—e.g., the particular forms incident to chimney-sweepers, cotton workers, etc. Chronic inflammations, under-nourishment and injury by a blow have also been blamed in particular cases. The orthodox treatment has not altered fundamentally during the past twenty-five years, although great improvements in technique have been made. This fact has tended to obscure the great progress made in our knowledge of the disease.

None of the claims made to have isolated a cancer bacillus have been proved valid; but a new direction to the study of cancer has been given by the discovery that the disease may be produced experimentally by the application to animals of synthetic compounds of known molecular structure.

Cancer, or **The Crab**, the sign of the zodiac, which the sun enters on June 21, when it is overhead at noon at all places on the Tropic of Cancer, the Tropic of Cancer marking on the globe the N. limit of places where the sun at any time of the year is vertically overhead.

Candia (Heraklion), the name of the capital of the dept. of Heraklion, in the centre of the N. coast of Crete, anciently giving name to the whole island. Pop. 33,000.

Candle, a solid cylindrical rod of some fatty substance, with a wick or small bundle of loosely twisted threads placed longitudinally through its centre, used as a portable light. The chief material used in the past was tallow, sometimes mixed with palm-oil or wax, etc. Paraffin-wax candles came into general use about 1850. Candles can be made by "dipping" the wick in the fatty substance (as in the case of "tallow-dips"), alternate cooling and dipping taking place until the desired thickness is achieved, or by moulding (as in the case of paraffin candles). The wicks usually consist of cotton yarn braided and "pickled," or impregnated in such a way as to ensure complete consumption when burnt.



CANARY
GRASS

Candlemas, a festival observed in the Armenian churches in commemoration of the purification of the Virgin Mary; held on Feb. 2, and celebrated with lighted candles.

Candlenut (*Aleurites triloba*), a tropical nut-bearing tree of the order Euphorbiaceae, grown for the oil and dyeing qualities contained in the nut, which is the size of the walnut. The flowers are large and white.

Candle Power, the unit of luminosity based on the standard sperm candle weighing six to the pound and burning 120 grains per hour.

Candytuft, a large genus (*Iberis*) of the order Cruciferae, annual, biennial and perennial herbs or shrubs of the order Cruciferae, common in Britain, Europe and Asia. There are some 30 species, including *I. amara* which grows wild in England and is also cultivated as an ornate garden flower. *I. umbellata* is also common in gardens, as is *I. coronaria* (rock-ot candytuft). The feature which gives the plant its peculiar beauty is the flowers, which grow in corymbs, the outer petals of each flower being of greater length than the others.



CANDYTUFT
(*Iberis amara*)

Cane, a general term for such plants as the bamboo, sugar-cane, and especially the rattan-palm, the stems of which, called rattans, are long and trailing and are exported from India and the East, being employed in wicker-work, chair-seats, ropes, or Khanias, the capital and chief

Canea, commercial town of Crete, on the NW. coast, built on the ancient site of Cydonia by Venetian settlers; trades in soap, oil and leather. Capital also of a dept. of the same name. Pop. (town) 27,000; (dept.) 12,000.

Cang(ue), a Chinese instrument of punishment consisting of a wooden yoke which prevents the victim from lying down or feeding himself.

Canker, the name applied to (1) a disease of trees, especially apple trees, due to a fungus, the *Nectria galligena*, the spores of which gain access through small wounds, made by insects, develop and cause the bark to crack; treatment is by control of the insects causing the wounds, by cutting away affected parts and smearing with pruning paint; (2) a disease of the ear of dogs, and occasionally of cats, an ulceration of the inner lining due to dirt or parasites.

Cannæ, ancient town in Apulia, near the mouth of the Aufidus, where Hannibal, in a great battle, defeated the Romans in 216 B.C.

Cannel Coal, a coal containing an unusual amount of ash and volatile ingredients, and burning with a clear, candle-like flame. It is valuable as a source of gas and oil, and occurs in British coalfields.

Cannes, a French watering-place and health resort on the Mediterranean, in the SE. of France, where Napoleon landed on his return from Elba. Pop. 42,000.

Cannes Conference, the meeting in 1922 at Cannes of the Supreme Council of the Allies with the main object of considering Anglo-French suggestions for reparations demands from Germany and her allies. Mr. Lloyd George stated that Great Britain was unwilling to incur military commitments in Central and E. Europe, and wanted Russia and the U.S.A. to be invited to a General

Reconstruction Conference. M. Briand of France opposed, and his resignation ended the conference.

Cannibalism, the eating of human flesh, still known to exist among the tribes of W. and Central Africa, New Guinea and northern S. America. Various causes are thought to have given rise to Cannibalism:—economic, when the supply of animal flesh is scarce, even civilised races having been reduced to it in cases of sieges, famine, etc.; superstitious and religious, it being considered that the courage of an enemy would pass to the eater of his corpse, and make him immune from being haunted by his spirit. Certain tribes in Australia devoured the flesh of the dead as a form of refined interment of the dead relative, while among Mexicans and Fiji natives offerings to the Gods took the form of human sacrifices, the offering afterwards being eaten by the devotees. The Niam-Niam and Monbutter tribes of Africa exposed corpses of relatives in the market-place for sale as food.

Canning, Charles John, Earl, son of in Cabinet offices, was made Governor-General of India, 1856, in succession to Lord Dalhousie; held this post at the time of the Mutiny in 1857; distinguished himself during this trying crisis by his discretion, firmness and moderation; became Viceroy on the transfer of the government to the Crown in 1858; died in London without issue, and the title became extinct. (1812-1862).

Canning, George, a distinguished British statesman, orator and bar; entered Parliament as a protégé of Pitt, whom he strenuously supported; was rewarded by an under-secretaryship; married a lady of high rank, with a fortune; satirised the Whigs by his pen in his *Anti-Jacobin*; on the death of Pitt became Minister of Foreign Affairs; under Portland distinguished himself by defeating the schemes of Napoleon; became a member of the Liverpool ministry, and once more Minister of Foreign Affairs; on the death of Liverpool was made Prime Minister, and after a period of unpopularity became popular by adopting, to the disgust of his old colleagues, a liberal policy; was not equal to the opposition he provoked, and died at the age of 57. (1770-1827).

Canning Town, an industrial district of E. London, in Essex, in the borough of West Ham. Here are the Victoria Docks.

Cannock, a market town of Staffordshire, England. Near is Cannock Chase, a district rich in coal and iron, formerly a wooded royal game preserve. Pop. 35,000.

Cannon, a gun, or any piece of ordnance fired from a "carriage" or fixed mounting; "heavy," as distinct from "small arms."

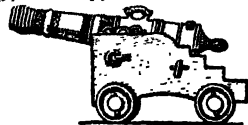
See **Artillery**.

Cannon-Ball Tree,

the *Couroupita guianensis* of the order Lecythidaceae, allied to the Brazil

nut, found in tropical S. America. The fruit is a large, round, woody container packed with seeds, hence the name. The wood is useful.

Canoe, a general term for a small, light boat, pointed at both ends and propelled by hand paddles. They are of many types, the most primitive being the dug-out or hollowed-log canoes of the South Seas, W. Africa, etc. In other types a light



16th CENTURY
ITALIAN CANNON

framework is covered with skins (e.g., the Eskimo kayak) or with birch-bark (e.g., the N. American Indian canoe). The kayak has a covered deck, only a small opening (or well) being left for the passengers, and is propelled by a double-blade, a single-bladed paddle only being used as a rule on the birch-bark type. Canoes of both types are made to-day for pleasure purposes, the open birch-bark being mostly confined to river use, the covered-in type being constructed for river, and even for long-distance sea work. Many are fitted with sails. Canvas is the usual covering for the framework. Canoeing as a sport was given its initial impulse by the adventurous voyages of John Macgregor in the *Rob Roy*, a canoe built of oak with a cedar deck. The Royal Canoe Club was founded in 1866.

Canon, the name given to the body of Scripture accepted by the Church as of divine authority.

Canon, a church dignitary, especially one connected with a cathedral. They comprise residentiary canons, who form part of the chapter and whose duties include residence at the cathedrals, preaching, etc., and minor canons appointed by the dean and chapter, who sing the services. Originally the life of a canon was according to a rule (canon) such as the Augustinian Canons. The regular canons were confined to their own monasteries, while secular canons visited the laity. During the Reformation many foundations were abolished. A canon in the English church is sometimes called a Prebendary.

The word canon also means rules of faith put forward by the councils of the Church, such as the Canons of Nicea A.D. 325. The term also describes the list of saints and the central portion of the Liturgy, including the consecration of the sacred elements.

In music a canon is a particular form of composition where the melody is taken up and repeated in succession at set intervals by the other parts and overlapping. Such canons date from the 12th Century, and include the chorale circle canon, canon cancrizans, etc. Examples occur in the hymn tune *Tallis' Canon*, the grace *Non Nobis, Dominus*, by Byrd, and the quartette in the first act of Beethoven's *Fidelio*.

Cañon, a deep, narrow gorge with nearly vertical sides, at the bottom of which flows the river which has eroded the gorge. They occur in rainless districts, as in Arizona, U.S.A., the lack of rain accounting for the vertical sides of the gorge, which would otherwise be eroded to a V-shape. The R. Colorado, Arizona, flows for some 300 m. through such cañons, the greatest being the Grand Cañon, with a wall from 3,000 to 6,000 ft. in perpendicular height.

Canoness, a member of an association of women instituted as a chapter, vowed to obedience and chastity, but not to poverty, and engaged in religious work, including the recitation of the Breviary, education, translation of religious works and embroidery of vestments. They were not cloistered, but shared a dormitory and a common table. At the Reformation many became Protestant.

Canonisation, in the Roman Catholic Church, the solemn declaration by the Pope that a servant of God, renowned for virtue and for miracles he has wrought, is to be publicly venerated by the whole church, termed Saint, and honoured by a special festival. A preparatory stage is beatification, and the beatification and canonisation of a saint are promoted by a long, tedious and costly process, much resembling a suit at law.

Canon Law, the body of laws by which the government of the Church is administered. The canons

in which these laws are embodied are enacted by general church councils or provincial synods. Eastern canonical law is coded in the *Nomocanon* of Photius of Constantinople (800) and the *Synodikon* of Bishop Beveridge (1672). Various editions of Western Canonical Law were collected together at Basle as *Corpus Juris Canonici*, based upon the initial work of Gratian, a Benedictine Monk (1154), but many additional decrees, etc., have to be added. A new code, the *Codem Juris Canonici*, was imposed in 1917 in the Catholic Church. During the Middle Ages the study of Canon Law was the chief work of candidates for Church offices.

Canopus, (1) the blue vault of heaven with its stars; (2) a star in the constellation Argus, one of the brightest and largest of all stars; (3) an ancient town of Egypt, 15 m. N.E. of Alexandria, famed for its temple of Serapis.

Canossa, a town NW. of Bologna, Italy, in the courtyard of the castle of which the German Emperor Henry IV. stood three days in the cold, in Jan. 1077, bare-headed and barefooted, waiting for Pope Gregory VII. to remove from him the sentence of excommunication which he had incurred in what has generally been called the "investiture dispute."

Canova, Antonio, a great Italian sculptor, born near Venice; his first important work, which established his fame, was the group of "Theseus and the Minotaur," which was succeeded by his "Cupid and the Psyche," distinguished by a tenderness and grace quite peculiar to him, and by "Perseus with the Head of Medusa," perhaps the triumph of his art; his works brought him a large fortune. (1757-1822).

Cantal, an inland dept. of France; part of the old province of Auvergne and crossed by the Auvergne Mts. Cattle and sheep are reared, rye and buckwheat grown, and coal is mined. Area 2,230 sq. m. Pop. 191,000. Cap. Aurillac.

Cantaloupe (*Cucumis melo*), a variety of the musk-melon (*Cucumis* of Cucurbitaceae order), but smaller and with a ribbed covering named from Cantalupo, a town near Rome in Italy, where it was first grown.

Cantata, a form of musical composition, usually to-day resembling an unacted opera when secular, or a short oratorio when sacred. In the 18th Century they were composed for one singer.

Canteen, a military refreshment place, where the rank and file of a regiment may purchase alcoholic drink, groceries and tea, coffee, etc. Formerly run by civilians, they are now in the charge of a department of the War Office, but during the Great War the Y.M.C.A. established canteens. Canteens are also frequently provided in connection with large commercial and industrial undertakings; by Act of Parliament the Home Secretary has power to compel employers to provide canteens for employees where necessary.

Canterbury, in E. Kent, on the Stour, by rail 62 m. S.E. of London; is the ecclesiastical capital of England; the cathedral was founded A.D. 597 by St. Augustine; the present building belongs to various epochs, dating as far back as the 11th Century; it contains many interesting monuments, statues and tombs, among the latter that of Thomas à Becket, murdered in the north transept, 1170; the cloisters, chapter-house and other buildings occupy the site of the old monastic houses; the city is rich in old churches and ecclesiastical monuments; there is an art gallery; trade is chiefly in hops and grain. Christopher Marlowe was a native. Pop. 25,000.

Canterbury, a provincial district of the New Zealand, in the centre of the South I., on the E. side of which are the Canterbury Plains or Downs, a great pastoral land for sheep of over three million acres and the source of Canterbury lamb. Pop. 233,000.

Canterbury Bell (*Campanula medium*), a species of campanula (q.v.), and a native of Central Europe, a biennial with many varieties. The flowers are bell-shaped.

Cantharides, a drug prepared from the Spanish Fly, or blister beetle (the coleopterous *Cantharis vesicatoria*). The drug contains a powerful and poisonous chemical principal called cantharidin, which has blistering properties and is of great value in medicine as a counter-irritant, though its use requires great care under medical direction.

Canticles, a book in the Bible erroneously ascribed to Solomon, and called in Hebrew the Song of Songs, about the canonicity and interpretation of which there has been much debate, though, as regards the latter, recent criticism inclines, if there is any unity in it at all, to the conclusion that it represents a young maiden seduced into the harem of Solomon, who cannot be persuaded to transfer to the King the affection she has for a shepherd in the northern hills of Galilee; the aim of the author presumed by some to present a contrast between the morals of the south and those of the north, in justification possibly of the secession. It is by some still believed to be an allegory in which the Bridegroom represents Christ and the Bride His Church.

Cantilever, in bridge-construction and projecting portions of buildings, and consisting of a projection of iron or stone which acts as a "bracket," the "free" end carrying the weight to be supported, the other end being itself supported and made fast to a wall or pier. See Bridges.



CANTILEVER BRIDGE

Canton, chief commercial city and port of S. China; stands on a river, almost on the seaboard, 90 m. NW. of Hong-Kong, and is a healthy town, but with a heavy rainfall; it is surrounded by walls, has narrow, crooked streets, 125 temples, mostly Buddhist, and two pagodas, 10 and 13 centuries old, respectively; a great part of the population live in boats on the river; the fancy goods, silk, porcelain, ivory and metal-work are famous; its river communication with the interior has fostered an extensive commerce; exports tea, silk, sugar, cassia, etc.

After the expulsion of the Manchu emperors from China in 1911, Canton became a seat of the revolutionary movement. Here Dr. Sun-Yat-Sen established the Kuomintang or People's Party. The Nationalist forces of S. China, with their focus here, declared a separate republic in 1920. In 1925 they began to march northwards, and in 1927 captured Shanghai, Nanking, and Hankow, after which success the Nanking troops broke away from the Hankow Government. Canton has been one of the principal centres of the movement against the Treaty Ports. In 1938 havoc was wrought by bombing and on Oct. 21 it was occupied by the Japanese. Pop. 341,000.

Canton, in Switzerland, a territorial division administered by a separate government which has control of taxation and public money, but not foreign policy or the army, these being left to the Federal Parliament at Berne.

Canton, a thriving manufacturing city of Ohio, U.S.A., county seat of Stark county. President McKinley lived and was buried there. Pop. 105,000.

Canute, or *Canut*, *The Dane*, called the Denmark; invaded England, and after some success was elected king by his fleet; the usurpation was repudiated by the English Ethelred, and he had to flee; returned in 1015, and next year, though London held out for a time, carried all before him; Ethelred died in 1016, Edmund "Ironside," his son, after some successes, was defeated at Assington in Essex the same year, and Edmund and Canute agreed on a division of the country. When later in the year Edmund was murdered, Canute became undisputed King of all England, and ruled it wisely and well, though the care of governing Denmark and Norway lay on his shoulders as well; died in England, and was buried in Winchester Minster. His great ambition was the establishment of a great northern Empire to include England, Denmark, Norway and Sweden. Denmark was his by right of birth, England by conquest. Norway he also conquered in 1028. On his death this empire came to an end. (King of England 1017-1035).

Canvas, a strong cloth made of jute, linen, the hemp, or flax, and woven like linen. The best sailcloth is made of the strongest quality flax canvas. Artists' canvas are of the finest quality, and are specially prepared to take oils.

Canvey, an island in the Thames estuary off Essex, England, reclaimed from the sea in the 17th Century. At low tide a causeway connects it with Benfleet.

Canyon, an English form of the Spanish word cañon (q.v.), a gorge or deep, narrow chasm or valley.

Capablanca, José Raúl, noted chess player. Of Cuban birth, he started to play at the age of five; champion of the world from 1921 (when he defeated E. Lasker) until defeated by Alekhine in 1927. (1888-).

Capacity, the power of containing a quantity. Cubic capacity is the number of units of volume (cubic inches or cubic centimetres, etc.) in a solid body or an enclosed space. The capacity for heat (thermal capacity) is the amount of heat required to raise the temperature through 1° Centigrade.

Cape Breton, the insular portion of the province of Nova Scotia, Canada, from which it is separated at its eastern extremity by the Strait of Canso. 110 m. long and 85 m. broad; is covered with forests of pine, oak, etc., is rich in coal, and exports timber and fish. Pop. 86,000.

Cape Coast, seaport and former colony; capital of the Gold Coast. Pop. 18,000.

Cape Cod, a sandy peninsula, 65 m. long, of Massachusetts, U.S.A., between which and the coast lies Cape Cod Bay. Served by rail and canal, it is a popular holiday resort with a number of centres. Plymouth, where the Pilgrim Fathers originally landed, stands on the Bay.

Cape Gooseberry (*Physalis peruviana*), the name of a species of Solanaceae, a native of S. America, but now naturalised to S. Africa; also called the strawberry or gooseberry tomato. It bears a whitish flower, and the fruit, which is enclosed in the red persistent calyx, is edible.

Cape Horn, the most southerly point of S. America, a black, steep, frowning rock at the S.E. extremity of the Fuegian Is., much dreaded at one time by sailors, on account of the heavy weather encountered there.

Capek, *Karel*, Czechoslovakian author. Son of a Bohemian doctor, he was educated in Prague, Berlin and Paris, and became a journalist. In 1919 he was producer at Prague Municipal Theatre, and wrote *R.U.R.* (Rossum's Universal Robots) and, in collaboration with his brother, *The Insect Play*, both of which came to London. His latest play is *Power and Glory*, produced in London in April 1938. (1890-).

Capella, a bright red star of first Auriga, the fifth or sixth brightest in the sky, discovered to be a binary star.

Cape of Good Hope Province, comprises British Bechuanaland and the extremity of the African continent S. of the Orange R. and Natal, and is nearly twice the size of the United Kingdom. The Nieuwveld Berge, running E. and W., divides the country into two slopes, the N. slope long and gradual to the Orange R., the S. shorter and terraced to the sea; two-thirds of the country is arid plain; the climate is dry and healthy, but hot in summer; the prevalent vegetation is heath and bulbous plants.

Sheep- and ostrich-farming are the chief industries; wool, goats' hair, ostrich feathers, hides, diamonds from Kimberley, and copper from Namaqualand are the chief exports; two-thirds of the people are of African race, chiefly Bantus, who flourish under British rule; the remainder are of Dutch, English, French and German origin. In 1910 the colony of the Cape of Good Hope was merged in the Union of S. Africa, thereafter forming an original province of the Union.

Cape Town is the seat of the Provincial Administration. Kimberley, Port Elizabeth, and E. London are the only other large towns, but there are many small towns. The government is in the hands of an administrator appointed by the Governor-General of the Union of S. Africa, aided by a Council of sixty-one members and an executive committee of five; local government is in force all over the country. Discovered by the Portuguese, Diaz, in 1486, the Cape was taken possession of by the Dutch in 1652, from whom it was captured by Great Britain in 1805. Pop. (European) 788,000; total pop. 3,500,000.

Caper, the *Capparis spinosa*, a trailing herb or shrub of the order Caprifoliaceae cultivated in Sicily and S. France. When pickled with vinegar the unexpanded flower-bud is used in sauces.

Capercaillie, the wood-grouse, a large game-bird found in fir woods in mountainous districts, as in Sweden and Scotland, and highly esteemed for table. Four species are known, the common Capercaillie being *Tetrao urogallus*. It was exterminated in the British Is. in the 18th Century, but has been reintroduced with success to Scotland.



CAPercaillie
(MALE)

Capernaum, a town on the N. side of the Sea of Galilee, the centre of Christ's labours, the exact site of which is uncertain.

Capet, the surname of Hugh, the founder in 987, of the third dynasty of French kings, which continued to rule France till 1328, though the name is applied both to the Valois dynasty, which ruled till 1589, and the Bourbon, which ruled till 1848.

Louis XVI. having been officially designated as a Capet at his trial, and under that name sentenced to the guillotine.

Cape Town, capital of Cape Province, situated at the head of Table Bay, on the SW. coast, with Table Mt. rising behind it; is a regularly built, flat-roofed, imposing town, with handsome buildings and extensive Government gardens; well drained, paved and lit, and with a good water supply. The Government Buildings of the Union, and law courts, museum and art gallery, bank and exchange are its chief architectural features. It has docks, and a graving-dock, and is a port of call for vessels of all nations. Pop. (European) 165,000.

Cape Verde, the most westerly headland of Africa, in Senegal, French W. Africa, first seen by the Portuguese in 1443.

Cape Verde Islands, a group of numerous volcanic islands belonging to Portugal, and administered by a Governor, 300 m. from Cape Verde, on the W. of Africa. 40 are inhabited, the largest and most productive being Santiago and São Vicente, a coaling station with an excellent harbour, most frequently visited. The islands are unhealthy; cattle-breeding the chief industry. Area 1,560 sq. m. Pop. 157,000.

Cape Wrath, a bold headland, and Sutherlandshire, Scotland, 523 ft. high.

Capillarity, name given to the phenomenon that liquids rise in very narrow tubes against the force of gravity, owing to surface tension. In this way moisture rises up the narrow channels in plants.

Capital, wealth set aside for the production of further wealth. It includes, besides money, the stock of a trader or manufacturer, buildings, machinery and equipment.

In a more extended sense capital embraces the accumulated resources of a whole community, and may be defined as the products of industry possessed by the community. In social polemics capital forms the subject of opposing theories by two schools of thought, one, that its ownership should be individual, and the other that capital should be owned and directed by the State for the benefit of the State as a whole, and the two schools have come to be regarded as capitalist and labour.

The former theory holds that the individual trader, by postponing or denying himself the present enjoyment of a portion of his means of consumption, is entitled to claim the appropriate reward of profit, either as rent or interest, and that no progress can be made industrially without reserve funds controlled by persons who risk them for the sake of such progress. It is further argued that the incentive of individual competition among owners of capital is productive of greater industrial development than under a system where capital is the property and concern of the State collectively.

The opposite point of view, usually called the "labour" attitude, contends that privately owned capital is the product of the labour it employs, and that theoretically the workers pay their own wages, since it is by their labour that the profits of the "capitalist" are made. This view is expressed by the economist Henry George in *Progress and Poverty*, while Karl Marx considered that private property based upon the labour of the owner had become, by the evils of our industrially advancing conditions, replaced by a capitalism which exploited other people's labour for the owner's advantage.

Capital, in architecture, the portion crowning the top of a column, pillar or pilaster, and forming its most characteristic part.

Capital Levy, a tax on all owners of a certain sum of capital. Bonar Law had some sympathy with it as a suggested means of paying for the Great War, and it was advocated by the Labour Party at the General Elections of 1922, 1923 and 1924, after which it was dropped. Capital levies have been made in Italy as a compulsory contribution on the part of employers to the Abyssinian campaign, payment having been allowed in some cases and in some circumstances in the form of a transfer of shares to the Government. Such a levy also passed the French Chamber of Deputies during the Blum regime of 1938, but was rejected by the Senate.

Capital Punishment, the punishment by death, the offences which are so punishable in England including murder, treason, dockyard arson and piracy. In actual practice in England murder is the only capital offence, there having been only two cases of execution for treason this century (one during the Boer War and one during the Great War), and no case of execution for dockyard arson or piracy. The method of execution varies. In pre-Norman times it took the form of hanging, decapitation, burning and hurling from rocks. Modern methods include hanging, decapitation by the guillotine (in France), or axe (for some offences in Germany), or electrocution in the U.S.A. Capital punishment has been abolished in a few countries, and its removal here is a frequent theme for agitation.

Capitol, the temple of Jupiter Capitolinus, the most famous and most splendid temple of ancient Rome. It stood on the SW. peak (called the Capitolium) of the Capitoline Hill (Mons Capitolinus), which was sometimes also called the Tarpeian Rock (Mons Tarpeius), though that name was usually reserved for that cliff face down which criminals were thrown to destruction. On the NE. peak (the Arx) stood the temple of Juno Moneta. The Capitol was founded by Tarquin, and dedicated in 507 B.C. It was thrice burned down and rebuilt, the last time by Domitian. The Sibylline books were kept there, and there the Consuls entering office made sacrifices and took their vows. On the site there stands to-day the Capitoline Museum, the Senatorial Palace, the Campidoglio designed by Michelangelo, and the Church of S. Maria in Ara Coeli. Capitols elsewhere have been modelled on that at Rome, notable examples being those at Toulouse and at Washington, U.S.A.

Capitularies, collections of royal edicts issued by the Frankish kings of the Carolingian dynasty, with sanction of the nobles, for the whole Frankish empire, as distinct from the laws for the separate peoples comprising it, the most famous being those issued or begun by Charlemagne and St. Louis.

Capitulation, the making of terms, surrender of a fortress, territory or body of troops. A capitulation concluded by an officer who has not the proper authority is called a sponson, and must be ratified to be binding. The word in the plural denotes the terms of an agreement securing foreigners immunity from the jurisdiction of the courts of the country agreeing to such infringement of its sovereignty. Such arrangements are in operation in China, Morocco, Persia, and Egypt, but those of the last-named country were much modified in 1938.

Capri, a village in Italy, in the Great War of 1914-18, the scene, during the last week of August, of an Austro-German attack on the town. It was between Piaggio and Tolmino, 10,000 prisoners were captured on 24, 1917. The advance was finally held

up on the R. Piave by the Italian forces under Generals Cadorna and Caviglioglio. A final effort to drive back the Italian line of defence was made on Nov. 22, by Krauss's Bosnian and German troops, but a counter-attack in which the Italian Commander Laderchi with the IX corps was prominent, was successful and the retreat was arrested.

Cappadocia, an ancient country in between the Halys, the Euphrates and the Euxine, and separated from Galatia by the R. Cappadox; of varied political fortune, being at one time a province of Persia (which divided it into two satrapies), and later of Rome. The people had a reputation among the ancient Greeks for meanness, perfidy, lack of eloquence, and servility. Famous natives were the geographer Strabo and St. Basil. The country was a plateau with pastures for immense flocks, its horses being held in some esteem.

Caprera, a small, barren island off the coast of Garibaldi, where he died, and his burial-place.

Capri, a small Italian island at the entrance from the S. of the Bay of Naples, with a cap. of the same name on the E. side; a favourite retreat of the Emperors Augustus and Tiberius, and noted for its fine air and picturesque scenery. Pop. 7,500.

Capricornus, or the Sea-Goat, the sign of the zodiac which the sun enters on Dec. 21, when it is overhead at noon at all places on the Tropic of Capricorn.

Caprifoliaceae, a large family of shrubs and trees, including some 275 species found chiefly in N. temperate regions and mountain regions of the tropics. There are 18 genera, of which the chief are *Sambucus* (20 species including the English Elder), *Laburnum* (110 species including the Guelder Rose), *Linnæa* (20 species), *Lonicera* (100 species including the English Honeysuckle).

Caprifolium, the name by which is genus *Lonicera* of the natural order Caprifoliaceae (q.v.).

Capsicum, a genus of 30 species of plants of the order Solanaceae, found in Central and S. America. *C. annum* is cultivated for its fruit, known as chillies or red peppers, and when dried and ground as Cayenne pepper (q.v.).



CAPRIFOLIUM (HONEYSUCKLE)

Capstan, a contrivance originally of wood, now usually of iron, used on ships and in docks for manipulating heavy ropes, cables, etc. It consists of a heavy cable-holder of cylindrical shape mounted on a vertical axis, the shaft being coupled below to worm-gearing by means of which power is applied. Hand capstans were worked by means of bars inserted in holes at the top.

Captain, (1) The military officer who commands a company of infantry, or is second-in-command of a six-gun battery of artillery, or second-in-command of a squadron of cavalry. Since the introduction of the double-company system in 1914, a company is commanded by a major, or mounted captain. (2) An officer in the navy commanding a ship of war, and next in rank to a commander. The officer commanding an admiral's ship is called a flag-captain. (3) The master of a merchant vessel.

Capua, a city in the dept. of Campagna, Italy, on the Volturno, 17 m. N. of Naples, of great wealth and power in Roman times, where Hannibal retired with his army to spend the winter after the Battle of Cannæ, 216 B.C., and where, from the luxurious life they led, his soldiers were enervated. It was taken later by the Romans, and finally destroyed by the Saracens in 840. A modern city has since been built on the site, though relics of the former splendour still exist. Pop. 13,000.

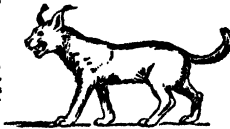
Capuchins, monks of the Franciscan Order, founded in 1520 by Matteo di Bassi, so called from a cowl they wear. They were a mendicant order, led an austere life in great poverty, and engaged largely in missionary work. They still exist chiefly in Austria and Switzerland, and have missions abroad.

Capulets, a celebrated Ghibelline family of Verona at mortal feud with that of the Montagues, familiar to us through Shakespeare's *Romeo and Juliet*, Romeo being of the latter and Juliet of the former.

Capybara, or **Carpincho**, the water-hog, the largest rodent extant, in appearance like a small pig; found in S. America. It belongs to the Cavy group of animals, is aquatic, and similar to the hippopotamus in habits. Its hind-legs, which are three-toed, are webbed. The forefeet are four-toed. It has no tail and a cleft upper lip like the guinea-pig's.

Carabineer, or **Carbineer**, formerly the name of light horse (mounted infantry) armed with a carbine and specially trained in skirmishing. The title was abolished in the French army in 1870. The 6th Dragoon Guards in the English army are so called.

Caracal, a species of the lynx family found in Africa and S. Asia; of a somewhat fierce disposition. It is reddish brown, has a comparatively short tail and tufted ears.



CARACAL LYNX

Caracalla (Marcus Aurelius Antoninus), a Roman emperor, son of Septimius Severus, born at Lyons; on the death of Severus at York in 211 he succeeded to the throne with his brother Geta, whom he murdered in 212; his reign (211-217) was a series of crimes, follies, and extravagances. He put to death 20,000 persons whom he suspected of attachment to his brother, among others, the jurist Papinianus, and was himself assassinated by one of his guards, named Macrinus, at Edessa. (188-217).

Caracas, the capital of the Republic of Venezuela, standing in the federal district of the same name, in the Andes, 3,000 ft. above sea-level; subject to earthquakes, in one of which (1812) 12,000 perished and a great part of the city was destroyed; it was the birthplace of Simon Bolívar. Pop. (federal district) 195,000.

Caracci, or **Caracci**, a family of painters, born at Bologna; **Ludovico**, the founder of a new school of painting, the principle of which was eclecticism, or imitation of the styles of the best masters (1555-1619). **Annibale** nephew and pupil, went to Rome and painted the celebrated Farnese gallery, a task which occupied him four years (1580-1600). **Agostino**, brother of the above, assisted him in the frescoes of the gallery. (1557-1602).

Caractacus, or **Caratacus**, a British chief, King of the Silures, maintained a gallant struggle against the Romans for nine years, but was overthrown

by Ostorius, A.D. 50, taken captive, and led in triumphal procession through Rome, when the Emperor Claudius was so struck with his dignified demeanour that he set him and all his companions at liberty.

Caramel, the substance produced by the process of rids the sugar of water and other substances, leaving, after cooling, a dark-coloured, brittle mass. It is soluble in water and is used as a colouring-material for wines, beers, gravy, etc.

Carat, the seed of the Mediterranean carob-tree (*Ceratonia Siliqua*), which is supposed to have been the first measure of weight for gold and precious stones, used by jewellers owing to their remarkable uniformity. To-day the term signifies a standard of weight for gold and jewellery, the standard carat being of 3.16 grains troy in London and of 200 milligrams in the U.S.A. and the other principal world centres. It is also used to express the proportionate fineness of gold. Thus, if a mass of gold contains 22 parts of pure gold out of 24, it is 22-carat gold.

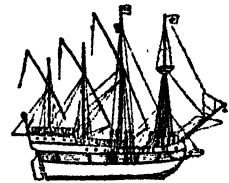
Caravaggio, **Michelangelo Amerighi**, an Italian painter, disclaimed the ideal and the ideal style of art, and kept generally to reality, often in its grossest forms; a man of a violent temper, which hastened his end; his "Christ and the Disciples at Emmaus" is in the National Gallery, London. (1569-1609).

Caravan, the name for large parties of travellers, travelling merchants and pilgrims, particularly in N. Africa and Asia, banded together for protection against brigands. Caravels are largely used, sometimes numbering as many as 600. The name is also applied to a sort of house on wheels used by itinerant gypsies, while the motor-caravan is a modern adaptation.

Caravanserai, a large unfurnished inn, with a court in the middle for the accommodation of caravans and other travellers at night in the East.

Caravel, a sailing-ship of Portuguese origin bearing three or four

masts and much employed by navigators of the 15th and 16th Centuries. The earliest forms of caravel were entirely lateen rigged, the foresail being the largest; later square sails were fitted to the foremast. A square stern was another characteristic feature.



CARAVEL

Caraway, the dried ripe fruit of the umbelliferous plant *Carum carvi*, which grows wild in N. and Central Europe and Asia, and has been naturalised in England. The seed, which is laterally compressed and has an aromatic flavour when bruised, is extensively used as flavouring for bread, cakes, etc. A volatile oil (caraway oil) is also derived from the seeds, and is of value for flavouring liquors, etc., and in medicine as a carminative.

Carberry Hill, the place in Scotland where in 1567 Mary, Queen of Scots, was taken in battle by the revolting nobles. She was forced to abdicate, and was imprisoned in Lochleven Castle.

Carbide, a compound of carbon with calcium, manganese, or iron, including calcium carbide, which is especially important for the production of acetylene gas generated from

it by the addition of water. Silicon carbide, prepared by heating sand and coke in an electric arc, is used as a substitute for emery.

Carbohydrates, a class of substances, such as the sugars, starches, and celluloses, consisting of carbon, hydrogen and oxygen. They are important in the life of animals and plants as structural elements and in maintaining functional activity. They furnish many materials of modern manufacture, including the cellulose used in the making of paper, films, varnishes and artificial silk. Glucose is obtained from dextrose or grape-sugar, milk, cane-sugar, etc.

Carbolic Acid, the popular misnomer for hydroxybenzene or phenol, C_6H_5OH . It occurs in coal-tar, from which it is extracted by fractional distillation, but the supply is augmented by synthetic preparation from benzene. The benzene is treated with fuming sulphuric acid, which converts it into benzene-sulphonic acid, and the latter is then fused with caustic soda. A sodium derivative of carbolic acid is thus formed, from which the carbolic acid itself is liberated by fractional distillation.

It is a colourless crystalline solid, melting point $43^\circ C.$, boiling point $181^\circ C.$; on exposure to air it turns pink and gradually liquefies owing to the absorption of water from the atmosphere. It is a poisonous substance with a characteristic smell, and the solid produces burns if left in contact with the skin. It has pronounced germicidal powers, and is used as an antiseptic and disinfectant, though to a decreasing extent, since the discovery of better agents. It finds extensive application in the manufacture of plastics (*q.v.*), and is also the starting-point in the manufacture of lyddite (see *Explosives*). It is not an acid, though it possesses certain acid properties.

Carbon, a chemical non-metallic element belonging to the same family as silicon, tin and lead. Symbol C, atomic number 6, atomic weight 12. Nearly chemically pure carbon occurs naturally in two crystalline forms—*viz.*, diamond (S. Africa, Brazil, etc.), and graphite (Ceylon, Czechoslovakia, and other places). It is also widely and abundantly distributed in the form of its compounds, *e.g.*, carbon dioxide (0.03–0.04 per cent. by volume of the air), limestone and chalk rocks (containing about 12 per cent. by weight of carbon and composed of impure calcium carbonate), coal (a complex mixture of various carbon compounds such as hydrocarbons), and petroleum (mixtures of hydrocarbons—*i.e.*, compounds consisting of carbon and hydrogen only). Carbon is also the essential element of living tissues, and occurs in most products of living or dead organisms.

It is a comparatively unreactive element, its most striking property being the capacity of its atoms to join together to form straight or branched chains, often of considerable length, and rings. These structures form the skeletons of the vast number of carbon compounds studied in the branch of chemistry known as "organic chemistry."

Impure forms of carbon of a non-crystalline ("amorphous"), or at least micro-crystalline character, are: (1) lampblack, a kind of soot obtained by the partial combustion of natural gas or petroleum, and largely used for imparting strength to rubber for motor-car tyres and for making printer's ink; (2) wood charcoal, especially when "activated."

It is in a current of superheated steam the power of absorbing great quantities of gases or vapours, and is therefore used in gas-masks, in the recovery of volatile oils, etc.; (3) animal charcoal or bone-which is the residue left after the dis-

tilation of bones, and consists of about 10 per cent. of carbon with 90 per cent. of mineral matter, chiefly calcium phosphate; it is used in the refinement of sugar to remove the brown colour of the crude product; (4) gas carbon, a hard substance lining the retorts in which coal has been distilled, and finding its chief use in the carbons for arc-lamps and dry cells.

All forms of carbon burn in air or oxygen if sufficiently heated, yielding carbon dioxide (with carbon monoxide if the supply of air or oxygen is insufficient for complete oxidation). Compounds of carbon with metals are known as carbides; the most important is calcium carbide, CaC_2 . The principal uses of carbon depend on: (a) the heat given out during its combustion, hence its value as a fuel, and (b) its affinity for oxygen, hence its use in metallurgy, to reduce metallic ores of the oxide type to the metallic state.

Carbonari, (lit. charcoal burners), a secret society that, in the beginning of the 19th Century, originated in Italy and extended itself into France, numbering hundreds of thousands, including Lord Byron, Silvio Pellico, and Mazzini among them, the object of which was the overthrow of despotic governments; they were broken up by Austria, and absorbed by the Young Italy party.

Carbon Assimilation, or photosynthesis, the feeding process by which green plants convert water (obtained via their roots from the soil) and carbon dioxide (obtained from the air via the minute holes or stomata on the under-surface of the leaves) into sugars, starches and other complex organic compounds, with evolution of oxygen as a waste product. The changes involved require a supply of energy, and this is derived from the energy of sunlight, part of which—chiefly the red and orange rays—is trapped by the green colouring-matter or chlorophyll (*q.v.*) and applied to bring about the reactions.

Carbon assimilation should be carefully distinguished from respiration or "breathing," which, in plants as in animals, consists in using atmospheric oxygen for the slow combustion or oxidation of carbonaceous material to carbon dioxide and water, with liberation of energy. There are thus two opposing processes going on in green plants during daylight, but since the carbon assimilation is much more extensive than the respiration, the latter is masked; during darkness, however, or even in the light with those plants that possess no chlorophyll, such as germinating barley grains, respiration can easily be detected.

Carbon assimilation is the basic condition of the existence of all life upon the earth, since animals, including man, are dependent for their food upon previously elaborated carbonaceous material. Carbon assimilation, by removing carbon dioxide from the air and returning oxygen to it, helps to keep the proportion of gases in the atmosphere constant. See *Carbon Dioxide*.

Carbonate, a salt of carbonic acid—*e.g.*, $CaCO_3$, calcium carbonate; Na_2CO_3 , sodium carbonate; $BaCO_3$, barium carbonate; $NaHCO_3$, sodium bicarbonate. Many of the carbonates are extensively used in the arts and medicine.

Carbon Dioxide, a gaseous oxide the formula CO_2 ; it is present in the atmosphere to the extent of approximately 3 parts in 10,000 by volume, and this proportion remains remarkably steady, since, though much is used as food by green plants (see *Carbon Assimilation*), much is thrown into the air by the combustion of carbonaceous fuels, by the respiration of living organisms, and by volcanoes.

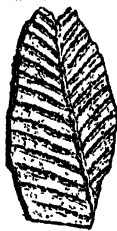
It is a heavy gas, rather more than 1½

times as dense as air, and often collects on the floors of caves, valleys, etc., in volcanic regions—e.g., the Grotto del Cane near Naples and the Valley of Death in Java. It has no smell, but its solution in water (see **Carbonic Acid**) has a prickly taste, and is used as "soda-water." It is detected by its reaction with lime-water, with which it yields a white precipitate of calcium carbonate. The lime-water "turns milky." It will not support life or combustion, but is not actively poisonous.

It may be prepared by pouring a dilute acid upon a carbonate (e.g., dilute hydrochloric acid upon marble), and is evolved from a lime-kiln during the "burning" of limestone. Commercially it is obtained during fermentation processes—e.g., brewing—and is placed on the market compressed in steel cylinders.

Carbonic Acid, a weak and unstable acid present in an aqueous solution of carbon dioxide (q.v.). It has never been isolated, but its salts, the carbonates and bicarbonates, are well known, and some of them—e.g., calcium carbonate (limestone, marble and chalk)—are very abundant. Its chemical formula is H_2CO_3 . "Carbonic acid gas" is an obsolete name of carbon dioxide.

Carboniferous, the geological strata and below the Permian strata. The rocks include limestones and grits, as well as most of the coal measures of the period. The Carboniferous Age had a hot, wet climate that gave rise to luxuriant forests, the remains of which form the coal beds. In rocks of this age remains of the earliest amphibians are found.



CARBONIFEROUS
(COAL) FOSSIL

Carbonisation, the process of producing coal-gas and coke from coal by the application of heat at a temperature of $1,000^{\circ}C$. The process was invented by William Murdoch in 1792. Later processes involve low-temperature carbonisation at $600^{\circ}C$, which produces semi-coke and yields a higher liquid product. The Fuel Research Station at Greenwich, founded by Sir George Beilby, is examining low-temperature carbonisation possibilities.

Carbon Monoxide, a compound of carbon and oxygen of the chemical formula CO . It is a colourless, odourless gas of approximately the same density as air, and is formed by the incomplete combustion of carbon or carbon compounds in a limited supply of air or oxygen. It is very poisonous on account of the fact that it forms a bright red compound, carboxy-haemoglobin, with haemoglobin, the red colouring-matter of the blood, and thus prevents it from performing its function of carrying oxygen to all parts of the body. Its accidental production when a motor-car engine is allowed to run in a closed garage, and when a gas geyser is burning in a small room without a flue, has led to many deaths.

In the laboratory it is made by passing carbon dioxide over red-hot carbon, or by abstracting the elements of water from formic acid or oxalic acid by means of concentrated sulphuric acid. Industrially it is an important reducing agent, as well as one of the principal gaseous fuels. It readily combines with oxygen to form carbon dioxide (CO_2), and in virtue of this can be used to reduce the oxides of certain metals—e.g., ferric oxide to iron. When steam is passed over white-hot coke a mixture of this gas and of hydrogen, known as Water Gas, is produced.

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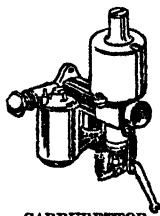
and this is commonly mixed with coal gas for domestic and other uses. When coke is heated in a limited supply of air, a mixture of carbon monoxide and nitrogen, known as Producer Gas, results, its chief use being as an industrial gaseous fuel.

Carbonyl Chloride, or **Phosgene**, the acid chloride derived from carbon monoxide and chlorine which unite directly in sunlight; used in the Great War as a poison gas.

Carborundum, or **Silicon Carbide** (see **Carbide**). It is prepared from sand and coke, which are heated together in an electric furnace. The resultant solid is black and crystalline, and is of exceptional hardness—greater than that of the ruby. It is of great commercial value in engineering as an abrasive, and is used in the place of emery. The word is a trade name.

Carbuncle, the name of a precious garnet; of a dark red colour. It is relatively soft, and is found in E. Asia, especially Burma and Ceylon, and in Brazil. The word is also the name of an eruption of the skin, resembling a boil, but much more severe. It appears usually on the shoulder, neck, abdomen, and sometimes on the leg, and is due to the infection of the staphylococcus germ.

Carburettor, that part of an internal-combustion engine, running on an easily vaporised fuel like petrol, the function of which is to project minute droplets of fuel into the air passing into the cylinders, so that a suitable explosive mixture may be formed for ignition by the spark. It consists of a float-chamber where the level of the petrol arriving from the tank is kept constant by a float-and-needle valve, and—usually—two jets from which the petrol is discharged into the air-stream. One jet delivers at a constant rate, while the other gives more fuel when the engine speed is greater; under the latter conditions, therefore, the petrol-air mixture is less rich.



CARBURETTOR

Carcassonne, a city of France, capital of a dept. of the Aude, and a centre of the wine trade. It is famed for its ancient fortifications, which include two encircling walls guarded by many towers. The old town within the walls has a cathedral begun in the 11th Century, the new town across the Aude, has a 13th-Century cathedral. Carcassonne was a city before the Romans invaded Gaul. Pop. 35,000.

Carchemish, Hittite, on the Euphrates. Identified as Jerablus (Hierapolis), excavations have yielded remarkable architectural and other remains.

Cardamoms, the dried ripe fruit of several plants, used in India as a spice. The chief species which yield these fruits are the *Elettaria cardamomum*, found in India and Malaya, and the *Amomum cardamomum*, both plants belonging to the Zingiberaceae order.

Cardiff, county town of Glamorganshire, S. Wales, on the R. Taff, the sea outlet for the mineral wealth and products of the district, a town that has risen more rapidly than any other in the kingdom, having had at the beginning of the 19th Century only 2,000 inhabitants; it has a university, a number of churches, few of them belonging to the Church of England, and the National Museum of Wales. Pop. 223,600.

Cardigan, seaport of Cardiganshire, S. Wales, on the Teifi. It has a small harbour and salmon fisheries and ruins of an old castle. Pop. 3,300.

Cardigan, officer, commanded the Light Cavalry Brigade in the Crimean War, and distinguished himself in the famous charge of the Six Hundred, which he led; his favourite regiment, the 11th Hussars, on the equipment of which he lavished large sums of money. (1797-1868).

Cardigan Bay, a wide semi-circular bay of Wales, with a coast-line of 130 m.

Cardiganshire, a county in S. Wales, low-lying on the coast and mountainous in the interior, but with fertile valleys where sheep and cattle are reared; the county is remarkable for its many early British remains and other antiquities. Area 693 sq. m. Pop. 55,000.

Cardinal, the highest rank, next to the Pope, in the Catholic Church. The title is reserved for members of the Sacred College of Rome who form the Pope's council and are appointed only by him. They meet in consistory, and number 70; on the death of the Pope they name his successor, usually one of themselves. He is crowned by the cardinal deacon and consecrated by a cardinal bishop, of whom there are six. Cardinals wear a scarlet biretta and dress, and receive a ring from the Pope. Most cardinals are of Italian birth and live in Rome. English-speaking cardinals include the archbishops of Sydney, Baltimore, Westminster, and Armagh.

Cardinal, or Red-bird, the popular name of a red, crested, singing bird with a black throat, found in N. and S. America, of the species *Cardinalis*. They belong to the Grosbeaks of the Fringillidae family.

Carding, an operation in textile manufacture for removing all impurities and withdrawing imperfect fibres, thus preparing the perfect ones for spinning. It is performed by a series of cylinders furnished with wire teeth. The "neccos" after being combed, pass through a funnel, and are narrowed into "slivers" ready for "drawing."

Cardoon (*Cynara Cardunculus*), a plant of the order Compositae, closely allied to the artichoke, and found over wide areas of the Peninsula of S. America. It is cultivated for the leaves, which are blanched and eaten like celery.

Cardross, a village of Dumbartonshire, Scotland, the birthplace of Smollett. Robert Bruce died in Cardross Castle. Pop. 12,000.

Cards, Playing, pieces of thick paper or paper, pasteboard with devices on them, used in card games of skill and chance. A full pack contains four suits—viz., hearts, diamonds, spades and clubs—each suit containing 13 cards—viz., the Ace, King, Queen, Jack, and nine others with from ten down to two pips on them. They are of uncertain origin, but in the past have lent themselves (especially the court cards) to decorative treatment and to use for illustration of prominent people.

Cardwell, a town and seaport of Queensland, Australia. Cedar-wood is exported, and there are digging fisheries and meat-canning works. Pop. 5,000.

Cardwell, Edward Cardwell, Viscount, statesman, son of a Liverpool merchant. M.P. with virtually no break,

1842-1874. He followed Peel, Aberdeen, and Palmerston; was President of the Board of Trade (passing the Merchant Shipping Act, 1854), Secretary for Ireland, Colonial Secretary, Chancellor of the Duchy of Lancaster, and finally, 1868, Secretary for War. He carried out army reforms for which as Colonial Secretary he had made preparations. The abolition of purchase of commission, the short service and the linked battalion systems, 1871, were part of his plan. (1813-1886).

Carew, Thomas, English courtier poet; his poems, chiefly masques and lyrics of a sensuous nature. (1598?-1638 f.).

Carey, Henry, English poet and musician, excelled in ballads; composed *Sally in Our Alley*. (d. 1743).

Carey, William, celebrated Baptist missionary, born in Northamptonshire; founder of the Baptist Missionary Society, and its first missionary; founded the mission at Serampore and directed its operations, distributing by thousands Bibles and tracts in native languages, as well as preparing grammars and dictionaries; was 29 years Oriental professor in the College of Fort William, Calcutta. (1761-1834).

Caria, an ancient maritime country in SW. Asia Minor, bordering on the Archipelago, of which the Mæander was the chief river and Halicarnassus the chief town. It was originally inhabited by the Carians, but colonised by the Greeks, later subdued by the Persians, and finally became a province of the ancient Roman empire. The district to-day forms part of Turkey in Asia Minor.

Caribbean Sea, a great arm of the Atlantic, lying between the Greater and Lesser Antilles and Central and S. America, subject to hurricanes; it is connected with the Pacific by the Panama Canal, with the Gulf of Mexico by the Yucatan Strait, and with the Atlantic by Windward, Mona, and other Passages.

Caribou, the wild reindeer of Arctic districts of the New and Old

World. There are two types, the Woodland Caribou, found in moose-inhabited forests, and Barren Ground Caribou, which is smaller, roaming Arctic wastes. Both male and female have antlers, those being not as a rule evenly developed on both sides of the head.

Caribs, a race of Indians, American, once inhabiting the West Indies,

now confined to the southern shores of the Caribbean Sea, as far as the mouth of the Amazon; ethnologically they originated in Central Brazil; they are a fine race, tall, and of ruddy-brown complexion, but have lost their distinctive physique by an amalgamation with other tribes; give name to the Caribbean Sea.

Caricature, a representation or description bearing a resemblance to the original, is exaggerated so as to be ridiculous, and often employed, especially by artists, to give point to satirical comment. Such burlesques date from a very early period, and appear in the plastic and pictorial art of Greece and Rome. In England pictorial caricature reached its zenith in the work of Hogarth (q.v.) and of Max Beerholm and Rowlandson, Doyle, Cruikshank, Leech, E. T. Reed, Furness, Raven-Hill and Partridge, made political caricature popular. The art is a feature of the modern newspaper as well as journals like *Punch*, the most striking work to-day in England being that of Low and Strube.



CRESTED
CARDINAL



CARIBOU

Caries, a disease of the bones, set up by inflammation generally caused by an injury. It resembles ulceration: the more vulnerable parts, and often accompanies scrofula, syphilis and tubercle. The chief centres attacked are the vertebrae, and the hands and feet. A lesser and different form attacks the teeth causing chronic decay.

Carillon, a large peal of bells, suitable for playing somewhat elaborate music; also the tunes so played. A peal for ringing does not exceed 12, but those of Belgium are extensive, and number from 40 at Antwerp to 48 at Ghent. The bells are struck by hammers, usually by mechanical apparatus, called chiming machinery. Carillon recitals are popular in Belgium, especially at Antwerp.

Carinthia, an Alpine province in the S. of Austria, adjoining Italy and Yugoslavia. The R. Drave flows through it from W. to E. Much is clad in pine forests, and horses and cattle are reared. It has rich mines of lead, zinc, iron and coal, and its industries include the making of steel, iron, wire, machinery and rails. Klagenfurt is the capital. It became Austrian in 1335. Small parts passed to Italy and to Yugoslavia, by whom it was occupied, after the Great War. Area 3,680 sq. m. Pop. 349,000.

Carisbrooke, a village in the Isle of Wight, in the castle of which, now partly in ruins, Charles I. was imprisoned for 13 months before his trial; it was at one time a Roman station.

Carlile, **Prebendary Wilson**, founder, in 1882, of the Church Army. Companion of Honour, 1926. (1847-).

Carline Thistle, the *Carlina vulgaris*, common in Britain on heaths, a species of compositae with purple flowers and prickly leaves and bracts.

Carlingford, a seaport and pleasure resort of Co. Louth, Ireland (Eire), on an arm of the Irish Sea called Carlingford Lough. It has oyster fisheries. Pop. 600.

Carlisle, county town of Cumberland, England, on the Eden; a great railway centre; with an old castle of historical interest, and a cathedral founded by William Rufus and dedicated to Henry I. Once a Roman station; ruins of Hadrian's Wall are close to it. Pop. 57,000.

Carlists, a name given in France to the partisans of Charles X. (1830), and especially in Spain to those of Don Carlos (1833), and those of his grandson. (1872-1876).

Carlos I., King of Portugal, son of Luiz I. and Maria Pia daughter of Victor Emmanuel II. of Italy. The kingdom fell into financial straits, and his minister Franco became a dictator governing by decree. Carlos and his eldest son were assassinated in Lisbon. (1863-1908).

Carlos, Don, son of Philip II. of Spain, born at Valladolid, and heir to the throne; but from incapacity, or worse, excluded by his father from all share in the government; confessed to a priest a design to assassinate someone, believed to be his father; was seized, tried and convicted, though sentence against him was never pronounced; died shortly after; his story has formed the subject of tragedies, especially one by Schiller. (1545-1568).

Carlos, Don, the brother of Ferdinand and laid claim to the crown as heir against Isabella, Ferdinand's daughter, who by the Salic law, though set aside in her favour by her father, had, he urged, no right to the throne; his cause was taken up by a large party, and the struggle kept up for years; defeated at length, he abdicated in favour of his son. (1785-1855).

Carlos, Don, grandson of the preceding, and heir to his rights; revived the struggle in 1870, but fared no better; took refuge abroad. (1848-1909).

Carlovingians, or **Carolingians**, the name of the second dynasty of Frankish kings, in succession to the Merovingian, which had become *fatuous*; bore sway from 752 to 987, Pépin le Bref the first, and Louis V. the last; Charlemagne was the greatest of the race, and gave name to the dynasty.

Carlow, a small inland farming country, of Leinster, Ireland (Eire). Area 346 sq. m. Pop. 34,000. Also the county town. Pop. 7,000.

Carlowitz (now **Karlovec**), a town of Yugoslavia on the Danube, 30 m. NW. of Belgrade, where a treaty was concluded in 1699 between Turkey and other European Powers, very much to the detriment of the territories of the former. Has a metropolitan see of the Serbian Church.

Carlsbad (**Karlsbad**; Czech. **Vary Karlovy**), a celebrated watering-place formerly in Czechoslovakia but since Oct. 1938 incorporated in Germany, the springs being the hottest in Europe, the temperature varying from 117° to 165°; population nearly trebled in the season; the inhabitants are engaged in industries which minister to the tastes of the visitors. Pop. 24,000.

Carlskrona (**Karlskrona**), a Swedish town, strongly fortified, on the Baltic, with a spacious harbour, naval station and arsenal; built on five rocky islands united by dykes and bridges. Pop. 28,000.

Carlton, urban district of Nottinghamshire, England, 3 m. NE. of Nottingham. Mining and brick-making are the chief industries, and there are large railway works. Pop. 22,000.

Carlisle, an industrial town of Lanarkshire, Scotland, with coal and iron mines, limestone quarries, foundries and engineering works, etc. Pop. 10,000.

Carlyle, Thomas, born in the village of

Dumfriesshire; son of James Carlyle, a stonemason and afterwards a small farmer, and of Janet Aitken; educated at the parish school and Annan Academy; entered the University of Edinburgh at the age of 14, distinguished in mathematics; a student in the theological department; became a teacher first in Annan Academy, then at Kirkcaldy; threw up both schoolmastering and the Church; removed to Edinburgh, and took to tutoring and working for an encyclopædia, and later to translating from the German and writing criticisms for the *Reviews*, the latter of which were collected afterwards in the *Miscellanies*; wrote a *Life of Schiller*; married (1826) Jane Welsh, a descendant of John Knox; removed to Craigenputtock, in Dumfriesshire, where his original work began with *Sartor Resartus*, written in 1831, a radically spiritual book, and a symbolical; removed to London in 1831, where he wrote his *French Revolution* (1837), a book instinct with the all-consuming fire of the event which it pictures, and revealing "a new moral force" in the literary life of the country and century; delivered three courses of lectures to the élite of London Society (1837-1840), the last of them *Heroes and Hero-Worship*, afterwards printed in 1840; in 1840 appeared *Chartism*, in 1842 *Past and Present*, and in 1850 *Later-Day Pamphlets*; all on what he called the "Condition-



THOMAS CARLYLE

of-England-Question," which to the last he regarded as the most serious question of the time; in 1845 he published *Letters and Speeches of Oliver Cromwell* and concluded (1858-1865) his life's task with *The History of Frederick II. of Prussia, called Frederick the Great*. (1795-1881).

Carman, William Bliss, Canadian journalist, alist and poet, born at Fredericton, New Brunswick. His earliest volume of poetry was *Low Tide on Grand Pré*, 1893. With Richard Hovey, and afterwards alone, he issued volumes of *Songs from Vagabondia*. Discussed his philosophy of nature-worship in a prose work called *The Kinship of Nature*. (1861-1929).

Carmarthenshire, a county in S. Wales, and the largest in the Principality; contains part of the coalfields in the district; capital Carmarthen, on the right bank of the Towy, a river which traverses the county. Area 920 sq. m. Pop. 179,000.

Carmel, Mount, a NW. extension of the S. the Plain of Esdraelon, in Palestine, and terminates in a rocky promontory 500 ft. high; forms the southern boundary of the Bay of Acre; its highest point is 1,810 ft. above the sea-level. It is an attractive region, perennially green. At its N. end are several hotels and pensions, and it is a popular residential area for inhabitants of Haifa, which is at the foot of the Mount.

Carmelites, a monastic order, originally an association of hermits on Mount Carmel, afterwards mendicant, called the Order of Our Lady of Mount Carmel, i.e., the Virgin, in consecration to whom it was founded by a pilgrim of the name Berthold, a Calabrian, in 1156; known formerly as the "White Friars." The Order is said to have existed from the days of Elijah.

Carmen Sylva, the *nom-de-plume* of Elizabeth, Queen of Rumania; having lost an only child, she took to literature for consolation; evinced an active interest in the elevation and welfare of her sex. (1843-1916).

Carminatives, name given to those drugs used on account of their stimulating effect on the stomach.

Carmine, a red colouring-matter of the cochineal insect, and used in water-colours, cosmetics, etc.

Carnac, a fishing-village in the Bay of Morbihan, France, with interesting historical remains of menhirs and mounds of Celtic and pre-Celtic days.

Carnarvon, George Edward Stanhope, Fifth Earl of, Egyptologist. Most of his life and much of his money were spent in excavations, his most notable discovery being Tutankhamen's tomb at Luxor in 1922, just before his death. (1866-1923).

Carnatic, an old province in the Madras Presidency of India that extended along the Coromandel coast from Cape Comorin, 600 m. N.

Carnation, the popular name of the varieties of the clove pink, *Dianthus Caryophyllus*. Rabbits greedily eat them, as also do birds. Those of the florist are much prized for their beautiful colouring and sweet-scented double flowers.

Carnegie, Andrew, ironmaster, born in Dunfermline, the son of a weaver; made a large fortune from his iron and steel works at Pittsburgh, U.S.A., out of which he liberally endowed institutions and libraries, both in America and his native country. (1835-1919).

Carnelian, sometimes cornelian, a semi-precious stone of a red colour, often cut for beads, seals, etc. It is semi-transparent.

Carniola, a district in Yugoslavia, SW. S. of Carinthia (once an Austrian duchy); contains quicksilver mines, second only to those of Almaden, in Spain; the surface is mountainous, and the soil is not grain productive, though in some parts it yields grapes and fine fruit.

Carnival, in Roman Catholic countries the name given to a season of feasting and revelry immediately preceding Lent, akin to the Saturnalia of the Romans.

Carnivora, an order of mammals, called flesh-eating, though some members (e.g., some bears) are vegetarian feeders. Their geographical distribution is world-wide, except Australia and New Zealand. They are characterised by sharp teeth, small incisors, well-developed brain and simple stomach. The order is divided into two sub-orders: the *Pissipedia* (land types, including the cat tribe, dog tribe, civets, wolves, foxes, weasels, otters, bears, etc.), and the *Pinnipedia* (the fin-footed or aquatic types, including seals and allied species).

Carnot, Lazare Nicolas Marguerite, French mathematician and engineer, born at Nolay, in Burgundy; a member of the National Convention; voted for the death of the king; became member of the Committee of Public Safety, and organiser of the armies of the Republic, whence his name, the "organiser of victory"; Minister of War under Napoleon; defender of Antwerp in 1814; and afterwards Minister of the Interior. (1753-1823).

Carnot, Marie François Sadi, civil engineer and statesman, born at Limoges, nephew of the preceding; Finance Minister in 1875; became President of the French Republic in 1887; was assassinated at Lyons by an anarchist. (1837-1894).

Carnot, Nicolas Léonard Sadi, son of Lazare, founder of thermodynamics; in his *Réflexions sur la Puissance du Feu* enunciates the principle of reversibility, considered the most important contribution to physical science since the time of Newton. (1796-1832).

Carnoustie, a seaside resort of Forfarshire, Scotland, 10 m. NE. of Dundee. Near is Barry Links, a military camping and manoeuvring ground. Pop. 6,000.

Carnwath, village of Lanarkshire, Scotland, 7 m. NE. of Lanark. Pop. 5,200.

Carob, the *Ceratonia Siliqua*, a tree found wild in Mediterranean countries, the only species of its genus of Leguminosae, the pods of which are nutritious and reputed to have been eaten by St. John the Baptist. See *Carat*.

Carol, a religious song, the most common being those heard at Christmas and sung by the common people. Dancing and singing were probably combined in the earliest times.

Carol II., King of Rumania. Son of the throne, he married in 1921 Princess Helen of Greece, by whom he had one son, Michael. In 1925 he renounced his claim to the throne, and on the death of Ferdinand Michael became king. Subsequently Carol, after abortive attempts to claim the throne, was successful in 1930, when King Michael abdicated and became Crown Prince. (b. 1892).

Carolina, North, one of the original 13 States of N. America, on the Atlantic, S. of Virginia; 480 m. from E. to W. and 180 m. from N. to S.; has a fertile, well-watered sub-soil in the highlands; is rich in minerals and natural products; chief industry, agriculture (crop and stock-raising); chief

products maize, cotton, tobacco, peanuts. Chief mineral output mica, feldspar and residual kaolin clay. Area 52,400 sq. m. Pop. 3,170,000 (918,000 negroes). Cap. Raleigh.

Carolina, South, S. of North Carolina, is alluvial with swamps extending 100 m. inland from the coast, and is well watered; produces cotton in large quantities and of a fine quality, also maize, oats, peanuts and tobacco. Area 30,990 sq. m. Pop. 1,739,000 (793,000 negroes). Cap. Columbia.

Caroline, Queen of George II. of England, was the daughter of the Margrave of Brandenburg-Anspach, married (her second husband) George Augustus, Electoral Prince of Hanover, and son of George I. of England, in 1705; became Queen Consort on his accession in 1727, and acted as regent in his absence from the country; exercised considerable influence in affairs of state. (1683-1737).

Caroline Islands, a stretch of 2,000 m. from E. to W., N. of New Guinea and E. of the Philippines; the soil of the western islands is fertile, and there is abundance of fish and turtle in the lagoons; products, copra, beche de mer, turtle and pearl shell. They were discovered in the early 16th Century by Diego da Rocha, Portuguese navigator, who named the group the Sequeira Is.; bought from Spain by Germany in 1899; in 1919 mandated to Japan under League of Nations. Pop. 31,000 (chiefly Kanakas). Ponapé I. has 10,000, and Yap and Parao, 7,000 and 11,000 respectively.

Caroline of Brunswick, Queen IV. and daughter of the Duke of Brunswick; married George then Prince of Wales, in 1795; gave birth to the Princess Charlotte the year following, but almost immediately after her husband abandoned her; she retired to a mansion at Blackheath; on the accession of her husband she was offered a pension of £50,000 if she stayed out of the country, but rejected it and claimed her rights as queen; was charged with adultery, but after a long trial acquitted; on the day of the coronation sought admission to Westminster Abbey, but the door was shut against her; she died a fortnight after. (1768-1821).

Carp, a genus of soft-finned fishes with a gills of three flat rays. They have one dorsal fin and frequent fresh, quiet water. They feed chiefly on vegetable matter, worms, and insects. The common carp (*Cyprinus carpio*) is said to live to a great age, even 100 years.



COMMON CARP

Carpaccio, Vittore, a Venetian painter of great celebrity, particularly in his early pieces, for his truth of delineation, his fertile imagination, and his rich colouring; his works have nearly all of them sacred subjects. (c. 1450-1522).

Carpathians, a range of wooded Europe, 880 m. long, which, in two great masses, extend from Presburg (Bratislava) to Orsova, both on the Danube, circling round the greater part of Hungary, particularly the whole of the N. and E., the highest of them Tatra, 8,740 ft.; they are rich in minerals, and their sides are clothed with forests, principally of beech and pine.

Carpentaria, Gulf of, a broad, deep Australia; contains several islands, and receives several rivers.

Carpenter, Mary, a philanthropist, born at Exeter, daughter of Dr. Lant Carpenter, Unitarian minister; took an active part in the establishment of reformatory and ragged schools, and a chief promoter of the Young Offenders Act; her philanthropic efforts extended to India, and she was the founder of the National Indian Association. (1807-1877).

Carpentier, Georges, a famous French boxer, born at Lens and employed as a boy in the mines; took to boxing early, and in 1914 defeated Gunboat Smith, who was disqualified for a foul; served with the French aviation corps during the War; defeated Joe Beckett in 1919, knocking him out with two blows; beaten by Jack Dempsey in New York in 1921. (1894-).

Carpentry, the art of combining pieces of timber to support a weight or sustain pressure. The work of the carpenter is intended to give stability to a structure, that of a joiner to give finishing and decoration. The term *frame* in carpentry is applied to any assemblage of pieces of timber firmly connected together, the points of meeting being called the *joints*.

Lengthening a beam consists of uniting pieces of timber into one length by joining their extremities. When neatness is not required, this is done by *fishing*—i.e., by fastening a piece of timber on each side of the point where the beams meet. When the width of the beam must be the same throughout, *scarfing* is employed. This consists of cutting from each beam a part of the thickness of the timber, and on opposite sides, so that the pieces may be jointed together or bolted or hooped. When greater strength is required, *building* or *trussing* is the operation employed, building being the combining of two or more beams so as to have the effect of one large one. In trussing, the beam is cut in two in the direction of its length, and supported with cross-beams, as in roofing. *Mortise and tenon* is a mode of joining timber. An excavation called a mortise is made in one piece, and a projecting tongue to fit it, called the tenon, in the other piece.

Carpet, a floor-covering usually of wool woven on a strong linen or woollen base. Axminster carpets are usually made in one piece on strong linen, and small tufts of different-coloured worsted or wool are tied or fastened under the warp and are brought to the surface by a comb. Kidderminster carpets are made by intersecting two or more cloths of different colours, and, being made in layers, may be either two- or three-ply. The back of the carpet is the reverse pattern of the front.

Wilton or pile carpets have a velvety appearance, the loops of the coloured wool being cut through, and an extra velvety effect is obtained in some varieties by throwing in as a shoot a coloured chenille, afterwards cut at the surface. A cheap substitute for Wilton carpet is the tapestry carpet. Instead of several coloured yarns being used, a single coloured yarn is employed, the pattern being produced by dyeing the yarn in various colours at intervals of its length. Felt carpet, often used for stairs, landings and bedrooms, is made by printing colours on felt. In recent years Indian and Persian carpets have become popular, and are imported in large quantities.

Carpet Bagger, a derisive term for a candidate who seeks election in a constituency where he is a stranger, especially if sent down by the central party organisation.

Carrageen, an edible seaweed, Irish moss (*Chondus crispus*), reddish brown in colour, found on the shores of N. Europe and N. America.

CASCADE MOUNTAINS

Cascade Mountains, a range of mountains stretching through Oregon and Washington in the U.S.A. into British Columbia, Canada. They slope down towards the Pacific from the W. Plateau, of which the Rocky Mts. form the E. boundary; they are nearly parallel with the coast, and more than 100 m. inland.

Cascara Bark, the bark of the N. American buckthorn tree, *Rhamnus Purshiana*. The bark is dried, and the fluid, Cascara Sagrada, extracted from it. This fluid is used in medicine as a purgative, on account of its action on the muscles of the intestine.

Casein, a protein present in milk and cheese; it forms the basis of most of the patent foodstuffs obtained from milk and has extensive uses in the cotton industry.

Casemate, in fortifications, a vault built into the rampart of a fortress, with loopholes through which guns may be fired. On warships a similar armoured protection for firing guns. In architecture, a hollow moulding.

Casement, Roger, Irish spy. Knighted in 1911 after years in the British consular service; he worked among Irish prisoners in Germany in 1915, and the following year landed in Ireland from a German boat to start a rebellion. For high treason he was deprived of his knighthood and hanged. (1864-1916).

Cashel, a town in Tipperary, Ireland (Eire), 49 m. N.E. of Cork; a bishop's see, with a "Rock" 300 ft. high, occupied by interesting ruins; it was formerly the seat of the kings of Munster. Pop. 2,900.

Cashew-nut, the fruit of the tree (order Anacardiaceae), grown in the W. Indies, Central and S. America for the sake of the kernels of the nuts, which are eaten raw and roasted, and for the sake of the culinary oil derived from the kernels.



CASHEW-NUT TREE

Cashmere, or **Kashmir**, a native Indian State, bordering upon Tibet, 120 m. long and 80 m. wide, with beautiful scenery and a delicious climate, in a valley of the Himalayas, forming the basin of the Upper Indus, hemmed in by deep-gorged woods and snow-peaked mountains, and watered by the Jhelum, which spreads out here and there near it into lovely lakes; shawl-weaving and lacquer-work are the chief occupations of the inhabitants. Cashmere, which had been under Hindu and Mohammedan sultans, became part of the Mogul Empire under Akbar from 1581. After a period of Afghan rule in the 18th Century it was taken by the Sikhs, and after the Battle of Sohraon, 1846, Lord Hardinge entrusted its rule to a feudatory prince, subject to British supremacy. Pop. (with Jammu) 3,646,000.

Cash on Delivery. The C.O.D. system was first introduced by the Swiss Post Office in 1849. It provides an advantageous means of trading to both buyer and seller, with no risk to either party. In 1885 the Postal Congress made regulations for the delivery of parcels and in 1891 for letters. In 1877 the service had been established in India and Australia. The United Kingdom was considerably later in using the new facilities owing to the opposition of retail traders in 1904. However, the system was adopted eventually between the U.K. and the various

Dominions and Protectorates, and in 1919-1920 the scheme was in operation with European and other nations. In 1926 an inland parcel service was adopted. The service by rail is worked with the four big railway companies, the Post Office doing the paying, and the Railways the conveyance.

Cash Register, a machine registering and calculating cash paid into it. It has keys marked with particular amounts, which, on being struck, record them on the face of a dial for the customer to see. One machine can be worked by many assistants, each having a separate adding total and cash drawer.

Casimir, the name of five kings of Poland; the most eminent, Casimir III., called the Great; elected king in 1333; recovered Silesia from Bohemia in two victories; defeated the Tartars on the Vistula, and annexed part of Lithuania; formed a code of laws, limiting both the royal authority and that of the nobles. (1310-1370).

Casimir-Périer, Jean Paul Pierre, President of the French Republic, born in Paris; a man of moderate views and firm character; was premier in 1893; succeeded Carnot in 1894; resigned 1895. (1847-1907).

Casino, a club-house or public building in Continental towns provided with rooms for social gatherings, music, dancing, billiards and gambling.

Casket Letters, eight letters, of disputed authenticity, attributed to Mary Queen of Scots, and held as proof of her having connived at the murder of her husband, Lord Darnley. They were found in 1567, but the French originals are lost.

Caslon, William, typefounder; born in Worcester, Worcestershire; was the father of modern types in printing. (1692-1766).

Caspian Sea, an inland sea between Europe and Asia, Russia and Iran, the largest in the world, being 600 m. from N. to S. and from 130 to 270 m. in breadth, with the Caucasus Mts. on the W. and the Elburz on the S.; is the fragment of a larger sea which extended to the Arctic Ocean; shallow in the N., deep in the S.; the waters, which are not so salt as the ocean, abound in fish, especially salmon and sturgeon. Chief rivers Volga, Ural, Emba, Terek, Kura and Atrek.

Casquets, a group of rocks in the English Channel off the W. coast of Alderney, the scene of many wrecks until the construction of a lighthouse.

Cassandra, a beautiful Trojan princess, daughter of Priam and Hecuba, whom Apollo endowed with the gift of prophecy, but, as she had rejected his suit, doomed to utter prophecies which no one would believe, as happened with her warnings of the fate and the fall of Troy, which were treated by her countrymen as the ravings of a lunatic; her name is applied to anyone who entertains gloomy forebodings.

Cassation, Court of, a court of highest appeal and last appeal in France, appointed in the case of appeal to revise the forms of a procedure in an inferior court; it consists of a president and vice-president, 49 judges, a public prosecutor called the *procureur-général*, and six advocates-general; it consists of three sections: first, one to determine if the appeal should be received; second, one to decide in civil cases; and third, one to decide in criminal cases.

Cassava, the name of two species of manihot, the *M. utilisima* (Bitter Cassava) and *M. Api* (Sweet Cassava), both of the order Euphorbiaceae. The roots of *M. utilisima* are poisonous, but by treatment an edible starch is extracted, as from the roots of *M. Api*, from which tapioca is made.

Cassel (Kassel), capital of Hesse-Nassau, an interesting town with some important manufactures, 120 m. from Frankfurt-Main. Pop. 175,000.

Cassia, genus of tropical Leguminosae, shrubs and herbaceous plants. The drug senna is extracted from the leaves of several of the species, and senna-poda, also a purgative, are the seed-vessels of *Cassia fistula*.

Cassiopeia, in Greek legend, Queen of Ethiopia, mother of Andromeda, placed after death among the constellations; a constellation well N. in the northern sky, of five stars in the shape of a W.

Cassiterides, islands in the Atlantic, which the Phœnician sailors visited to procure tin; presumed to have been the Scilly Isles or Cornwall, which they adjoin.

Cassiterite, a mineral occurring in the chief ore of tin and is mined where the rock has been weathered and laid down in deposits. The chief workings are in Malaya, Dutch East Indies, Bolivia and Nigeria.

Cassius, Cæsar, chief conspirator against John in the plot; soon after the deed was done fled to Syria, and made himself master of it; joined his forces with those of Brutus at Philippi; repulsed on the right, thought all was lost; withdrew into his tent, and called his freedmen to kill him; Brutus, in his lamentation over him, called him the "last of the Romans." (d. 42 B.C.).

Cassivelaunus, a British warlike chief who unsuccessfully opposed Cæsar on his second invasion of Britain, 54 B.C.; surrendered after defeat, and became tributary to Rome.

Cassowary, a brevi-pinnate (short-

they are flightless) bird, genus *Casuarus*, the second largest bird after the ostrich, which it resembles. The head is protected by a curious horny growth, and the inner toe has a long, powerful claw. It is a very fast-running bird, native of Malacca, Java and Pacific Is.

Castalia, a fountain at Parnassus sacred to Apollo and the Muses; named after a nymph who drowned herself in it to escape Apollo.

Castanea, a genus of trees of the beech (Fagaceae) order, *C. vulgaris* being the edible sweet chestnut tree.

Castanets, two hollow, pear-shaped together by a cord and held in each hand, used as musical instruments of percussion, especially by dancers in Spain to mark the rhythm of the music.

Caste, rank in society of an exclusive as prevails among the Hindus especially. Among them there were originally two great classes, the twice-born and the once-born, i.e., those who have passed through a second birth, and those who have not; of the former there are four grades, Brahmans, or the priestly caste, from the mouth of Brahma; Kshatriyas, or the soldier caste, from the hands of Brahma; Vaisyas, or the agricultural caste, from the loins of Brahma; and the Sudra, menials, from the feet of Brahma; notwithstanding which distinction often members of the highest class sink socially to the lowest level, and members of the lowest rise socially to the highest.

Castellammare, a port on the coast SE. of Naples, the scene of Pliny's death from

the eruption of Vesuvius in A.D. 79. It takes its name from a castle built on it by the Emperor Frederick II.; has a cathedral, arsenal and manufactures.

Castellon, a maritime province of a coastline on the Mediterranean. Area 2,495 sq. m. Pop. 309,000. The capital is Castellon de la Plana, a town with a pop. of 37,000.

Castelnau, Noël Marie Joseph Edouard, French general, born at Saint Affrique, Aveyron. Captain 1876, Commandant 1889, General of Division 1910. In 1914 commanded second army in Lorraine, became chief of staff Dec. 1915. In Feb. 1916 resisted attack on Verdun and safeguarded right bank of Meuse. In Chamber of Deputies for Aveyron till 1924. (1851-).

Castiglione, Baldassare, an accomplished Italian born near Mantua; author of *Il Cortegiano*, a manual for courtiers, called by the Italians, in admiration of it, *The Golden Book*; had spent much of his time in courts in England and Spain, as well as Rome. (1478-1529).

Castile, a central district of Spain, divided by the mountains of Castile into Old Castile in the N., and New Castile in the S.; the former, consisting of a high bare plateau, bounded by mountains on the N. and on the S., with a variable climate, yields wheat and good pasture, and is rich in minerals; the latter, also tableland, has a richer soil, and yields richer produce, breeds horses and cattle, and contains besides the quicksilver mines of Almaden. Both were at one time occupied by the Moors, and were created into a kingdom in the 11th Century, and united to the crown of Spain in 1469 by the marriage of Ferdinand and Isabella.

Casting, process of giving a substance a required shape by melting it and pouring it into a mould, the shape of which it takes after cooling and hardening. For casting in iron or bronze a sectionalised plaster mould of the object to be cast is first made. From that is cast a plaster model. Alternatively wood models are used. By pressing the model into a sand-pit, a sand mould is made. The molten metal is poured into this. Type for printing is cast by machinery in a metal mould.

Castle, a fortified building, or fortress. The earliest remains of a castle built in England is Richborough Castle in Kent, probably of Roman origin. After the Norman Conquest castles were built by the feudal Barons as their homes and strongholds. To aid defence, they were built preferably on a hill (e.g., Corfe Castle, Dorset), and many were surrounded by a moat filled with water (e.g., Bodiam Castle, Sussex), over which a draw-bridge was lowered.

The main stronghold of the castle was the inner tower or keep (q.v.). The keep of Carlsbrooke Castle and the White Tower of the Tower of London are characteristic Norman keeps. The keep was usually surrounded by two courtyards, divided by a battlemented wall, strongly fortified at the corners by round towers or bastions. Towers also protected the gateway. The gate was also protected by an outwork, a parapet edging the moat, called the barbican.

Castlebar, county and town of Co. Mayo, Ireland (Eire), the centre of an agricultural district. Here an English garrison was massacred during the Civil War. Pop. 4,300.

Castlecary, market town of Somerset, Yeovil. There is an old round-house in the market-place and remains of a castle. Pop. 2,000.

Castle Donington, a town of Leicestershire, England, on the Trent. Here baskets, hosiery and silk are made. Pop. 3,000.



CASSOWARY

Castle Douglas, borough, market resort of Kircudbrightshire, Scotland, the chief business centre of Galloway. Pop. 3,000.

Castleford, a town in the W. Riding of Yorkshire, England, 10 m. SE. of Leeds, with extensive glass-works. Pop. 24,260.

Castlemaine, a town of Talbot Co., Victoria, Australia, a railway junction and a health resort. There are gold mines near. Pop. 7,000.

Castlereagh, Lord, entered political life as a member of the Irish Parliament, co-operated with Pitt in securing the Union, after which he entered the Imperial Parliament, became War Minister (1805), till the ill-fated Walcheren expedition and a duel with Canning obliged him to resign; became Foreign Secretary in 1812, and the soul of the coalition against Napoleon; represented the country in a congress after Napoleon's fall; succeeded his father as Marquis of Londonderry in 1821, and committed suicide the year following; his name has been unduly defamed, and his services to the country as a diplomatist have been largely overlooked. (1769-1822).

Castle Rising, village of Norfolk, England, once an important town and seaport. Here are remains of a magnificent castle. Pop. 230.

Castleton, village of Derbyshire, England, in the Peak District. Here are the ruins of a Norman castle, and famous caves and fluor spar mines. Pop. 600.

Castletown, a seaport in the Isle of Douglas and the former capital. Pop. 1,800.

Castoreum, a brown substance, or **Castor**, with a strong odour and bitter taste, obtained from the beaver, used in medicine and especially for perfumes.

Castor and Pollux, the Dioscuri, the twin sons of Zeus by Leda; the former great in horsemanship, and the latter in boxing; famed for their mutual affection, so that when the former was slain the latter begged to be allowed to die with him, whereupon it was agreed they should spend a day in Hades alternately; were raised eventually to become stars in the sky, the Gemini, twin signs in the zodiac, rising and setting together; this name is also given to the electric phenomenon called St. Elmo's Fire.

Castor Oil, a natural oil obtained from *Ricinus communis*, chiefly grown in India. It is mostly used as a purgative, but in India for other purposes, such as lubricating and as an oil for lamps.

Casual Ward, a ward in an institution where any vagrant or person out of work may obtain food and shelter for the night. Some work is usually required in return. It is usual, but not necessary, to get an admittance order from the relieving officer.

Casistry, the science of solving moral problems and cases of conscience by the application of rules derived from the Scriptures, or from the laws of society, or the accepted moral laws, or from common-sense and reason. In a legal aspect, an attempt to reconcile existing laws with an apparent breach of the same may be termed casuistical. The works of the Schoolmen, of Thomas Aquinas, and a 17th-Century book, *The Penitential*, were in their time favoured as the basis of casistry in cases of conscience.

Casus Belli, a Latin term meaning "cause of war." It has become a legal term, referring to one or other of the causes laid down by international law

as sufficient to justify a declaration of war by one nation on another.

Cat, in zoology, a family or tribe of carnivorans, voracious mammals (Felidae) which includes the lions, tigers, leopards, etc. Usually, however, the term is restricted to the domestic species, *Felis domestica*, which are probably descended not from the wild cat, *Felis catas*, but from the cat worshipped as sacred in Egypt, *Felis caffer*. Domestic cats, although smaller, retain the characteristics of the wilder species—flexible and strong spine, supple claws, and easy movement. The eyes react to the light by an expansion or contraction of the pupils.

In England various kinds of domestic cats are common: pure white, pure black, tabbies of different markings, grey, blue-grey and chinchilla. Persian cats, usually black or blue-grey, are long-haired and much prized. Siamese cats are short-haired, light fawn-coloured, and with black muzzle, ears and feet.



SIAMESE CAT

Annual cat-shows are held in England. The National Cat Club was founded in 1887, its annual show being held usually in September; the Scottish Cat Club in 1891, its annual show being held in Edinburgh or Glasgow. Besides the championship held by the National Club in London, other championships are held in various parts of the country.

Catacombs, originally underground burial-places for the dead, found beneath Paris and in the neighbourhood of Rome, as well as elsewhere; those around Rome, some 40 in number, are the most famous, as having been used by the early Christians, not merely for burial but for purposes of worship, and are rich in monuments of art and memorials of history.

Catalepsy, a form of hysteria which causes the limbs and muscles to become rigid. Sometimes the sufferer becomes insensible, and may show hardly any signs of life. Women are more prone to attack than men. The symptoms can also be produced by hypnotism.

Catalonia (*Castellon*), old province of Spain, on the N.E., including the modern provinces of Barcelona, Gerona, Lerida and Tarragona; has a most fertile soil, which yields a luxuriant vegetation; chief seat of manufacture in the country; the people specially distinguished from other Spaniards by their intelligence and energy. When the republic was inaugurated in 1931, Catalonia, which had long struggled for its ancient autonomy, was allowed to have its own language and flag, but in 1932 the Spanish Government gave Catalonia its own autonomy, and a new Catalan parliament was set up in that year. After a rebellion in 1934 the Spanish cortes suspended the Statute of Autonomy of Catalonia for an indefinite period. During the Civil War the four provinces stood firm on the Government side, and an autonomous government was again set up in Catalonia in Aug. 1936. The whole province put up a fierce resistance to General Franco in 1938, when, with the help of Italian forces and by extensive aerial bombardment, he broke into the provinces and, by driving a salient through the Government forces to the sea, cut Catalonia off from the Valencia Government. Area 12,427 sq. m. Pop. 3,018,000.

Catalpa, a genus of trees, family Bignoniaceae, growing in N. America and E. Asia. *C. syriacaefolia* has

large leaves and white flowers, *C. bignonioides* yields a useful durable wood.

Catalysis, an alteration (usually accompanied by coloration) in the rate at which a chemical reaction is proceeding, caused by the presence of another substance (known as a catalyst), which itself remains unchanged in weight and in chemical composition, though often undergoing some physical change. Upon gaseous reactions, metals and metallic oxides frequently exert a marked catalytic effect, and the use of such substances is of considerable commercial importance.

In solution, catalysis is a common effect of osmium ions ("hydrogen ions"), while organic catalysts of unknown composition ("enzymes") play an important part in fermentation and biological chemical changes in general. The action of a catalyst has been likened by the German chemist Ostwald to that of lubricating oil upon a machine; but it should be noted that certain catalysts exert a retarding action upon the chemical processes they are used to catalyse. Whether a catalyst can actually initiate a reaction is still a subject of controversy.

Catamaran, an Indian vessel, used chiefly in Madras, as it can be paddled through surf without capsizing. It is built of 3 logs, lashed side by side, the longest being in the middle and curved upwards at the fore-peak.

Catamarca, NW. province of the Argentine Republic; rich in minerals, especially copper. Pop. 105,000. Also the capital of the province. Pop. 22,000.

Catania, an ancient city of Sicily at the foot of Etna, and on the E. coast of the island, on a fertile plain known as the Granary of Sicily, chief town of a province of the same name; has been several times devastated by the eruptions of Etna, particularly in 1169, 1669, and 1693; manufactures silk, linen and articles of amber, etc., and exports sulphur, grain, fruits, nuts and oil. Pop. 212,000.

Catapult, a siege engine, used in the 3rd Century B.C., and later by the Greeks and Romans. Two wooden arms twisted into stretched hanks of cord or hide were drawn back by cords attached to a propelling bolt which slid back along a grooved piece of wood. The twisted hanks of cord provided sufficient resistance to bring the bolt forward, when released, with power to send projectiles along the groove with considerable force. The Roman siege catapults were constructed on huge frames.

Cataract, an eye disease, a cloudy or contained in the lens of the eye. Operation is the only treatment. A hard lens is removed. If soft, the fluid is drained. Spectacles compensate for the absent lens. Without spectacles the patient remains blind.

Catarrh, inflammation of the mucous membranes of the body, including those of the bowel and stomach (gastritis and colitis), and of the gall-bladder (cholecystitis). The term is in particular used of inflammation of the mucous membranes of the nose (nasal catarrh), which is a frequent concomitant of a cold, and which may also be due to malformation, or to the presence of polypi. When the cause is known, the state is curable.

Cat-bird (*Galero-waples carolinensis*), the common name of an American species of mocking-bird (Mimidae: family) a well-known songster which can utter notes



CAT-BIRD
(AMERICAN)

like the meowing of a cat. The Green Cat-bird (*Elanoides forficatus*) is an Australian bird of the genus *Elanoides* of the Ptilonorhynchidae (Bower-bird) family allied to the Birds of Paradise and crows, but the only one that does not build a bower.

Catch (music), a light form of vocal music, sung in concert, several voices entering at equal intervals of time. Once very popular. There is still in existence a Catch Club founded in 1761.

Catchment Areas, the areas in which water, from rainfall or otherwise, collects to form the supply of a river, stream or drainage area. The boundaries of any particular catchment area being those heights or ridges of land which separate it from another drainage area. A certain proportion of the rainfall is always lost by evaporation and absorption. The "run-off" is that water which actually reaches the stream or river.

Cateau, La (Battle of), fought Aug. Smith-Dorrien's Second Army Corps against Von Kluck's Army during the retreat from Mons. The stand enabled the main Allied forces to retreat safely. The Corps lost nearly 8,000 men and 38 guns, but with the help of French, territorials and cavalry, withstood the enemy, the survivors being able to retire unmolested. In the course of this now historic battle there were many heroic incidents, notably the desperate bravery of the men of the "L" battery R.H.A., 3 of whom were awarded the V.C.

Catechism, a set form of question and answer whereby the Christian Church has sought to instruct the young in the tenets of religion. There are various forms prevailing in the different churches. Most include the Creed, the Lord's Prayer and the Ten Commandments. A *Smaller Catechism* was published by Luther, while the Presbyterian Church also uses a shorter form, giving some explanation of the doctrines and duties of a Christian. The Catechism used in the English Church differs only slightly from the one drawn up in 1549.

Catechu (*Cutch*), an extract obtained from the leaves of certain trees in the E. Indies, India, etc., which have astringent properties and are useful in dyeing and tanning. Black Catechu is prepared from the leaves of an acacia tree of India (*Acacia catechu*), Pale Catechu from those of the E. Indian *Uncaria Gambier*, a tree of the order Rubiaceae. Though both have similar properties and uses, only Gambier or Pale Catechu is used in medicine in England.

Categorical Imperative, Kant's name for the self-derived moral law, "universal and binding on every rational will, a commandment of the autonomous, one and universal reason."

Categories are either classes under which all our Notions of things may be grouped, or classes under which all our Thoughts of things may be grouped: the former called *Logical*, we owe to Aristotle, and the latter called *Metaphysical*, we owe to Kant. The Logical are derived, that group our notions, are ten in number: Substance or Being, Quantity, Quality, Relation, Place, Time, Position, Possession, Action, Passion. The Metaphysical, so derived, that group our thoughts, are: (1) as regards *quantity*, Totality, Plurality, Unity; (2) as regards *quality*, Reality, Negation, Limitation; (3) as regards *relation*, Substance, Accident, Cause and Effect, Action and Reaction; (4) as regards *modality*, Possibility and Impossibility, Existence and Non-existence, Necessity and Contingency. John Stuart Mill resolves the categories into 5: Existence, Co-existence, Succession, Causation, and Resemblance.

Caterham, urban district of Surrey, England, 7 m. S.E. of Croydon. Here are the Guards' barracks, and a lunatic asylum. Pop. (with Warrington) 20,000.

Caterpillar, the worm-like larva of butterflies and moths. They are made up of 13 sections and have a number of true jointed legs (6 on the first, 3 on thoracic segments) and curious pseudo-legs (a varying number but always on the last 10 or abdominal segments). It often closely resembles the plants on which it is feeding, and is capable of eating an enormous amount of food, thus supplying itself with sufficient nourishment to maintain itself through the chrysalis stage.

Catesby, Robert, born in Warwickshire, a Catholic of good birth; concerned in the famous Gunpowder Plot; shot dead 3 days after its discovery by officers sent to arrest him. (1573-1605).

Cat-fish, a large order (the Siluridae) of smooth-skinned, scaleless fish (some species have the body protected with overlapping bony plates).

There are some hundreds of species, mostly fresh-water fish, inhabiting rivers in Europe,



AMERICAN LAKE CAT-FISH

Africa and America, though 2 families are marine. They usually have barbels.

Catford, a suburb of S.E. London, in the Lewisham, metropolitan borough of

Catgut, a cord prepared from the intestines of sheep, cattle, horses, etc., used for the strings of violins and other stringed musical instruments, also for tennis rackets, etc., and by surgeons for putting stitches in wounds. The best comes from Italy.

Cathartic, in medicine, drugs used to produce free motion of the bowels, there being many different drugs used for the purpose according to whether a mild aperient is required or a drastic purgative.

Cathay, the name given to China by medieval writers, introduced to Europe by Marco Polo, and derived from Khitai, a name still given to China in some parts of Central Asia.

Cathedral (from the Latin *cathedra*, meaning a "seat"), is the name given to the church in which the throne of the bishop of the diocese is placed. In early times the position of the bishop's throne was in the apse behind the altar, but now it is usually kept on the S. side of the choir.

When cathedrals were first founded in England, they were of 2 kinds—either served by monks or by secular canons. The cathedrals which belonged to a monastery were of more elaborate architecture than those of the secular clergy. They generally contained a cloister-court, chapter-house, refectory, dormitory, infirmary and guest-hall. The cathedral church itself usually consists of a nave with aisles, a central tower, N. and S. transepts, presbytery and choir. Most cathedrals are cruciform in plan.

English cathedrals may be classified in 3 groups: (1) Old Foundation, (2) New Foundation, (3) those founded since the Reformation. A group (1) are London (St. Paul's), York, Exeter, Salisbury and Lincoln, while those belonging to the New Foundation, founded at the time of the Reformation, include Oxford, Gloucester and Peterborough, as well as monastic cathedrals that survived such as Canterbury, Winchester, Rochester, Ely, Norwich and Durham.

Among those founded since the Reformation,

many originally parish churches, may be named, Truro, Newcastle and Birmingham. The finest example of a modern cathedral is at Liverpool, built in modern Gothic to the design of Sir Gilbert Scott.

Catherine I., wife of Peter the Great, daughter of a Livonian peasant; married first to a Swedish dragoon, became afterwards the mistress of Prince Menshikoff, and then of Peter the Great, who eventually married her; succeeded him as empress, with Menshikoff as minister; in the end gave way to dissipation. (1680-1727).

Catherine II., The Great, empress of Russia, born at Stettin, daughter of Prince of Anhalt-Zerbst; "a most clever, clear-eyed, stout-hearted woman"; became the wife of Peter III., a scandalous person, who was dethroned and then murdered, leaving her empress; ruled well, and though her character was immoral and her reign despotic, her efforts at reform, the patronage she accorded to literature, science and philosophy, and her diplomatic successes, entitle her to a high rank among the sovereigns of Russia; it was during her reign, and under the sanction of it, that Europe witnessed the three partitions of Poland. (1729-1796).

Catherine, St. of Alexandria, a virgin who, in 307, suffered martyrdom after torture on the wheel, which has since borne her name: Festival, Nov. 25.

Catherine de' Medici, daughter of Lorenzo de' Medici, wife of Henry II., of France, and mother of his three successors; on the accession of her second son, Charles IX., for the reign of her first, Francis II., was very brief—acted as regent during his minority; joined heart and soul with the Catholics in persecuting the Huguenots, and persuaded her son to issue the order which resulted in the massacre of St. Bartholomew; on his death, she acted as regent during the minority of her third son, Henry III. (1519-1589).

Catherine of Aragon, fourth daughter of Ferdinand and Isabella of Spain, and wife of Henry VIII. of England, her brother-in-law as widow of Arthur, from whom and at whose instance, after 18 years of married life, and after giving birth to five children, she was divorced on the plea that she had been his brother's wife before; after her divorce she led an austere religious life. The refusal of the Pope to sanction this divorce led to the final rupture of the English Church from the Church of Rome. (1485-1536).

Catherine of Braganza, the wife of Charles II. of England, of the royal house of Portugal; was unpopular in the country as a Catholic and neglected by her husband, on whose death, however, she returned to Portugal, and did the duties ably of regent for her brother Don Pedro. (1638-1705).

Catherine of Sienna, born at a sister of the Order of St. Dominic, and patron saint of the Order; celebrated for her ecstasies and visions and the marks which by favour of Christ she bore on her body of His sufferings on the Cross. (1347-1380).

Catherine of Valois, daughter VI. of France, and wife of Henry V. of England, who, on his marriage to her, was declared heir to the throne of France, with the result that their son was afterwards, while but an infant, crowned king of both countries; becoming a widow, she married Owen Tudor, a Welsh gentleman, whereby a grandson of his succeeded to the English throne as Henry VII. and the first of the Tudors. (1401-1438).

Catherine Parr. See Parr, Catherine.

Catheter, an instrument used in medicine for withdrawing liquid from a cavity the opening to which is a narrow channel. They are of rubber or metal, the most common being the urethral catheter used for passing through the urethra to empty the bladder.

Cathetometer, an instrument for measuring the difference of levels between two near points. It consists of a graduated vertical rod upon which slides a horizontal telescope, the distance the telescope travels on the rod marking the difference in height of the objects under observation.

Cathode, the negative pole of an electric cell; the conductor by which an electric current leaves an electrolyte, and passes over to the negative pole; the opposite of the Anode, which is the positive conductor.

Catholic Apostolic Church, a religious movement begun in 1830, and finally formed in 1835 with the designation of twelve "Apostles." The inspiration of the sect was the teaching of the Scottish preacher, Edward Irving, whose vast popularity in the Scottish Church ended in a trial for heresy in 1831 when he was deposed. He believed in the divine origin of his utterances. There are at present over a thousand communicants in the United Kingdom. Their liturgy is based on that of the Anglican and Catholic Churches.

Catholic Emancipation, the name given to the movement in England for freeing Roman Catholics from disabilities, and to the final law passed in 1829 emancipating them from disabilities which precluded their election to office in the State, so that they are eligible now to any save the throne itself, the Lord Chancellorship of England and the Lord High Commissionership in the Church of Scotland.

Catholic Epistles, the name, equivalent, given to certain epistles in the New Testament not addressed to any community in particular but to several, and given eventually to all not written by St. Paul.

Catiline, or **Lucius Sergius Catilina**, a Roman patrician; an able man, but unscrupulous and ambitious; frustrated in his political designs, he formed a conspiracy against the State, which was detected and exposed by Cicero, a discovery which obliged him to leave the city; he tried to stir up hostility outside; this too being discovered by Cicero, an army was sent against him, when an engagement ensued, in which, fighting desperately, he was slain, 62 B.C.

Catkin, a wind-fertilised inflorescence which is usually pendulous, either male or female. The best-known trees which bear catkins are the willow, hazel, birch, oak, poplar and sweet-chestnut.

Catmint, the common name for certain species of plants of the genus *Nepeta*, order Labiatae, on account of the fondness of cats for them. In particular the name is given to *N. Cataria*, which bears white flowers spotted with pink.

Cato, **Marcus Porcius**, or **Cato Major**, surnamed **Censor**, **Priscus** and **Sapiens**, born at Tusculum, of a good family, and trained to rustic, frugal life; after serving occasionally in the army, removed to Rome; became in succession censor, ædile, prætor, and consul; served in the second Punic War, towards the end of it, and subjugated

Spain; disliked and denounced all innovations; sent on an embassy to Africa, was so struck with the increasing power of Carthage that on his return he urged its demolition, and in every speech which he delivered afterwards he ended with the words, *Ceterum censeo Carthaginem esse delendam*. "But, be that as it may, my opinion is Carthage must be destroyed." (234-149 B.C.).

Cato, **Marcus Porcius**, or **Cato the Younger**, or **Uticensis**, great-grandson of the former; devoted himself to study of the Stoic philosophy; conceived a distrust of the public men of the day, Cæsar among the number; preferred Pompey to Cæsar, and sided with him; after Pompey's defeat retired to Utica, whence his surname, and stabbed himself to death rather than fall into the hands of Cæsar. (95-46 B.C.).

Cato-street Conspiracy, a significant, abortive plot, in 1820, headed by one Thistlewood, to assassinate Castlereagh and other ministers of the Crown; so called from their place of meeting off the Edgware Road, London.

Catrail, an old earthwork of uncertain origin, 50 m. long, passing S. from near Galaahills through Selkirk and Roxburgh to Peel Fall in the Cheviots; it is known also by the name of the "Devil's Dyke."

Cat's-eye, a semi-precious stone, a variety of quartz or of chrysoberyl. A perfect specimen when cut has a line of colour within it resembling the light to be seen in a cat's eye. Most varieties are hard and semi-transparent.

Catskill Mountains, a group of mountains, of steep ascent and with rocky summits, in New York State, U.S.A., W. of the Hudson, none of them exceeding 4,000 feet; celebrated as the scene of Rip Van Winkle's long slumber; belong to the Appalachians.

Cat's Tail, the popular name of a species of rush, the *Typha* (also called reed-mace and bulrush), of which there are 2 species, the inflorescence being a dense spike, yellow at the top (male flowers), brown below (female). The name is also sometimes given to the Timothy grass (*Phleum pratense*).

Cattaro, or **Kattaro**, a fortified seaport and cathedral town of Yugoslavia, in Dalmatia, standing on the Gulf of Cattaro, an arm of the Adriatic 20 m. long. It was formerly in Austria, but was occupied by Italy in 1918, and ceded to Yugoslavia in 1919. Pop. 5,000.

Cattegat, an arm of the North Sea, at its greatest width, between Sweden and Jutland; a highway into the Baltic, all but blocked up with islands; is dangerous to shipping on account of the storms that infest it at times.

Catterick, village of Yorkshire, England, in N. Riding, 4 m. S.E. of Richmond. Near by is a large camp of the British army. There is a racecourse here. Pop. 600.

Cattle, a general term for livestock, usually held to include bulls,

cows, bullocks, calves, and heifers. Cattle may be divided into 3 main classes: beef, milk, and dual purpose. Beef cattle include such breeds as Aberdeen Angus, Sussex, Hereford, Devon, Longhorn and W. Highland. As a rule short-horned varieties are preferred



SHORTHORN BULL



POPLAR CATKINS

the long-horned, as there is less likelihood of damage in transit.

Milk cattle are Guernseys, Jerseys, Alderneys and Keries, the last being termed the *cow*, owing to its hardiness, reliability and small size. The main breed of *qual-purpose* cattle is the Shorthorn; British *Shorthorns* have been used in cattle breeding all over the world. Other breeds in this division, both good milkers and producing beef, are Red Polls and Dexters, the latter a small but excellent breed.

Cattle Plague, or Rinderpest, a disease which affects *ruminants*, but especially bovine cattle; *indigenous* to the East, Russia, Persia, India and China, and imported into Britain only by contagion of some kind; the most serious outbreaks were in 1865 and 1872.

Cattleya, a genus of orchids (Orchidaceae), of which there are some 30 species native to tropical America (Brazil), but cultivated in England as stove plants, especially in hybrid forms.

Catullus, *Gaius Valerius*, the great Latin lyric poet, born at Verona, a man of wealth and good standing, being, it would seem, of the equestrian order; associated with the best wits in Rome; fell in love with Clodia, a patrician lady, who was the inspiration of many of his effusions and whom he addresses as *Lesbia*; the death of a brother was the occasion of the production of one of the most pathetic elegies ever penned; in the civic strife of the time he sided with the Senate, and opposed Caesar. (87-54? B.C.).

Cauca, a river in Colombia, S. America, which falls into the Magdalena after a northward course of 600 m.

Caucasian Race, a name adopted by Blumenbach to denote the Indo-European race, from the fine type of a skull of one of the race found in Georgia.

Caucasus, an enormous mountain range, 750 m. in length, extending from the Black Sea E.S.E. to the Caspian, in two parallel chains, with tablelands between; bounded on the S. by the valley of the Kur, which separates it from the tableland of Armenia; snowline higher than that of the Alps; has fewer and smaller glaciers; has no active volcanoes, though there is abundant evidence of volcanic action. As the result of the Great War, the Caucasus became a unit of the Soviet Union of Republics, with the title of Transcaucasian Federated S.S.R. and comprises the 3 republics, Azerbaijan, Armenia and Georgia.

Caucus, a political term, especially used in the U.S.A., denoting a meeting of a party to nominate a candidate, or deal with organisation or policy. Originally applied to a club in Boston, U.S.A.

Caudine Forks, a narrow mountain gorge in Samnium, in which, during the second Samnite war, a Roman army was entrapped and caught by the Samnites, who obliged them to pass under the yoke in token of subjugation, 321 B.C.

Caul, a close head-covering made of net. Anatomically, it is part of the membrane covering the lower intestines; also the membrane or amnion enveloping the *fetus*. If the child was born with the caul remaining round its head, it was formerly considered lucky.

Cauliflower, *Botrytis cauliflora*, a variety of cabbage or *Brassica oleracea*. It belongs to the order Cruciferae. The white flowering head is eaten as a vegetable.

Causeway, originally also *canseway*, a paved roadway higher than the natural level of the ground, being raised on an artificial bank of stones, earth, etc., or on timber. It is built either to traverse a

marsh or wet ground or to encircle a pond to prevent overflow on to lower ground.

Caustic, in medicine, a substance that burns and destroys animal tissue. In chemistry a name given to certain alkalis which have the same properties, viz., to caustic soda (sodium hydroxide, NaOH) and to caustic potash (potassium hydroxide, KOH). In optics, certain rays of light reflected on a surface or mirror.

Cauterets, a fashionable watering-place Pyrénées, 3,250 ft. above the sea, with sulphurous springs of very ancient repute, 24 in number, and of varying temperature.

Cautery, the process of burning or searing animal tissue in order to destroy dead tissues or promote healing; also the instrument used which in *actual cautery* is a white-hot iron, in *button cautery* an iron heated in water; in *galvanic cautery* a platinum wire heated by electricity.

Cauvery, a river of S. India, 415 m. long, rising in the W. Ghats and falling into the Bay of Bengal after traversing Mysore and Madras. It is not navigable, though it waters a fertile plain and provides electric power for Mysore (from the Cauvery Falls).

Cavaignac, Louis Eugène, a distinguished French general, born in Paris; appointed Governor of Algeria in 1848, but recalled to be head of the executive power in Paris the same year; appointed dictator, suppressed the insurrection in June, after the most obstinate and bloody struggle the streets of Paris had witnessed since the first Revolution; stood candidate for the Presidency to which Louis Napoleon was elected; was arrested after the *coup d'état*, but soon released; never gave his adherence to the Empire. (1802-1857).

Cavaliers, the royalist partisans of Charles I. in England in opposition to the parliamentary party, or the Roundheads as they were called.

Cavalry. In history the horse-soldier has taken turns with the foot-soldier in being the more important arm of the army. Cavalry have been most used by nations with open territory, and infantry have been most used in hilly countries. Both arms, however, have had their special value, and found their greatest effectiveness when working together. In the Great War, 1911-1918, large forces of cavalry were assembled, but it was only in the Palestine campaign of 1918, under General Allenby, that they were of outstanding use. The conditions of fighting on the Western front practically immobilised cavalry.

Warfare in the future will depend much more on mechanised forces and highly-mobile forces, as cavalry must disappear. The future of the arm seems to lie in mechanisation, which is being rapidly adopted by all countries. Not long after the Great War there were cavalry amalgamations in the British Army tantamount to the elimination of some of the then existing 30 cavalry regiments. Since then new schemes of army organisation have involved the conversion of most of the rest of the cavalry (excepting, especially, Indian regiments) into cavalry-armed-car or cavalry-light-tank units.

Cavan, a county of Ireland (Ulster), bounded by Fermanagh (Ulster), Monaghan, Meath, etc.; with a poor soil; has minerals and mineral springs. Pop. 76,600. Also a market town, capital of the same county. Pop. 3,000.

Cavan, tenth Earl of, British soldier. Entering the Grenadier Guards, he first saw service in the Boer War, and took command of the Guards division in France in 1915. In 1917 he went to the Italian front, taking command there in 1918. He was

made Chief of the Imperial General Staff in 1922. Field-Marshal, 1932. (1865-)

Cave, Edward, a London bookseller, born in Warwickshire; projected the *Gentleman's Magazine*, to which Dr. Johnson contributed; was the first to give Johnson literary work, employing him as parliamentary reporter. (1691-1754).

Cave, Viscount, British politician. He entered Parliament as a Conservative in 1906, and from 1916 to 1919 was Home Secretary in the Coalition Govt. He was Lord Chancellor in 1922 under Bonar Law, and in 1924 under Baldwin. (1856-1928).

Caveat, in law, a notice or warning to prevent judicial steps being taken against him. It is used especially to stop the grant of probate of a will.

Caveat Emptor, a legal expression denoting that a buyer purchases at his own risk, unless there is an express warranty. Literally it means "Let the buyer beware." The Sale of Goods Act of 1893, however, established that the goods must correspond to their description, and must be fit for their purpose, provided the purpose for which they are required has been made quite clear.

Cavell, Edith Louisa, the British nurse who was shot by the Germans at Brussels on Oct. 12, 1915, for harbouring refugees and facilitating their escape into Holland. After the war she was buried in Norwich Cathedral, near which town she was born. She had been matron of a Brussels hospital since 1906. (1865-1915).

Cavendish, the name of the Devonshire ducal family, traceable back to the 14th Century.



EDITH CAVELL

Cavendish, Lord Frederick Charles, Duke of Devonshire, educated at Trinity College, Cambridge, and a Liberal; was made Chief Secretary for Ireland in 1882, but chancing to walk home one evening through the Phoenix Park, he fell a victim, stabbed to the heart, of a conspiracy that was aimed at Mr. Burke, an unpopular subordinate, who was walking with him, and who came to the same fate. Several men were arrested when one of them informed; 5 of them were hanged; the informer, Carey, was afterwards murdered, and his murderer hanged. (1836-1882).

Cavendish, Henry, natural philosopher and chemist, born at Nice, of the Devonshire family; the first to analyse the air of the atmosphere, determine the mean density of the earth, discover the composition of water, ascertain the properties of hydrogen, and discover the presence of nitrogen in nitric acid. He was an extremely shy, retiring man; born rich and died rich, leaving over a million sterling. (1731-1810).

Cavendish, Thomas, an English navigator, fitted out three vessels to cruise against the Spaniards; extended his cruise into the Pacific; succeeded in taking valuable prizes, with which he landed in England, after circumnavigating the globe; he set out on a second cruise, which ended in disaster, and died in the island of Ascension broken-hearted. (1560-1592).

Caversham, town of England formerly in Oxfordshire, now in Berkshire, on the Thames opposite Reading, Berkshire, in which most of it is now included.

Caves, or *Caverns*, cavities or hollow places hollowed out of rock, and are formed in a

variety of ways. The rock may be worn away by the constant friction of the sea or the passage of an underground river, the course of which may later be diverted, or it may dry up, leaving a series of underground passages. They may also be formed under glaciers owing to the shifting of the ice, or they may be the result of a volcanic eruption which causes lava to flow over ice and compressed snow.

Primitive man used caves to live in, and remains of men and prehistoric animals have been found in caves. The dripping of water in caves in limestone districts leaves a deposit of bicarbonate of lime which in time forms into pillars, sometimes resembling icicles, called stalagmites and stalactites. In England the Cheddar Caves in the Mendip Hills are celebrated; the Chislehurst Caves are thought to extend far underground.

Caviare, the roe (the immature ovaries) of the common sturgeon and other kindred fishes, caught chiefly in the Black and Caspian Seas, and prepared and salted; deemed a great luxury by those who have acquired the taste for it; largely imported from Astrakhan.

Cavour, Count Camillo Benso, one of the greatest of modern statesmen, born the younger son of a Piedmontese family, at Turin; entered the army, but was precluded from a military career by his liberal opinions; retired, and for 16 years laboured as a private gentleman to improve the social and economic condition of Piedmont; in 1847 he threw himself into the great movement which resulted in the independence and unification of Italy; for the next 14 years, as editor of *Il Risorgimento*, member of the Chamber of Deputies, holder of various portfolios in the Government, and ultimately, as Prime Minister of Piedmont, he obtained a constitution and representative government for his country, and raised it to a place of influence in Europe; he co-operated with the allies in the Crimean War; negotiated with Napoleon III. for the expulsion of the Austrians from Italy, and so precipitated the successful war of 1859; he encouraged Garibaldi in the expedition of 1860, which liberated Sicily and S. Italy, and saw the parliament of 1861 summoned, and Victor Emmanuel declared King of Italy. (1810-1861).

Cavy, or *Cavia*, a genus of rodents of which the domestic guinea-pig (*Cavia cobaya*) is a species. They are natives of Central and S. America, have rough hair and no tails.



BOLIVIAN CAVY

Cawdor, a Scottish village SW. of of Duncan in Shakespeare's *Macbeth*.

Cawnpore, a city on the right bank of the Ganges, in the United Provinces of Agra and Oudh, India, 40 m. SW. of Lucknow, and 628 m. NW. of Calcutta; the scene of one of the most fearful atrocities, perpetrated by Nana Sahib, in the Indian Mutiny in 1857. Pop. 244,000.

Caxton, William, the first English printer, born in Kent, trained as a mercer, settled for a time in Bruges, learned the art of printing, and printed there a translation of the *Recuyell of the Histories of Troyes*, and *The Game and Playe of Chess*, returning to England, set up a press in Westminster, and in 1477 issued *Dictee and Sayings of the Philosophers*, the first book printed in England, which was soon followed by many others. (c. 1422-1491).

Cayenne, capital and port of French Guiana. Swampy, unhealthy, rank with tropical vegetation. Pop. 10,000.

Cayenne Pepper, the dried and fruit of *Capiscum annuum*, a plant of the order Solanaceae, native to Central and S. America. The pods (known as chillies or red peppers and used in pickles and chilly-vinegar) are bright red and very hot to the taste.

Cayman Islands, three in number: Little Cayman and Cayman Brac. Are a dependency of Jamaica, which is about 120 m. away to the SE. They have an area of 104 sq. m. and a population of over 6,000. When discovered by Columbus, on his voyage from Porto Bello to Haiti, they were called the Tortugas.

Ceará, a maritime state of N. Brazil, and bounded landwards by the states of Piahy, Pernambuco and Parahyba; climate hot and dry; chief products cattle and tropical products. Pop. 1,848,000. Also the name of the capital (also called Fortaleza). Pop. 143,000.

Cebu, an island of the Philippines, some 125 m. long, and with an area of 1,695 sq. m., producing abaca (Manila hemp), tobacco, copra, etc. The capital of the islands is a town of the same name. Pop. (island) 1,000,000; (town) 82,000.

Cebus, the Capuchin genus of monkeys, dull-coloured, with long, prehensile tails; found in S. America.

Cecil, Robert, Earl of Salisbury, succeeded his father, Lord Bureleigh, as first Minister under Elizabeth, and continued in office under James I., whose friendship he sedulously cultivated before his accession, and who created him earl. (c. 1563-1612).

Cecil, Viscount, of Chelwood (Lord Robert Cecil), British politician. A son of the Marquess of Salisbury, he spent 19 years at the Bar before entering Parliament as a Conservative in 1906. He became Under-Secretary for Foreign Affairs in 1915, and was given a seat in the Cabinet in 1916, later representing Great Britain at the Peace Conference and doing a great deal to establish the League of Nations. He served in the Baldwin Government of 1924 until he resigned, as he thought its peace policy insufficient, and he again represented Britain at Geneva when Labour took office in 1929. (1864-).

Cecilia, St., a Roman virgin and martyr, especially church music, and reputed inventor of the organ; sometimes represented as holding a small organ, with her head turned heavenwards, as if listening to the music of the spheres, and sometimes as playing on an organ and with a heavenly expression of face. Festival, Nov. 22.

Cecrops, the mythical first king and civiliser of Attica and founder of Athens with its citadel, dedicated by him to Athena, whence the name of the city.

Cedar, a term used loosely for many kinds of fir trees. The true cedar or *cedrus* belongs to the order Coniferae, and is a handsome evergreen tree. There are 3 species: Cedar of Lebanon or *Cedrus Libani*, *Cedrus atlantica* (the Atlantic cedar) and *Cedrus Deodara* (the deodar).

Cedar Rapids, a manufacturing town in Iowa, U.S.A.; a great railway centre. Pop. 56,000.

Ceiling, the interior top surface of a room, over the floor, has attracted the decorator and artist from the earliest times. Egyptian and Roman ceilings were richly designed, and in the Italian Renaissance plaster ceilings reached a high pitch of originality and beauty. Early English ceilings were timbered. Moulding in the classical style later became popular, and the ceilings designed by Robert Adam are among the best English examples of the ornamented ceiling.

Celandine, the name given to 2 English wild flowering plants, viz., the Lesser Celandine, *Ranunculus Ficaria*, of the order Ranunculaceae, bearing small, bright yellow flowers in spring and the Greater Celandine, *Chelidonium Majus*, of the order Papaveraceae (Poppy order), also bearing yellow flowers.



GREATER CELANDINE

Celebes, an island in the Dutch E. Indies, third in size, in the shape of a body with 4 long limbs, traversed by mountain chains; chief river, Sodang; very healthy climate; reptiles abound, but no large animals; it yields among its mineral products gold, copper, tin, etc.; and among its vegetable, tea, coffee, rice, sugar, pepper, etc.; cap. Makassar. Pop. 3,093,000.

Celery, a species, *Apium graveolens*, of the order Umbelliferae. It is cultivated for eating with salads or as a cooked vegetable. The stems of the plant when about a foot high are blanched by being earthed up or tied round with brown paper. A special variety known as Celoriac (*Apium graveolens rapacum*) is cultivated for the sake of its swollen root rather than its leaves.

Celestine, the name of five Popes: C. II., Pope from 1143 to 1144; C. III., Pope from 1191 to 1198; C. IV., Pope for 18 days in 1241; C. V., Pope in 1294, a hermit for 60 years; nearly 80 when elected against his wish; abdicated in five months; imprisoned by order of Boniface VIII.; d. 1296; canonised 1313.

Celestines, an order of monks founded by Celestine V. before he was elected Pope; they followed the rule of the Benedictine Order, and led a contemplative life.

Celibacy, the unmarried state. It has been much practised by religious communities. In the East Buddhist monks are celibate. In the Christian Church the Synod of Elvira, A.D. 305, disallowed marriage to the higher clergy, and in A.D. 385 celibacy was enjoined on all clergy. Opposition was strong until, at the Council of Trent (1545), it was laid down that the Roman Catholic priesthood should remain celibate as evidence of their faith.

Cell, in biology, the protoplasmic unit of which plant and animal bodies are composed. They are usually of microscopic size, but the egg of a bird is a single cell of comparatively huge dimensions. Most plant cells differ from animal cells in possessing surrounding walls of cellulose (q.v.), though even in plants the sexual cells are normally without a wall. In all cells the typical structure is a mass of relatively undifferentiated protoplasm known as the cytoplasm, in which is embedded a rounded body of denser protoplasm called the nucleus. The nucleus is the carrier of the hereditary characters, and appears to direct the living activities of the cell.

A cell often contains a space filled with an aqueous liquid (cell-sap), and sometimes this space or vacuole bursts to the exterior (e.g., in the minute one-celled animal Amœba), re-forming in the same spot; it is then known as a contractile vacuole. The green colouring-matter of plants, chlorophyll (q.v.), is contained within the cell in special protoplasmic bodies called chloroplasts. New cells are formed from pre-existing ones by the process of cell-division (see Cytology), the nucleus generally dividing first; each daughter nucleus takes a proportionate part of the cytoplasm. In

both plants and animals various cells are modified to fulfil special functions, and frequently large numbers of cells of the same type are associated to form "tissues."

In the simplest forms of life, such as the Protozoa among animals, and the lower Algae among plants, the organism consists of a single cell and is described as unicellular. The higher organisms consist of assemblages of cells, and are thus multicellular. The plant cell was discovered by the English microscopist Hooke in the 17th Century.

Cell, Electrolytic. See **Electrolysis**.

Cell, Voltaic, a chemical device for obtaining a continuous direct current of electricity. The first electric battery was made by Alessandro Volta in 1800. It consisted of a pile of discs of silver, zinc and cloth dipped in salt water, arranged as follows: silver, zinc, cloth, silver, zinc, cloth, and so on, ending with the metals. When the top and bottom discs were connected by means of a wire, a current flowed through the wire; and the device became widely known as the "Voltaic pile." Volta's next battery, the "crown of cups," consisted of a series of cups each containing salt water into which dipped a plate of silver and a plate of zinc; the zinc of one cup was connected by a wire to the silver of the next, there thus being a free plate of silver in the cup at one end and a free plate of zinc in that at the other. These two plates formed the terminals of the battery, and a current would run through a wire connecting them.

The only type of voltaic cell now widely used is the Leclanché, in which the negative plate (or rod) is of zinc and the liquid is a solution of sal ammoniac (ammonium chloride). The positive plate is of carbon, and is placed inside a porous-pot set in the liquid, the space inside the pot not occupied by the carbon being packed with a mixture of gas carbon and manganese dioxide. When the cell is in action, zinc is slowly dissolved by the ammonium chloride, and ammonia and hydrogen are liberated on the carbon.

The hydrogen would soon stop the cell from working, owing to an effect known as polarisation, but it is mostly absorbed by the gas carbon, and afterwards slowly oxidised to water by the manganese dioxide; the cell will therefore recover if left to itself for a while before being used again, and Leclanché cells are very convenient for intermittent working—e.g., in telegraphy, for electric bells and in similar operations. They have a voltage of about 1.4.

The familiar dry cells are of the Leclanché type, but the zinc rod is replaced by a zinc case, which forms the negative part of the cell, the ammonium chloride is dissolved in a paste or jelly, and the whole is enclosed in a cardboard case, which usually contains 3 cells in series, giving a total voltage of rather more than 4. For the type of voltaic cell known as the storage cell or accumulator, see **Accumulators**.

Cellini, Benvenuto, a celebrated engraver, sculptor and goldsmith, a most versatile and erratic genius, born at Florence; had to leave Florence on account of a brawl he was involved in, and went to Rome; worked as a goldsmith there; patronised by the nobles; killed the Constable de Bourbon at the sack of the city, and for this received plenary indulgence from the Pope, Francis I. attracted him to his Court and kept him in his service five years, after which he returned to Florence and executed his famous bronze "Perseus with the Head of Medusa"; was a man of a quarrelsome temper, which involved him in no end of scrapes with sword as well as tongue; left an autobiography, from its self-dissection of the deepest interest to all students of human nature. (1500–1571).

Cellophane. See **Cellulose**.

Celluloid. See **Cellulose**.

Cellulose, a substance known chemically, ally as a carbohydrate of the polysaccharide group, to which also belong starch glycogen (animal starch) and dextrin (gum); it has the empirical formula $C_6H_{10}O_5$, but its true formula, which remains unknown is certainly much more complex than this. Its name is derived from the fact that it is the typical constituent of the walls of plant cells, and the substance itself, in a more or less pure form, is familiar as paper, cotton-wool and linen; it may be distinguished from starch by the fact that the latter gives a blue colour with a solution of iodine, whereas cellulose gives only a brown coloration.

Cellulose will not dissolve in ordinary chemical reagents, but readily dissolves in a solution of copper sulphate to which excess of ammonia has been added (Schweizer's solution); from this solution it may be precipitated by the addition of acids, and can so be obtained in the form of glossy threads from which one kind of artificial silk (Rayon) is spun. With acids it yields derivatives called cellulose esters; the chief of these are cellulose trinitrate (nitrocellulose or "gun-cotton," made by treating cotton-wool with a mixture of concentrated nitric and sulphuric acids), and cellulose acetate, which is used in aeroplane dope and for a second form of rayon (acetate rayon).

Celluloid is a mixture of cellulose dinitrate (pyroxylin or collodion cotton) with camphor; since it can easily be moulded when warm, it finds many uses, but it suffers from the serious defect of being very inflammable. Cellophane is a tough, transparent, waterproof material made from viscose or cellulose sodium xanthate, which is itself prepared by treating cellulose (from spruce wood pulp) with caustic soda and carbon disulphide.

Celsius, Anders, a distinguished Swedish astronomer, born at Upsala, and professor of Astronomy there; inventor of the Centigrade scale for thermometers. (1701–1744).

Celt, the name of the stone (especially) and the bronze axe-heads used by the prehistoric peoples of Europe.

Celts. The W. of Europe was in prehistoric times subjected to two invasions of Aryan tribes, all of whom are now referred to as Celts. The earlier invaders were Goidels or Gaels; they conquered the Ivernian and Iberian peoples of ancient Gaul, Britain and Ireland; their successors, the Brythons or Britons, pouring from the E., drove them to the westernmost borders of these countries, and there compelled them to make common cause with the surviving Iberians in resistance; in the eastern parts of the conquered territories they formed the bulk of the population, in the W. they were in a dominant minority; study of languages in the British Isles leads to the conclusion that the Irish, Manx and Scottish Celts belonged chiefly to the earlier immigration, while the Welsh and Cornish represent the latter; the true Celtic type is tall, red or fair and blue-eyed, while the short, swarthy type, so long considered Celtic, is now held to represent the original Iberian races.

Cement, a name applied to a mixture which is plastic, and tenacious at different temperatures, forming a material which, when applied in a wet state, unites other materials into a cohesive mass. The best known such mixture is Portland Cement, named from its resemblance in colour to Portland Stone, an English rock formation. It is made by burning a mixture, such as chalk and clay, until it becomes a clinker, when it is broken up and ground. Its binding

qualities are very strong. A good concrete is made from proportions of 1 : 3 : 5 of cement, sand and gravel, respectively.

Cementite, name given in the steel industry to one of the carbides of iron.

Cemetery, a burial-place, unattached to any church. By various Acts of Parliament dating from 1847 cemeteries belong either to a local authority or an incorporated company. The freehold of a grave cannot be sold.

Cenci, The, a Roman family celebrated for their crimes and misfortunes as well as their wealth. **Francesco Cenci** was twice married, had had twelve children by his first wife, whom he treated cruelly; after his second marriage cruelly ill-treated his first wife's children, but conceived a criminal passion for the youngest of them, a beautiful girl named **Beatrice**, whom he outraged, upon which, being unable to bring him to justice, she, along with her step-mother and a brother, hired two assassins to murder him; the crime was found out, and all three were beheaded (1599); this is the story on which Shelley founded his tragedy, but it is now in some points discredited.

Genis, Mont., a mountain between the which Graian and Cottian Alps, over which Napoleon constructed a pass 6,884 ft. high in 1802-1810, and through which (17 m. W. of the pass) a tunnel 7½ m. long passes from Modane to Bardonnèche, connecting France with Italy; the construction of this tunnel cost £3,000,000.

Cenotaph (lit. an "empty tomb"), the British national War Memorial "To Our Glorious Dead," in Whitehall, originally a temporary erection of wood built to the designs of Sir Edwin Lutyens for the 1919 Peace Procession, reconstructed in stone in 1920. Memorial services have been held regularly there on Armistice Day since the end of the Great War.

Censors, two magistrates of ancient Rome, who held office at first for five years and then eighteen months, and whose duty it was to keep a register of the citizens, guard the public morals, collect the public revenue, and superintend the public property.

Censorship of Plays, as now existing in the Licensing Act of 1737. Though existing in some form for 2 centuries before, its importance was only realised after an attack on Sir Robert Walpole in a play written by Henry Fielding. The penalty of performing a play without official sanction was £50 each performance. Many Commissions have been appointed since the Act was passed to consider the strong claim made by dramatic authors for its abolition, but without success. At the present time the censor does his duties so successfully that the agitation for repeal has died down. The Official Censor is the Lord Chamberlain, who, in the case of dissatisfaction with the examiner's decision, can refer the play to a representative Committee for consideration and advice. The Theatres Act of 1843 laid down the conditions under which the Lord Chamberlain may refuse a licence. The fee for perusal of a play is not more than 2 guineas.

Census, a periodical numbering of the people, now held in Britain every ten years. The first in England was that of 1801.

Cent, Centime, the name of coins in use in various countries, they being one hundredth part of the unit of coinage—e.g., the cent of U.S.A. and Canada is a bronze coin with a value of one hundredth of a dollar. The centime of France is one hundredth part of a franc.

Cental, 100 lb. weight avoirdupois, used as a corn measure. It has since been adopted in the U.S.A. and Canada.

Centaurea, a genus of plants of the natural order Compositae embracing some 600 species, mostly found in the Mediterranean districts, though several are common to England—e.g., *C. nigra* (knapweed), *C. Scabiosa* (scabious knapweed), *C. Cyanus* (blue-bottle or cornflower). Annual and perennial species are cultivated.

Centaurs, a mythical race living between Pelion and Ossa, in Thessaly, and conceived of as half men and half horses, treated as embodying the relation between the spiritual and the animal in man and nature, in all of whom the animal prevails over the spiritual, except in Chiron, who therefore figures as the trainer of the heroes of Greece; in the mythology they figure as the progeny of Centaurus, son of Lixion and the cloud; some say their mothers were mares.

Centauray, the popular species of herb (*Erythraea Centaurium*) of the order Gentianaceae, common in England in dry and sandy soil. The flowers are rose or pink-coloured. Some species (there are 30 in all in the genus) are cultivated as rock plants.



CENTAURY

Centigrade Scale,

the thermometric scale having the freezing-point of water 0° and the boiling-point 100°. It is used for everyday purposes in most of the countries of the world except Germany and the English-speaking countries, and for scientific purposes everywhere. It was introduced by Celsius. To change a Centigrade reading to Fahrenheit multiply by nine, divide by five, and add thirty-two; to Réaumur, multiply by 4 and divide by 5.

Centipedes, a class of Arthropoda, at one time grouped with the millipedes among the myriopoda, but now treated as quite distinct. In some respects they resemble the insects. The peculiarities of the centipede are that they have a distinct head bearing antennae, a body divided into a varying number of segments or somites, each somite having a pair of legs (the number of pairs varying from 15 to over 100, but always being an odd number). The generative organs open at the rear of the body, and not at the front, as in millipedes. The head bears a pair of killing organs with poison glands. Centipedes are carnivorous and hunt their prey (small insects, flies, etc.) by night. Two species are found in England, though they are small and innocuous. Some tropical American species attain a length of 6 or 8 or even 12 in., their bite being painful to human beings and, it has been claimed, fatal.

Central America. See America, Central.

Central Australia, a portion of the Territory which under the Northern Australia Act of 1926 was divided into two parts, North and Central, respectively; separated by the 20th parallel of south latitude; it was administered by a Government Resident and an Advisory Council; the Act of 1926 was repealed in 1931. The whole of this part of Australia is now the Northern Territory, with Darwin as the headquarters of the Administrator and Alice Springs as that of the Deputy in the S.

Central Criminal Court, the principal criminal court in England and Wales, known as the Old Bailey, after the street in which it stands. Created by statute in 1834, replacing a much older court serving a smaller area, its jurisdiction extends over London, Middlesex and parts of Essex, Kent and Surrey, and British ships on the high seas. It is a court of Assize and part of the High Court of Justice.

Central Electricity Board,

The, the body established in 1927 under the Electricity Supply Act to control the production and supply of electricity in Great Britain, to concentrate production in the most efficient stations, to build and operate the "Grid" scheme for transmitting power in bulk from the main generating stations to the subsidiary distributing stations, etc.

Central India, a district in India between Rajputana in the N. and Central Provinces in the S., which includes 28 salute states and 61 other small states, etc., in which the Government of India is represented at Indore by an Agent to the Governor-General and under him in Bundelkhand, Bhopal, and Malwa by a Political Agent. The chief states are Indore, Bhopal, Rewa. Area of the agency, 51,650 sq. m. Pop. 6,636,000.

Central Provinces and Berar,

an autonomous province of India occupying the N. of the Deccan, and lying between the Nerbada and the Godavari. Principal crops are cotton (grown in Berar); spinning and weaving are carried on at Nagpur), rice and wheat. There are cement factories, and coal and manganese mines. Cap. Nagpur. Pop. 13,900,000.

Centre Board, a movable keel used in particular on shallow-draught and flat-bottomed boats, a device whereby in deep water the stability of greater draught is gained, but in shallow waters when the centre board is raised the boat is enabled to pass over shoals, or even to take the bottom without heeling over.

Centre of Gravity, that point of which the resultant of the earth's attractive forces on all its particles passes. A body behaves as if its whole mass were concentrated at its centre of gravity.

Centrifugal Force, the force with which a body moving in a circle around another body tends to fly away at a tangent. According to a law of Newton's a body in motion when not moving under the compulsion of any force will continue to move in a straight line. The force applied to a body to make it continue to move in a circular path is the centripetal force, the equal and opposite force with which the body tends to fly off at a tangent the centrifugal force.

Centrifugal Machine, one which uses centrifugal force produced by rapid revolution; used in clothes-drying, separating sugar from molasses, for clarifying liquids, and in the mechanical cream separator.

Centurion, a Roman officer commanding a century, a banding foot soldiers. A centurion was elected by vote, 60 centurions being elected by each legion. A legion consisted of 30 centuries or companies of 100 men, and two centuries were in command of each century. The first centurion elected belonged to the council of war.

Cephalonia, the largest of the Ionian Is., belonging to Greece, 30 m. long, the ancient Samos; yields grapes and olive oil. Capital Argostolion (pop. 8,000). Pop. 60,000.

Cephalopoda (Cephalopods), the highest in organisation of

the Mollusca class of marine animals. They are invertebrate, and have their arms or tentacles attached to and springing from the head, a development which has occurred through the foot becoming amalgamated with the head and then growing round and encircling the mouth. They live on crustacea and small fish, and are themselves the prey of the whale and large marine carnivora. The class is divided into 2 orders: the Tetrabranchia, which includes all 4 known species of the Nautilus, and the Dibranchia, with its 2 sub-orders, the Decapoda (having 10 arms and including the cuttlefish and squid) and the Octopoda (having 8 arms, cf. the Octopus).



COMMON CUTTLEFISH

Cepheids, a class of variable stars of average period 7 days, whose variation is not due to eclipse (see **Binary Stars** and **Algol**). These pulsatory stars are generally found in clusters. No satisfactory explanation of the cause of their variation has been found, although their periods have been shown to depend upon their absolute brightness.

Ceram (Serang), the largest of S. Moluccas Is., one of the Dutch E. Indies, yields sago, which is the chief product and export. Area 6,800 sq. m. Pop. 98,000.

Ceramics, the study of pottery as an art, the general term pottery being here used to include articles made of porcelain, stoneware and china clay, as well as all other kinds of clay.

Cerastes, a genus of venomous serpents, found in Africa and India, including the *C. cornutus*, the horned viper, which has (at least in the male) a horn projecting over each eye, and *C. ripera*, which has no such horns.

Cerberus, the three-headed or three-throated monster that guarded the entrance to the nether world of Pluto according to Greek mythology; could be soothed by music, and tempted by honey; only Hercules overcame him by sheer strength, dragging him by neck and crop to the upper world.

Cerdic, first King of the West Saxons, and ancestor of kings of England, landed in Britain, probably at the mouth of the Hedin, in 495. He gradually made enough conquests to be able to call himself king, but was defeated (some say by Arthur) in the valley of the Frome in 520. Conquered the Isle of Wight, 530. (d. 534).

Cereals, a group-term for various grasses, but having in common the fact that the seeds have formed the staple food of man from earliest times. They include wheat, barley, oats, maize, rice and millet. Named after Ceres, Roman goddess of corn.

Cerebration, Unconscious, a working of the cerebral hemisphere without the person being aware of the activity of the organism. The theory endeavours to explain the fact that the mind, after once being set consciously on, for instance, a problem, may later present to the consciousness a suggested conclusion, even though the conscious mind has since ceased to dwell on that particular problem. The theory has been best expounded by Sir W. Hamilton and by Carpenter in *Mental Physiology*.

Cerebro-Spinal Fever, or Spotted Fever, disease of the brain, being an inflammation of

the covering membranes or meninges of the brain and spinal cord. It is due to a germ, and is highly contagious. It is liable to occur in epidemics. Children are the most frequent victims, though it can afflict people of any age. **Ceres**, the Latin name for Demeter (q.v.); also the name of one of the asteroids, the first discovered by Piazzi in 1801.

Cerium, a chemical metallic element usually classified with the rare-earth metals (q.v.), but better placed with thorium in the fourth group of the periodic classification (see **Inorganic Chemistry**). Symbol Ce, atomic number 58, atomic weight 140.13.

Cerro de Pasco, a town in Peru, in the Andes, 14,200 ft. above the sea-level, with the richest silver mine in S. America and the largest and oldest copper mine of Peru. Gold and lead are also produced. Pop. 25,000.

Certiorari (law), a writ issued by a superior court directing an inferior court to transmit or "cause to be certified" (*certiorari facias*) all the records or other proceedings, with the object of reviewing the judgment of the lower court, or in order that the whole cause may be tried by the higher tribunal. Such a writ is most used when a lower court has acted beyond its powers, or where a member of the lower court acts under bias (usually pecuniary.)

Cervantes-Saavedra, Miguel de, the author of *Don Quixote*, born at Alcalá de Henares; was distinguished in arms before he became distinguished in letters; fought in the battle of Lepanto, and bore away with him as a "maimed soldier" marks of his share in the struggle; sent on a risky embassy, was captured by pirates and remained in their hands five years; was ransomed by his family at a cost which beggared them, and it was only when his career as a soldier closed that he devoted himself to literature; began as a dramatist before he devoted himself to prose romance; wrote no fewer than 30 dramas; the first part of the work which has immortalised his name appeared in 1605, and the second in 1615; it took the world by storm, was translated into all the languages of Europe, but the fortune which was extended to his book did not extend to himself, for he died poor some ten days before his great contemporary, William Shakespeare; though carelessly written, *Don Quixote* is one of the few books of all time, and is as fresh to-day as when it was first written. (1547-1616).

Cervin, Mont, the French name for the Matterhorn (q.v.).

Cesarewitch, the eldest son and heir before the Revolution. Also a handicap horse race run in the late autumn at Newmarket, so named after Alexander II., who visited England in 1839 when he was Cosarewitch.

Cessnock, a town of New South Wales, Australia, on the edge of Newcastle coal-field. Pop. 14,000.

Cestodes, tapeworms, animals with no intestinal cavity. The body is flat and resembles a ribbon. They have a head, but no mouth, liquid food being assimilated by absorption through the body. Many have hundreds of segments attached to the head, which are continually being formed throughout its life. These segments are hermaphroditic, and may be male or female in the same body, the end being usually crowded with eggs. The worm is usually a parasite of a vertebrate, but seldom dangerous.

Cestus, a girdle worn by Greek and Roman women, especially the girdle of Aphrodite, so embellished with symbols of the joys of love that no susceptible

soul could resist the power of it; it was borrowed by Hera to captivate Zeus.

Cetacea, an order of sea-animals, vertebrates and mammiferous. They breathe through their lungs, and rise to exhale and inhale every few minutes, although they can sink to a great depth. They are warm-blooded. Their fore-limbs are modified into paddles to aid swimming. They have no hind-limbs, but the tail is modified into a horizontal fin with flukes. They usually bring forth one at a birth, and always suckle their young. The order is divided into 2 sub-orders: the *Mystacoceti* or Whalebone whales, which are toothless, but have whalebone or "baleen" in the upper jaw (including Right Whales and Rorquals), and the *Odonoceti* or Toothed Whales, which include the Sperm Whale or Cachalot, Bottle-nosed Whale, Dolphins, Porpoises, Narwhal and Grampus or Killer.

Cetatea Alba (formerly **Akkerman**), a fortified town in Bessarabia, Rumania, at the mouth of the Dniester. Chief industry fruit growing. Pop. 40,400.

Cetinje (*Cetynye*), the former capital of Montenegro, in a valley 2,000 ft. high; now capital of the territorial division of Zetska in Yugoslavia. Pop. 5,000.

Cetiosaurus, a species of dinosaur (i.e., reptile-footed). Remains of this reptile have been found in the Jurassic and Wealden rocks of England. It was a herbivorous quadruped with small five-toed feet and a long, whip-like tail, and probably lived largely in water. They may have reached a total length of as much as 60 ft. and stood 10 ft. or more high at the hip.



CETIOSAURUS

Cette, a French seaport, trading and manufacturing town on a tongue of land between the lagoon of Thau and the Mediterranean, 18 m. SW. of Montpellier, with a large, safe harbourage. Has an important fishing industry. Pop. 35,000.

Cetywayo, King of the Zulus, in 1856 he defeated and slew his brother Umbhazal. On Panda's death in 1872, he was acknowledged king by the Natal Government, on conditions. On British annexation of the Transvaal in 1877, he was sent an ultimatum by Sir Bartle Frere demanding disbandment of regiments, etc., which he ignored. An expedition against him routed his forces at Ulundi after initial reverses at Isandhlwana and Rorke's Drift. He was captured and brought to England in 1882. Restored 1883, he was driven out by an old enemy, Ushibepu. Died at Ekowe native reserve. (c. 1836-1884).

Ceuta, a Spanish port on the coast of Morocco, opposite Gibraltar, and guarded by a fort on one of the Pillars of Hercules, overlooking it; of importance as a military station. Pop. 39,000.

Cévennes, a range of low mountains on the eastern edge of the central plateau of France, separating the basin of the Rhône from those of the Loire and Garonne; average height from 3,000 to 4,000 ft.; the chief scene of the dragonnades against the Huguenots under Louis XIV.

Ceylon, the ancient Taprobane, a pear-shaped island about the size of Scotland, separated from India, to which it geographically belongs, and SE. of which it lies, by Palk Strait, 32 m. broad; comprises a lofty, central tableland with numerous peaks, the highest Pidurut Talagala or Pedro-

tallagalla, 8,000 ft., and a broad border of well-watered plains. It was an ancient centre of civilisation.

The soil is everywhere fertile. The climate is hot, but more equable than on the mainland. The chief products are paddy, tea, cacao, cinnamon, tobacco, coconuts and rubber. The forests yield satin-wood, ebony, etc. There are extensive deposits of plumbago. Precious stones, sapphires, rubies, amethysts, etc., are in considerable quantities. The pearl fisheries are a valuable Government monopoly. Malaria is endemic, and there was a serious outbreak in 1934-1935. The chief exports are tea, rubber, coir, copra, coconut oil and plumbago. Two-thirds of the people are Sinhalese and Buddhists.

Under its new constitution the island is almost self-governing. The government is administered by a British Governor aided by a State Council of 50 elected members, 3 ex-officio members, who are called Officers of State, and are British, and 8 nominated members. The State Council has administrative as well as legislative functions. The Governor has the power of "certification" over laws or ordinances. In the 16th Century the Portuguese settled in the S. and W., but were dispossessed by the Dutch, who, in 1796, were in their turn driven out by the British, but it was not until the last Kandyan king was captured that the whole island came under British rule. The capital and chief port is Colombo. Area 25,300 sq. m. Pop. 5,312,000.

Cézanne, Paul, French painter. One of the pioneers of Impressionism, his work was for long rejected by the Salon, though his pictures are to be found in the Louvre. Landscapes and flowers were his forte. (1839-1906).

Chablis, a town of France in the dept. of Yonne, giving name to a popular white wine.

Chacma, the *Papio porcellus*, a species of baboon found in S. Africa, a vegetarian feeder, blackish grey in colour, and gregarious in habit.

Chaco, El, a territory in S. America, part of the Gran Chaco falling in Paraguay, Bolivia and Argentina, the scene of fighting from July 1932 to Jan. 1936 between Bolivia and Paraguay in a boundary dispute.

Chad, Lake, a shallow lake in the Sahara, between Nigeria, French W. Africa, and French Equatorial Africa, of varying extent, according as the season is dry or rainy; at its largest covering an area as large as England and abounding in hippopotamuses, rhinoceroses, etc., as well as waterfowl and fish.

Chadderton, a town of Lancashire, England, suburb of Oldham, with coal-mines near and cotton industries. Pop. 28,000.

Chadwick, Sir Edwin, an English social reformer, born in Manchester, associated with measures bearing upon sanitation and the improvement of the poor-laws, and connected with the administration of them. (1801-1890).

Chadwick, Prof. James, English scientist, educated at Manchester Secondary School and at Manchester, Berlin and Cambridge Universities. Assistant director of radio-active research at the Cavendish laboratory, and a Fellow of Gonville and Caius College, he collaborated for some years with Lord Rutherford (q.v.) at Cambridge University. Distinguished in atomic theory. Awarded Hughes medal of the Royal Society and, in 1935, the Nobel Prize for Physics. (1891-).

Chæroneia, a town in Boeotia, where Philip of Macedon defeated the Athenians and Thebans 338 B.C. and Sulla defeated Mithridates 86 B.C. The

birthplace of Plutarch, who is hence called Chæronean Sage.

Chaffinch, *Fringilla Coelebs*, a song-bird of Great Britain and other parts of Europe. Male has black forehead, bluish head, green rump, ruddy breast, white belly, black wings with white bands, and black tail. Female less brightly coloured, with greyish-white underparts, lacks red breast. In autumn sexes segregate and migration towards the S. to a certain extent takes place.



Chain, a measure used by surveyors being equal to 100 links, each link being equal to 7.92 in. 80 Chains equal 1 mile.

CHAFFINCH

Chain, Chain Cables, are a series of metal rings or links, connected with one another, and forming a flexible cable. Welded chains made from rolled bar iron are stronger, and will bear a more severe strain than machine-made knotted or stamped chains. Chains are usually open-linked or bar- (stud-) linked; in the latter case each link has a transverse bar to strengthen it. Such links are generally used in the making of chain cables to hold ships' anchors.

Chained Books, books in libraries, dating from 15th Century, open to public reading, but chained to the shelves or to iron rods to avoid theft. Chains were long enough to reach to a reading-desk; or the book might be chained to the desk. A chained library still exists in All Saints' Church, Hereford, dating from 1700, but the practice of chaining books did not long survive that date.

Chain-mail, a flexible metal shirt or cuirass, made of rings closely linked together. It came into use in Europe in the 12th Century, but was also known in the East. Its advantage was that it could be worn concealed beneath ordinary clothes.

Chain Shot, a projectile consisting of two balls or half-balls joined together by a chain, formerly employed in naval warfare to destroy the masts and rigging of ships. Also sometimes used in land battles.

Chair, a movable seat with a back-rest, generally intended for one person. They have been in use from very early times, and have often been of great splendour and highly ornamented with carving. They are generally made of wood, sometimes of metal, cf. especially the modern tubular designs.

Chairman, a person presiding over an assembly, public meeting, etc. His duty is to conduct the proceedings in an orderly and judicial manner, and to see that the objects of the meeting are carried out. He is a person exercising great authority, as a rule, in the management of companies, corporate bodies, etc. The Lord Chancellor is chairman of the House of Lords as the Speaker is of the House of Commons. The Chairman of Committees of the House of Commons takes the chair when the House is in committee and the Speaker "vacates the chair." It is an office carrying a salary of £2,500 per annum.

Chaise (the French word for "chair"), was the name given in the 18th Century to a light, one-horse vehicle which was made on either two or four wheels. As in the sedan, the occupant was able to lift off the top of the carriage or "calash" if he wished. The post-chaise was a fast, closed, four-wheeled vehicle of the 18th and 19th centuries drawn by 2 or 4 horses.

Chalcedon, a city of Bithynia, at the entrance of the Thracian Bosphorus, where the fourth Council of the Church was held in 451, which defined the orthodox conception of Christ as God-man.

Chalcedony, a rock found in the form of pebbles composed of concentric layers of silica, often of different colours. The centre is sometimes hollow and contains a drop of water and an air bubble. They have been formed by deposition in the cavities of rocks by percolating water.

Chalcidice, the three-fingered peninsula of the Balkan territory stretching into the Aegean Sea.

Chaldea, ancient name for Babylonia.

Chalet, the name of the timber-built houses found in the Swiss, Bavarian and French Alps and in the Tyrol, picturesque buildings of a log-cabin type.

Chalfont St. Giles, a village of Bucks, England, 3 m. S.E. of Amersham. Here is the cottage in which Milton lived during the Great Plague and where he wrote some of his best poetry. Pop. 2,000.

Chalgrove, a village of Oxfordshire, England, the scene of a clash in 1643 during the Civil War in which Hampden was killed while trying to cut off a troop of Prince Rupert's horse.

Chaliapin, Feodor Ivanovitch, one of the greatest Russian operatic artists of his time. He was a shoemaker before obtaining work as a singer in a local opera company at the age of 17. At 23 he appeared at Mamontoff's private theatre at Moscow, and later at the opera houses of the capitals of Europe. In 1932 he appeared in a film, *Don Quixote*, and published 2 books, *Pages from My Life*, and *Man and Mask*. (1873-1938).

Chalice, the sacred vessel used in the Christian Church in the celebration of Holy Communion.

In the early churches the large two-handed bowl was used, of which no examples survive. Early examples were also of glass, horn, wood, etc., whereas the chalice used in the English Church today must be of gold, silver or silver-gilt, and must be consecrated by a bishop.

Chalk, a white or greyish soft rock consisting almost entirely of carbonate of lime (calcium carbonate). It is composed of the crushed shells and calcareous remains of minute sea animalcules. Silica is always present, and flints are frequently found embedded in it. It is common to the S. of England and N. France, and there are large chalk beds under London. It has many commercial uses, and is sold under the names of Whiting, Paris White, etc.

Challenger Expedition, a scientific expedition sent out by the British Government in the *Challenger* in 1872 in the interest of science, and under the management of scientific experts, to various stations over the globe, to explore the ocean, and ascertain all manner of facts regarding their physical and biological conditions, an expedition which concluded its operations in 1876, of which as many as 50 volumes of reports have been compiled.

Chalmers, James, Scottish missionary and explorer; visited Rarotonga and New Guinea, in the latter island contributing greatly to the establishment of the British protectorate; killed by cannibals. (1841-1901).

Chalmers, Thomas, a celebrated Scottish ecclesiastic and pulpit orator, born at Anstruther, Fife; in 1825, he

became professor of Moral Philosophy at St. Andrew's and, in 1828, of Divinity in Edinburgh; he was not much of a scholar or even a theologian, but a great man, and a great force in the religious life of his country. He was distinguished for his practical sagacity, and was an expert at organisation. In 1843 he led a body of 470 clergy who left the Church in search of independence from civil authority and founded the Free Church of Scotland, he himself becoming principal of the Free Church College. (1780-1847).

Châlons-sur-Marne, capital of the Marne, 100 m. N. of Paris, where Attila was defeated by the Romans and Goths in 451; Napoleon III. formed a camp near it for the training of troops. Fell to the Germans in Aug. 1914, but retaken by Foch in September of that year. Pop. 31,000.

Chalybeate Springs, mineral waters impregnated with iron salts, chiefly the carbonate or the sulphate. They exist in many parts of the world, and are found in England at Harrogate and Leamington. They have medicinal value.

Chamberlain, an official in the court of a monarch or nobleman having nominally the charge of domestic affairs, an ancient office, and one of the highest importance in England from the 13th Century onwards, taking a great share in the government of the country. The office of Lord Chamberlain remains in the King's Household. Though it is of diminished importance, the holder is still responsible for the licensing of theatres in towns with a royal palace and for licensing plays for performance. He also controls all the officers and servants of the King's Household. The Lord Great Chamberlain's office is a sinecure office granted by Henry I. to the De Veres, Earls of Oxford, and hereditary since. The duties are chiefly concerned with coronation ceremonies, the care of the royal palaces at Westminster, including authority, during recesses, of the Parliament buildings.

Chamberlain, Rt. Hon. Arthur Neville, British politician. Second son of Joseph Chamberlain, he spent his early life in municipal politics in Birmingham, where he was Lord Mayor. In 1922 he became Postmaster-General under Bonar Law, was Minister of Health in 1923, and succeeded Baldwin as Chancellor of the Exchequer the same year. In Baldwin's second Government of 1924-1929 he was Minister of Health and fostered the Deregulation Bill. In the National Government of 1931 he again became Chancellor of the Exchequer, and held the post until 1937, when he became Prime Minister on the resignation of Mr. Baldwin. He has since taken a large personal share in the negotiations which resulted in the Anglo-Eire Treaty and the Anglo-Italian settlement. As Chancellor he introduced the conservative tariff legislation. In Sept. 1938 he went twice to Germany to seek with Hitler a peaceful solution of the Sudeten German problem in Czechoslovakia, and in addition secured Hitler's signature at Munich to a "peace pact." (1869-).

Chamberlain, Houston Stewart, author, born at Southsea, Hampshire, lecturer at Vienna University and naturalised German in 1914; one of the people who, following Gobineau, developed the Nordic theories which are the basis of Nazi Aryan philosophy. (1855-1927).

Chamberlain, Rt. Hon. Joseph, born in London, connected as a business man with Birmingham; after serving the latter city in a municipal capacity, was elected the parliamentary representative in 1876; became President of the Board of



CHALICE

Trade under Mr. Gladstone in 1880, and chief promoter of the Bankruptcy Bill; broke with Mr. Gladstone on his Home Rule measure for Ireland, and joined the Liberal-Unionists; distinguished himself under Lord Salisbury as Colonial Secretary, during which period of his career occurred the South African War and the passing of the Australian Commonwealth Act (1895-1902). It was he who raised the tariff reform issue in 1905 which led to the defeat of the Conservative Party. (1836-1914).

Chamberlain, Rt. Hon. Sir Joseph Austen, British politician. Elder son of Joseph Chamberlain, he entered Parliament as a Liberal-Unionist in 1892, and became a Lord of the Admiralty three years later, being made Chancellor of the Exchequer in 1903. On the fall of the Unionists in 1905 he remained out of office till 1915, when he joined the Coalition Government as Secretary for India. In 1919 he was again Chancellor of the Exchequer; from 1921 to the fall of the Coalition he was leader of the House; and in 1924 he joined Baldwin's Government as Foreign Secretary, holding the post till the Government fell in 1929; signed Locarno Treaty and Kellogg Pact, in 1925 and 1928 respectively. (1863-1937).

Chamber of Commerce, a n Association composed of merchants and other business people to promote the interests of trade and commerce. The earliest is said to have been founded in the 14th Century at Marseilles. To-day most cities and towns of any size possess Chambers of Commerce which are attached to a Central Association. There are British Chambers of Commerce in foreign countries, and foreign Chambers in Great Britain. In 1856 a Congress of British Chambers at home and abroad was held. This has since become a permanent body, known as the Federation of Chambers of Commerce. It is able to get an exchange of views, and thus initiate a common policy which can be used to guide the Government on all matters affecting trade.

Chamber of Deputies, a French legislative assembly, elected now by universal manhood suffrage. It is the lower of the two French assemblies, the other being the Senate, and is at present composed of 618 deputies.

Chambers, Sir Edmund Kirkever, English literary critic and distinguished Shakespearean scholar; born in Berkshire, educated at Marlborough and Corpus Christi College, Fellow of Worcester College, Oxford; author of *The Medieval Stage*, *The Elizabethan Stage*, etc. (1866-).

Chambers, Robert, brother of the line of life, but of superior accomplishments, especially literary and scientific; was the author of a great many works of a historical, biographical and scientific, as well as literary interest; wrote the *Vestiges of the Natural History of Creation*, a book on evolutionary lines which made no small stir at the time of publication, 1844. (1802-1871).

Chambers, William, born at Peebles; in Edinburgh, and commenced business on his own account in a small way; edited with his brother the *Gazetteer of Scotland*; started, in 1832, *Chambers's Edinburgh Journal* to meet a demand of the time for popular instruction; in company with his brother founded a printing and publishing establishment. (1800-1883).

Chambéry, cap. of the dept. of Savoie, France, in a beautiful district; is the ancient capital, and contains the castle of the Dukes of Savoie; manufactures silk, leather, lace, soap; is a summer resort. Pop. 23,000.

Chambord, spacious chateau in the dept. of Loir-et-Cher, France, built by Francis I.; after being long a residence for royalty and people of distinction, was presented in 1821 to the Duc de Bordeaux, the Comte de Chambord.

Chambord, Comte de, Duc de Berri and grandson of Charles X., born in Paris; exiled in 1830, he sought refuge in England with his grandfather; the monarchical party resolved to attempt a restoration in his behalf in 1871, but he refused to adopt the tricolour flag of the Revolution, and the scheme was abandoned. (1820-1883).

Chambre Ardente, a name given to a court of justice established in France for the trial of the Huguenots in 1535. They were held at night, and even when in the daytime, with lighted torches.

Chameleon, a division of the Lacertilia (lizard) sub-order of

reptiles, differing from the true lizards in having a very long, cylindrical, club-headed tongue, a crested head, very large eyes covered with a thick lid in which there is only



CHAMELEON

a small opening for the pupil, eyes that will focus independently of each other, 2 toes of each foot opposed to the other 3, thus enabling a good grip to be secured, and a very long, prehensile tail. There are several species, most being found in Africa or Madagascar, but the common chameleon is found in Europe, in Spain, and other species in India and Arabia.

Chamisso, Adelbert von, a German naturalist and littérateur, born in France, but educated in Berlin; is famous for his poetical productions, but specially as the author of *Peter Schlemihl*, the man who sold his shadow to the devil, which has been translated into nearly every European language; he wrote several works on natural history. (1781-1838).

Chamois (*Rupicapra tragus*), a species of ruminant intermediate between the goat and antelope, of the size of a goat which it resembles. It is found in herds in the Alps, Pyrenees, and Carpathian Mountains. The short horns curve backwards. The coat is red in summer, dark brown in winter; a dark band reaches from mouth to the eyes. It is extremely fleet and agile. The skin is prepared as *chamois leather*.

Chamouni (or Chamonix), a village in the dept. of Haute-Savoie, France, 40 m. SE. of Geneva, in a valley forming the upper basin of the Arve, famous for its beauty and for its glaciers; it is from this point that the ascent of Mont Blanc is usually made.

Champagne, an ancient province of France, 180 m. long by 150 m. broad, and including the depts. of Aube, Haute-Marne, Marne and Ardennes. In 1284 Joan of Navarre who had succeeded her father Henry III. King of Navarre and Count of Champagne, married the heir-presumptive to the French throne. The province became finally attached to the crown in 1314.

Champagne Wines, sparkling in the old French province of Champagne situated in the NE. of France. The wine is bottled before fermentation is completed, and so retains the carbon dioxide gas which would escape were it left in a cask. There are "dry" and "sweet" champagnes, the difference being represented by the amount of sweet liqueur mixed with the wine.

Champ-de-Mars, a large piece of ground in Paris, between the front of the Ecole Militaire and the left bank of the Seine; the scene of the Fête on July 14, 1790.

Champerty, a bargain entered into between the party to a lawsuit and an individual who has no legal interest in the suit, but who consents to finance the action in consideration of sharing the resultant profits, if any. It is an offence against the law.

Champion, a defender of any cause; representative of others to fight on their behalf; a person capable of defeating his competitors in any form of sport; generally, a leader in games of skill and strength. In the olden times, when judicial combats were fought, he acted as a substitute for one unable to bear arms. At the coronation of British Kings it is the duty of the King's Champion to challenge any person denying the King's title to the Sovereignty. The Dymoke family have had this right since the coronation of Richard II. and last exercised it at the coronation of George IV. at Westminster Hall.

Champlain, a beautiful lake between the States of New York and Vermont; it is 110 m. in length, and from 1 m. at its S. end to 14 m. at its N. end broad.

Champlain, Samuel de, "Father of New France," a French navigator, born at Brouage in Saintonge, was founder of Quebec, and French Governor of Canada; in 1620 he constructed Fort St. Louis. In 1629 Quebec was attacked by the English under David Kirke who compelled Champlain to surrender; he wrote an account of his voyages. (1587-1635).

Champs-Élysées, a Parisian promenade the Place de la Concorde and the Arc de Triomphe.

Chanak, a town of the sanjak of Bigha, Asia Minor, on the Dardanelles. It was unsuccessfully attacked by the Allied fleet in March 1915, and was occupied in 1922 by the British to check the advance of the Kemalists forces, the incident nearly resulting in war, a catastrophe prevented by the tact of Sir Charles Harington, who commanded the troops.

Chance, or **Chaud-Medley**. In law, chance-medley is the killing of another in an affray in self-defence. Chaud-medley is the killing of a person in the heat of passion.

Chancel, the E. part of a church, generally separated from the nave by a screen. It originated from the division in medieval monastic churches when the lay congregation was entirely shut off by the screen. The chancel now generally contains the altar, communion table, choir-stalls and minister's pew.

Chancellor, a title of an official, petty officer in the courts of ancient Rome. The office increased in importance, and eventually became endowed with judicial functions. The officer did secretarial and notarial work, and prepared and sealed any important documents.

In England, Edward the Confessor was the first King to seal documents, and his Ecclesiastical Chancellor was Secretary and Keeper of the Seals. The judicial duties of the Chancellor continued to grow in importance. Eventually he had his own court, and all petitions came to him direct. In the 22nd year of Edward III.'s reign other matters were definitely assigned to his court, and, in fact, he succeeded the Justiciar as the principal legal and political officer in the kingdom.

When Parliament developed and Ministers attended as Ministers of the House of Lords,

the Chancellor became the Speaker or Prolocutor. There were lay as well as clerical Chancellors. If not a peer the Chancellor's rights were simply those of his office, but from 1706 all Chancellors have been peers, and the title of Lord High Chancellor was conferred on the office. No Roman Catholic can be Lord Chancellor. The Chancellor of the Exchequer is the chief finance minister of the Government and the Chancellor of the Duchy of Lancaster manages its revenues for the Crown. The Chancellors of Oxford and Cambridge and other universities are the elected titular heads of their respective universities.

Chancellor, Richard, an English sea-man, who, voyaging in northern parts, arrived in the White Sea, and travelled to Moscow, where he concluded a commercial treaty with Russia on behalf of an English company; wrote an interesting account of his visit; after a second voyage, in which he visited Moscow, was lost by shipwreck off Aberdeenshire in 1556.

Chancellor of the Exchequer, the member of the Cabinet in charge of the nation's finances, to whom is entrusted the task of introducing an annual budget. The office dates from 1221 when it was but a minor one. His judicial functions were taken away by the Judicature Act 1873. He is always a member of the lower house.

Chancellorsville, a village of Virginia, U.S.A., the scene of a battle in the American Civil War in 1863, in which Gen. "Stonewall" Jackson was killed.

Chancery, Court of, the name given 1873, to the court which administered equity suits. Its early history is intimately connected with the royal Council, and it sprang from the Concilium Ordinarium exercising its functions as a Court of Appeal and Equity. Since the fusion of common law and equity in 1873, its place has been taken by the Chancery Division of the High Court, to which are usually assigned suits concerning estates of deceased persons, company liquidations, construction of wills and partnerships.

Chanctonbury Ring, a hill of the Sussex, England, above Steyning. The tree-capped summit (814 ft.) is occupied by prehistoric earthworks and a dewpond.

Chandelier, a frame of wood, metal, or crystal, suspended from the ceiling of a room, and originally used as a candle-holder, but in modern times as a support for gas or electric-light fittings. They have in the past been very elaborate and highly ornate.

Chandernagore,

a small town and territory in India, on the Hooghly, 22 m. N. of Calcutta, belonging to France. Pop. 28,800.

Chandos, John, a celebrated English general in the 14th Century; was present at Crécy, governor of English provinces in France ceded by Treaty of Bretigny; defeated and took prisoner Du Guesclin of Auray; served under the Black Prince, and was killed near Poitiers, 1370.

Chandragupta, Magadha, a son of a King of Magadha, was driven into exile by the King of Magadha, but having conquered the Punjab on the death of Alexander the Great, defeated and killed his kinsman, the reigning King of Magadha, and established the Maurya empire in India, he himself becoming the first



CHANDELIER

Emperor of India, reigning some time in the 4th Century B.C.

Changsha, a town of China, capital of the province of Hunan, a treaty port, with famous antimony works. Pop. 607,000.

Chang-Tso-Lin, Chinese marshal; from leader of bandits who helped the Japanese in their war against Russia, rose to be general of a division. He suppressed republicanism in Mukden 1911-1912, and remained as military governor of S. Manchuria. The rest of Manchuria came under his sway after defeat of Manchu restoration in 1917. In 1927 he was installed in Peking as generalissimo of the Chinese Republic. On approach of the southern army in 1928 he left for Mukden; his train was bombed, and he received fatal injuries. (c. 1873-1928).

Channel, English, an arm of the Atlantic between France and England, 280 m. long and 100 m. wide at the mouth; the French call it *La Manche* (the sleeve).

Channel Ferries have been in operation for years; among others there is that from Copenhagen to Malmö, 19 m.; another is from Warnemünde to Gdynia, 26 m.; there is one across Chesapeake Bay of 36 m.; during the Great War a regular train ferry service for military purposes was run by the Inland Waterways Section of the Royal Engineers from Hichborough to Dunkirk, 54 m., and Calais, 35 m.; and the same corps also ran another ferry from Southampton to Dunkirk, 130 m., and afterwards from Southampton to Calais, but in each case Dunkirk had to be abandoned as being too exposed to enemy action. The ferry, with the boats used at Hichborough and Southampton, is now in operation between Harwich and Zeebrugge.

Channel Islands, a group of small islands off the NW. coast of France, of which the largest are Jersey, Guernsey, Alderney and Sark; formerly part of the Duchy of Normandy, and now all that remains to Britain of her French dominions, being subject to her since 1066. They have a delightful climate, mild and bright, and varied and beautiful scenery; the soil is fertile; flowers and fruit are grown for export to Britain, also early potatoes for the London market; Guernsey pears and Jersey cows are famous; valuable quarries of granite are wrought; the language is Norman-French. Pop. 93,200.

Channel Swimming. The English Channel was first swum from England to France in Aug. 1875 by Capt. Matthew Webb, who took 21 hrs. 45 mins. It was not till 1911 that the feat was repeated, and not till 1923 that Webb's time was beaten, by S. Piraboschi, who swam from France to England in 16 hrs. 33 mins., the first crossing from France. Gertrude Ederle, of America, was the first woman to accomplish the swim, in 1926. Many have since achieved the feat, including E. L. Tenme (15 hrs. 54 mins.) in 1934 and Haydn Taylor (14 hrs. 48 mins.) in 1935. The fastest time is 11 hrs. 5 mins. by Georges Michel in 1926.

Channel Tunnel. The possibilities of a tunnel under the English Channel have been discussed for well over half a century. Hitherto, the opposition of the military authorities in England has been too strong. A Select Committee of the House of Commons has rejected the proposal, and in 1924 the Prime Minister, Mr. Ramsay MacDonald, and five ex-Prime Ministers in consultation decided against the project. The length of the tunnel would be about 30 m. and the cost is estimated at £30,000,000. It had the approval of the French Government.

Chansons de Gestes (i.e., Songs of Deeds), poems of a narrative kind much in favour in the Middle Ages, relating in a legendary style the history and exploits of some famous hero, such as the *Chanson de Roland*, ascribed to Théroutle, a trouvère of the 11th Century.

Chantilly, town of France, in the dept. of Oise. It has a famous race-course, and three châteaux in a park. It was the French Army headquarters, 1914-1918. Pop. 6,000.

Chantrey, Sir Francis, an English sculptor, born in Derbyshire; was apprenticed to a carver and glider in Sheffield; executed four colossal busts of admirals for Greenwich Hospital; being expert at portraiture, his busts were likenesses; executed busts of many of the most illustrious men of the time, among them of Sir Walter Scott, Wordsworth, Southey and Wellington, as well as of royal heads; made a large fortune, and left it (the Chantrey Bequest) for the encouragement of art. (1781-1842).

Chantry, a small private chapel, part cathedral or church, endowed by a person for the singing of masses to his soul after death.

Chanty, a sea-song (probably derived from *chanter*, 2nd person plural imperative of the French verb, *chanter*, to sing). Sailor's chanties were sung on board ship, the rhythm of the song giving time to such nautical labours as the hauling of ropes.

Chapbooks, a cheap issue of pamphlets in the early part of the 17th Century, containing popular romances and legends or devoted to astrology, palmistry and the interpretation of dreams; similar publications appeared in France and Germany.

Chapel, a separate building or part of a large building such as a cathedral or abbey, dedicated often to some particular sacred purpose. It may be consecrated to a saint or to the memory of a person buried in the chapel. In a cathedral the Lady-Chapel is set apart for devotion to the Virgin Mary. When designed for purposes of general worship, a chapel differs from a church in that its foundation is more private in origin. A place of worship built for the devotions of a family and built on the estate is called a chapel. Similarly, a community such as a college, school or guild, may have a chapel for the devotions of its members. A nonconformist place of worship is also called a chapel.

Chapel-en-le-Frith, market town of Derbyshire, England, in the Peak District. Industries include coal-mining and paper-making. Pop. 5,000.

Chapel-Royal, a clerical body formed for the purpose of conducting religious services for the King of England. The foundation dates back at least to the 15th Century, probably much earlier. It consists of 60 clergymen, including a dean. Its services are now held at St. James's Palace in London.

Chaplain, a clergyman attached to the household of a Sovereign or nobleman, bishop, or any person of distinction, possessing a private chapel. The ordinary chaplain has no parochial duties, but a bishop may appoint a benighted clergyman as his examining chaplain. The British Sovereign has 36 "Chaplains in Ordinary" in England and some in Scotland. There are chaplains in the Indian Civil Service, and attached to workhouses and prisons. In the Army about 160 chaplains hold commissions under a Chaplain-General. Every large ship in the Navy has a chaplain.

Chaplin, Charles, film comedian. Born in London, he emigrated to America, and after a time on the stage took to film work in the early days of the art. His

comic genius gave the cinema its first wide appeal, and earned him a fortune. His film *Modern Times* was shown in London in 1936. (1889-).

Chapman, Arthur Percy Frank, English cricketer, born at Reading; captained Uppingham School team; played for Cambridge University, Lords, 1920. Played for Berkshire. Toured Australia with MacLaren and with Gilligan. From 1925 played for Kent. Captained England at Oval, 1926, when Australia was beaten; led successful Australian tour, 1928-1929. Captained England in preliminary matches, 1930, with mixed result, and captained M.C.C. team to South Africa in autumn. Captain, Kent, 1933. He is a good left-handed batsman, but best as fielder. (1904-).

Chapman, George, English dramatic poet, born at Hitchin, Hertfordshire; wrote numerous plays, both in tragedy and comedy, as well as poems, of unequal merit, but his great achievement is his translation into verse of the works of Homer, which, though not always true to the letter, is instinct with somewhat of the freshness and fire of the original. He was a contemporary of Shakespeare. (1559-1634).

Chapter, an ecclesiastical term applied to each diocese. Under the presidency of the dean, it consists of the canons attached to a cathedral or collegiate church.

Chapter-House, the meeting-place of the chapter. Some are square or oblong as at Canterbury and Exeter, but most are polygonal, e.g., Lincoln (decagonal), Salisbury (octagonal), etc.

Chaz (or Charr), a genus of fish (*Salvelinus*) closely related to the salmon, from which they differ in the arrangement of the teeth. They are mostly freshwater fish inhabiting deep lake-waters (e.g., in Windermere), but one species *S. Alpinus* is a marine fish found in the Arctic (Lapland), but spawning in rivers. More than one species is found in English lakes. *S. fontinalis* is the N. American Brook Trout, *S. namaycush* the N. American Great Lake Trout or Namaycush.

Charade, usually, the dramatic interpretation of a word, each syllable of which, and the whole, is acted by individuals in a series of scenes. The acting may be silent or vocal. It may also be played simply by description of each syllable.

Charcoal, the residue of partially-burnt animal or vegetable matter, especially wood. It is produced more or less pure, according to the substance used and the time and care taken in burning. By burning sugar in ideal circumstances almost a pure carbon is produced. Animal carbon produced by burning bones, on the other hand, contains only 10 to 12 per cent. of pure carbon. For centuries where wood was plentiful, charcoal-burning was practised by simply cutting the wood, stacking it, and burning it. Now it is burnt in retorts, and various valuable by-products are recovered. Wood charcoal is useful mainly as a fuel, but it is also valuable for its capacity for absorbing gases and in the manufacture of gunpowder.

Charcot Land, an island of Antarctica, in latitude 76° S., of S. America. It is named after the French explorer Jean Baptiste Charcot, who commanded French expeditions to the Antarctic in 1903-1905 and 1908-1910 and mapped a considerable amount of Antarctic coastland.

Chard, a town of Somerset, England, scene of a parliamentary victory during the Civil War. Pop. 4,000.

Charente, a dept. of France, W. of the Gironde; cap. Angoulême; with vast chestnut forests; produces wines, mostly distilled into brandy. Area 2,305 sq. m. Pop. 309,000.

Charente, a river of France, 200 m. long, flowing through the depts. of Charente and Charente-inférieure to the Bay of Biscay, Rochefort the chief town on its banks.

Charente-inférieure, a maritime dept. of France, W. of the former; includes the islands of Ré and Oléron. Cap. La Rochelle. Area 2,791 sq. m. Pop. 415,000.

Chargé d'Affaires, a diplomatic officer who acts for his ambassador during the latter's absence. He may also be the appointed representative of his country at a less important Court.

Charing Cross, a district of London Trafalgar Square, taking name from the village of Charing, which was situated there, and the stone (Kilnecross) cross erected by Edward I. Here is a railway station, a terminus of the Southern Railway, previously of the London, Chatham and Dover line, and a former station of departure for the Continent.

Charing-Cross Bridge

Scheme, a plan to transfer the present Charing Cross to the Surrey side of the Thames, and to abolish the present railway bridge, with its adjacent footbridge (Hungerford Bridge). In its place a new road-bridge was to be built with wide approach, calculated to divert the traffic from the at present overcrowded Strand. The scheme was considered in connection with the proposed reconstruction of Waterloo Bridge by a Royal Commission in 1927. Following its report the scheme was further advanced by an agreement between the London County Council and the Southern Railway, and plans were drawn up. In 1930, however, Parliament refused its sanction, as details for the development of the S. bank of the river were not satisfactory. Two years later further preparation of the scheme lapsed for reasons of economy, since the cost was estimated at well over £10,000,000.

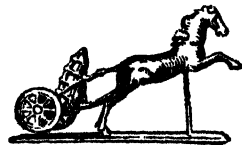
Chariot, a two-wheeled horse vehicle much used in antiquity in war and sport. They were lightly-built for fast driving, drawn by 2 or (in chariot-races) by 4 horses, and for purposes of war built up to a certain extent as a protection for charioteer and fighter. Their shape varied in the different countries. In Persia and ancient Britain destructive whirling scythes were fixed to the wheel-axles of battle-chariots. Chariot-racing was one of the most popular forms of sport in ancient Greece and Rome.

Charity Commissioners, a body set up in 1853 to supervise charitable trusts and endowed schools, most of its work in connection with the latter being transferred to the Board of Education in 1899. Investments held by the body aggregate over £70,000,000.

Charivari, an ancient French custom, consisting of serenading a newly-married couple with a musical mockery, using domestic utensils as instruments.



CHARR



ROMAN CHARIOT

Originally a serious custom at weddings, it degenerated into a way of insulting unpopular couples. It was forbidden by the Church about 1600.

Charlemagne, i.e., Charles or Karl the Great, the first Carolingian king of the Franks, son and successor of Pépin le Bref (the Short); became sole ruler on the death of his brother Carloman in 771; he subjugated by his arms the southern Gauls, the Lombards, the Saxons and the Avars, and conducted a successful expedition against the Moors in Spain, with the result that his kingdom extended from the Ebro to the Elbe; having passed over into Italy in support of the Pope, he was on Christmas Day, 800, crowned Emperor of the West, after which he devoted himself to the welfare of his subjects, and proved himself as great in legislation as in arms; enacted laws for the empire called capitularies, reformed the judicial administration, patronised letters and established schools. He died and was buried at Aix-la-Chapelle. (742-814).

Charleroi, a manufacturing town in Hainaut, Belgium, 32 m. S.E. of Brussels; a centre of the coal and iron industries. Pop. 28,000.

Charles, Archduke of Austria, son of the younger brother of Francis II., one of the ablest generals of Austria in the wars against the French Republic and the Empire; he was defeated at the Battle of Wagram, after which, being wounded, he retired into private life. (1771-1847).

Charles I., last Emperor of Austria-throne in 1916 during the Great War, left Austria for Switzerland in 1919, and was formally deposed by the Austrian Parliament; led an abortive attempt to restore the monarchy, but was defeated near Budapest and died at Madeira. (1887-1922).

Charles I., King of England, second son of James I., born at Dunfermline; falling in his suit for the Infanta of Spain, married Henrietta Maria, a French princess, a devoted Catholic, who had great influence over him; had for public advisers Strafford and Laud, who cherished in him ideas of absolute power adverse to the liberty of the subject; acting on these ideas brought him into collision with the Parliament, and provoked a Civil War; himself the first to throw down the gauntlet by raising the royal standard at Nottingham; in the end he surrendered himself to the Scots army at Newark, who delivered him to the Parliament on payment of £400,000, alleged arrears of military pay; was tried as a traitor to his country, condemned to death and beheaded, January 30, at Whitehall. (1600-1649).



CHARLES I

Charles II., King of England, son of Charles I., born at St. James's Palace, London; was at The Hague, in Holland, when his father was beheaded; assumed the royal title; was proclaimed King by the Scots; landed in Scotland, and was crowned at Scone; marching into England, was defeated by Cromwell at Worcester, September 3, 1651; fled to France; by the policy of General Monk, after Cromwell's death, was restored to his crown and kingdom in 1660, an event known as the Restoration; he was an easy-going man, and is known in history as the "Merry Monarch"; his reign was an inglorious one for England, though it is distinguished by the passing of the Habeas

Corpus Act, one of the great bulwarks of English liberty. (1630-1685).

Charles IV., The Fair, third son of France from 1322 to 1328; when trouble arose in Guienne, which was a duchy held by the English in fief to the French crown, Isabella went there in place of Edward II. of England, and with Charles plotted the final overthrow of Edward; was the last of the Capets. (1294-1328).

Charles V., The Wise, son of John II., King of France from 1364 to 1380; recovered from the English almost all the provinces they had conquered, successes due to his own prudent policy, and especially the heroism of Du Guesclin, De Clisson and De Boucicaut; France owed to him important financial reforms, the extension of privileges to the universities, and the establishment of the first national library, in which were gathered together thousands of MSS.; the Bastille was founded in his reign. (1337-1380).

Charles VI., The Well-Beloved, King of France from 1380 to 1422, was son and successor of Charles V.; began his reign under the guardianship of his uncles, who rifled the public treasury and provoked rebellion by their exactions; gained a victory at Rossbach over the Flemings, then in revolt, and a little after dismissed his uncles and installed in their stead the wise councillors of his father, whose sage, upright and beneficent administration procured for him the title of "Well-Beloved," a state of things, however, which did not last long, for the harassments to which he had been subjected and the excesses of his life, drove him insane, and his kingdom, rent by rival factions, was given over to anarchy, and fell by the treaty of Troyes almost entirely into the hands of the English conquerors at Agincourt. (1368-1422).

Charles VII., The Victorious, son of Charles VI., became King of France in 1422; at his accession the English held possession of almost the whole country, and he indolently made no attempt to expel them, but gave himself up to effeminate indulgences; was about to lose his whole patrimony when the patriotism of the nation woke up at the enthusiastic summons of Joan of Arc; her triumphs and those of her associates weakened the English domination, and even after her death her influence persisted, till at the end of 20 years the English were driven out of France, and lost all they held in it except Calais, Havre and Guines Castle. (1403-1461).

Charles VIII., King of France, son of Louis XI., during his minority the kingdom suffered from the turbulence and revolts of the nobles; married Anne of Brittany, heiress of the rich duchy of that name, by which it was added to the crown of France; sacrificed the interests of his kingdom by war with Italy to support the claims of French princes to the throne of Naples, which, though successful from a military point of view, proved politically unfruitful. (1470-1498).

Charles IX., third son of Henry II., became King of France in 1560; the civil wars of the Huguenots and Catholics occupy this reign; the first was concluded by the peace of Amboise, during which Francis of Guise was assassinated; the second concluded by the peace of Longjumeau, during which Montmorency fell; the third by the peace of St. Germain, in which Condé and Moncontour fell, which peace was broken by the massacre of St. Bartholomew, into the perpetration of which Charles was inveigled by his mother and the Guises; incensed at this outrage, the Huguenots commenced further wars when Charles died. (1550-1574).

Charles X., brother of Louis XVI. and Louis XVIII., the latter of whom he succeeded on the throne of France in 1824; was unpopular in France as *Duc d'Angoulême* in the time of the Revolution, and had to flee the country at the outbreak of it, and stayed for some time as an exile in Holyrood, Edinburgh; on his accession he became no less unpopular from his adherence to the old régime; at an evil hour in 1830 he issued ordinances in defiance of all freedom, and after an insurrection of three days in the July of that year had again to flee; abdicating in favour of his grandson, found refuge for a time again in Holyrood, and died at Götting in his eightieth year. (1757-1836).

Charles I., King of Naples and Count of IX. of France, with whom he was captured on a crusade. Ransomed, he was offered the crown of Naples and Sicily in 1284 by the Pope. The cruelty of the French caused a massacre and rising in Sicily known as the Sicilian Vespers, after which he never recovered Sicily. (1226-1284).

Charles V. (I. of Spain), Holy Roman Emperor, son of Philip of Burgundy, born at Ghent; became King of Spain in 1516, and succeeded to his Habsburg possessions in 1519 on the death of his paternal grandfather Maximilian I., being crowned at Aix-la-Chapelle in 1520; reigned during one of the most important periods in the history of Europe; the events of the reign are too numerous to detail; it is enough to mention his rivalry with Francis I. of France, his contention as a Catholic with the Protestants of Germany, the invasions of the Turks, revolts in Spain, and expeditions against the pirates of the Mediterranean; the ambition of his life was the suppression of the Protestant Reformation and the succession of his son Philip to the Imperial crown; he failed in both; resigned in favour of his son, and retired into the monastery of St. Yuste, in Extremadura, near which he built a magnificent retreat. (1500-1558).

Charles XII., King of Sweden, son of Charles XI., a warlike prince; ascended the throne at the age of 15; had to cope with Denmark, Russia and Poland combined against him; foiled the Danes at Copenhagen, the Russians at Narva and Augustus II. of Poland at Klissow; trapped in Russia, and forced to spend a winter there, he was, in spring 1709, attacked by Peter the Great at Pultowa and defeated, so that he had to take refuge with the Turks at Bender; here he was attacked, captured and conveyed to Demotica, but, escaping, he found his way back to Sweden, and making peace with the Czar, commenced an attack on Norway, but was killed by a musket-shot at the siege of Friedricksball. (1682-1718).

Charles XIV., King of Sweden and heir of Charles XIII., Norway, the adopted baptiste Jules Bernadotte (*q.v.*).

Charles Albert, King of Sardinia, succeeded his brother, Charles Felix, in 1831; conceived a design to emancipate and unite Italy; in the pursuit of this object he declared war against Austria; though at first successful, was defeated at La Bicocca near Novara, and to save his kingdom was compelled to resign in favour of his son Victor Emmanuel; retired to a monastery at Oporto, and died of a broken heart. (1798-1849).

Charles Edward, the Young Pretender, grandson of James II. of England, born at Rome, landed in Scotland (1745); issued a manifesto in assertion of his father's claims; had himself proclaimed King James VIII. of Scotland at Edinburgh; attacked and defeated General Cope at Prestonpans; marched at the head of

his adherents into England as far as Derby; returned and defeated the King's force at Falkirk, but retired before the Duke of Cumberland, who dispersed his army at Culloden; wandered about thereafter in disguise; escaped to France, and died at Florence. (1720-1788).

Charles Martel (i.e., "Charles the Hammer"), son of Pépin d'Héristal and grandfather of Charlemagne; became mayor of the Palace, and, as such, ruler of the Franks; notable chiefly for his signal victory over the Saracens at Tours in 732, whereby the Mussulman invasion was once for all stopped and the Christianisation of Europe assured. (c. 688-741).

Charles's Wain, the constellation of the Great Bear.

Charles the Rash, last Duke of Burgundy, son of Philip the Good, born at Dijon; enemy of Louis XI. of France, his feudal superior; was ambitious to free the duchy from dependence on France, and to restore it as a kingdom, and by daring enterprises tried hard to achieve this; on the failure of the last effort, at Nancy, was found lying dead on the field. (1433-1477).

Charleston, the largest city in S. Carolina, U.S.A., and the chief commercial city, with a spacious landlocked harbour; the chief outlet for the cotton, rice, and lumber of the district; has a large coasting trade. Pop. 62,000. Also the cap. of W. Virginia, U.S.A., a manufacturing town and centre of a coal, oil and salt-mining district. Pop. 60,000.

Charleville, a manufacturing and of Ardennes, France, on the R. Meuse opposite Metz; manufactures include hardware and bricks. Pop. 23,000. Also a town in Queensland, Australia. Pop. 2,300.

Charlock, *Wild Mustard*, or *Ketlock* (*Brassica*, or *Sinapis arvensis*), a weed with yellow, four-petalled flowers, which grows in fields in England. It is of the natural order Cruciferae, and belongs to the same genus (*Brassica*) as the cabbage and its relatives.

Charlotte, a city of Carolina, U.S.A., the county seat of Mecklenburg county, a thriving place with manufactures of machinery, cotton, dyestuffs, etc. Pop. 82,700.

Charlotte, Princess, daughter and only child of George IV. of England, married to Prince Leopold of Saxe-Coburg, afterwards King of Belgium; died after giving birth to a still-born boy, to the great grief of the whole nation. (1796-1817).

Charlottenburg, a town on the Spree, 3 m. W. of Berlin, with a palace, the favourite residence of Sophie Charlotte, the grandmother of Frederick the Great, and so named by her husband Frederick I. after her death; contains the burialplace of William I., German Emperor. It is now incorporated with Greater Berlin. Its old name was Lietzenburg.

Charlottetown, the capital of the Edward I., Canada. Pop. 12,000.

Charon, in the Greek mythology the dead over the Styx into Hades, a grim old figure with a mean dress and a dirty beard, peremptory in exacting from the ghosts he ferried over the obolus allowed him for passage-money.



CHARLOCK

Charrington, **Frederick Nicholas**, founder (1885) and honorary superintendent of Tower Hamlets Mission, was born at Bow; son of Frederick Charrington, brewer. Resigned position in father's brewery and became advocate of teetotalism. Member of L.C.C. 1889-1895, prominent in the attack (then justifiable) on music-halls. Guardian and vestryman of Mile End, afterwards on Stepney Borough Council. (1850-1936).

Chart, a map designed for use in the navigation of ships. All features of the coast are given, and soundings and currents are marked. Mercator (1512-1594) drew the first chart, showing the earth as round. The preparation of modern charts is the work of the Admiralty (Hydrographical dept.).

Charter, a formal document drawn up for the purpose of bestowing rights or privileges from one party to another. The word applies especially to the charters assigned by the sovereign to a company or corporation; or between private individuals to the deed covering the transfer of property. A public charter is that granted to a people, guaranteeing their rights. In Scottish law a charter evidences the grant of property which the successors of the recipient may inherit, under certain conditions surviving from feudal law.

Chartered Companies are formed under a charter granted by a sovereign power, and given special rights and facilities to develop the commercial advantages in the sphere named in the charter. These companies are of early origin, and the concessions given by the charter were generally in respect of land. Great Britain first granted a charter to a foreign company, the Hanseatic League. Later charters were granted to English companies trading in the Baltic, Russia and Turkey. The discovery of America led to the formation of the famous Hudson's Bay Company, which played a large part in opening up British North America. Other notable Chartered Companies were the East India Company, which was largely responsible for the conquest of India, and the British South Africa Company, which has played a big part in the development of South Africa.

Charterhouse, originally a Carthusian monastery. The Charterhouse in London was founded in 1371 by Sir Walter de Manny. After the Reformation it was for some time the residence of the Duke of Norfolk. In 1611, by the bequest of Thomas Sutton, a hospital, almshouse, and school were founded on the site. The school grew into a prominent public school, but in 1872 was moved to Godalming, Surrey. The Merchant Taylors' School took over the site of the Charterhouse, but some buildings of the older foundation still survive. The Merchant Taylors' School moved to Moorgate Park, near Northwood, in 1932.

Charter Party, in commerce, a document covering the hiring of a vessel for the conveyance of cargo from one port to another. There are stipulations included as to the date of loading, number of lay-days, freight, demurrage, etc.

Chartism, a movement of the working-classes of Great Britain for greater political power than was conceded to them by the Reform Bill of 1832, which found expression in a document called the "People's Charter," drawn up in 1838, embracing six "points," as they were called, viz., Manhood Suffrage, Equal Electoral Districts, Vote by Ballot, Annual Parliaments, Abolition of a Property Qualification in the Parliamentary Representation and Payment of Members of Parliament, all of which took the form of a petition presented to the House

of Commons in 1839, and signed by 1,280,000 persons. The refusal of the petition gave rise to great agitation throughout the country, which gradually died out after 1849.

Chartres, the capital of the French dept. of Eure-et-Loire, 55 m. SW. of Paris. Its 11th-13th Century cathedral, Notre-Dame, founded by Fulbert, is accounted one of the finest specimens of Gothic architecture in France. Pop. 25,000.

Chartreuse, **La Grande**, a Carthusian monastery in the dept. of Isère, 13 m. N.E. of Grenoble; famous as the original place of manufacture of the Chartreuse liqueur; founded by St. Bruno in 1084, the original buildings date from c. 1134, but were destroyed by fire and rebuilt 1676.

Charybdis. See *Scylla*.

Chasseur (French), originally a huntsman. In the 18th Century the name was given to a corps of light-armed soldiers. The term is still employed in the French army to designate certain regiments, either mounted (the Chasseurs d'Afrique, regiments specially trained for service in Algeria) or on foot (including the special Alpine regiments, the Chasseurs Alpins).

Chassis, the framework of an aeroplane or the under-carriage of a motor-car. In the latter it comprises the whole motor-car, including the engine; it excepts the body-work and coachwork.

Chastelard, **Pierre de Boscose de**, grandson of Bayard; conceived an insane passion for Queen Mary, whom he accompanied to Scotland; was surprised in her bedchamber, and condemned to death, it being the second occasion of the offence. (1540-1563).

Chasuble, an ecclesiastical vestment of worn by priests when celebrating Mass; a cloak falling over back and breast, but leaving the arms uncovered.

Chatalja, a town in Turkey, 25 m. from Istanbul (Constantinople), near which are the strongly fortified Chatalja lines on the Heights of Chatalja. These lines were constructed during the Russo-Turkish War, served their purpose during the Balkan Wars, attacking Bulgarian armies being driven back, and were strengthened during the Great War.

Chateaubriand, **François René, Viscount de**, eminent French littérateur, born in St. Malo, younger son of a noble family of Brittany; travelled to N. America in 1791; returned to France on the arrest of Louis XVI., and joined the Emigrants (q.v.) at Coblenz; was wounded at the siege of Thionville, and escaped to England; wrote an *Essay on Revolutions Ancient and Modern*, conceived on liberal lines; was tempted back again to France in 1800; wrote *Atala*, a story of life in the wilds of America, which was in 1802 followed by his most famous work, *Génie du Christianisme*; entered the service of Napoleon, but withdrew on the murder of the Duc d'Enghien; made a journey to the East, the fruit of which was his *Itinéraire de Paris à Jérusalem*; supported the Bourbon dynasty all through, withdrew from public life on the elevation of Louis Philippe to the throne; he exercised no small influence on French literature, especially the Romantic school of his day. (1768-1848).

Châteauroux, the capital of the dept. of Indre, France, a town of 22,000 inhabitants.

Château-Thierry, a town and river-port of France, on the Marne in the dept. of Aisne, 60 m. N. of Paris. It has an ancient ruined castle and an old church, and was the birthplace of La Fontaine. Musical instruments of all

kinds are manufactured, and there are sugar refineries and sawmills. Here Napoleon defeated the Russians and Prussians in 1814. It was taken by the Germans in 1914, and here in 1918 the final German offensive was stayed by six American divisions. Pop. 8,000.

Chatham, (1) a town in Kent, England, on the estuary of the Medway, a fortified naval arsenal; is connected with Rochester. Pop. 43,000. (2) a fruit-growing town of Ontario, Canada. Pop. 14,000. (3) River-port of New Brunswick, Canada, on the Miramichi (an alternative name of the town); has fisheries and shipyards. Pop. 5,000.

Chatham, William Pitt, Earl of, a great British statesman and orator, born in Cornwall; entered Parliament in 1735, joined the opposition to Sir Robert Walpole and on account of his maiden speech was deprived by Walpole of his army rank of Colonel. He showed himself conspicuously free of mercenary motives, and in spite of losing the favour of the King, George II., on account of opposition to Carteret's Hanoverian policy, he gained great respect and popularity in the country as a whole. In 1746 he became Vice-Treasurer of Ireland in the ministry of Pelham (the Pelham ministry had to resign before George II. agreed to the inclusion of Pitt). He became Secretary of State in 1756 under the nominal leadership of the Duke of Devonshire (transformed in 1757 into the Pitt-Newcastle administration), his particular responsibility being the conduct of the Seven Years War, the outcome of which was the mastership of India (after the battle of Plassey) and the conquest of Canada. Soon after the accession of George III., Pitt retired, and did not return to office until 1766, when he became Lord Privy Seal and Earl of Chatham. He opposed the taxation of the American colonies and acknowledgment of their independence, and the last time his voice was heard in the Parliament of England it was on that subject. On this occasion he fell back ill into the arms of his friends, and died little more than a month after at Hayes; was buried in Westminster Abbey. (1708-1778).



EARL OF CHATHAM

Chatham Islands, a group of islands 536 m. E. of New Zealand, and politically connected with it; the chief industry is the rearing of sheep and cattle. Chief export wool. Area 372 sq. m. Pop. 700 (300 Maoris).

Chat Moss, a large bog in Lancashire, England, 7 m. W. of Manchester, now largely reclaimed and under cultivation, through the ingenuity of George Stephenson traversed by the Liverpool and Manchester Railway.

Chats (Saxicolinae), a subfamily of the Thrushes, species breeding in Britain being the Stonechat, Whinchat and Wheatear.

Chatsworth, the palatial seat of the Duke of Devonshire, in Derbyshire, 8 m. W. of Chesterfield, enclosed in a park, with gardens, 11 m. in circumference.

Chattanooga, U.S.A., a commercial and railway centre, manufacturing iron, steel, etc. Here, in the American Civil War, Grant defeated the Confederates in Nov., 1862. Pop. 120,000.

Chatterton, Thomas, a poet of great promise, born at Bristol; passed off while but a boy as copies of ancient MSS., and particularly of lyric poems, which

he ascribed to one Rowley, a monk of the 17th Century, what were compositions of his own; having vainly endeavoured to persuade any one of their genuineness, though he had hopes of the patronage of Horace Walpole, Earl of Orford, he left Bristol for London, grew desperate, and committed suicide. (1732-1770).

Chaucer, Geoffrey, the great early English poet, and father of English poetry, the son of a vintner and taverner, born probably in London, where he lived almost all his days; when a lad, served as page in the royal household; won the favour and patronage of the king, Edward III., and his son, John of Gaunt, who pensioned him; served in an expedition to France; was made prisoner, but ransomed by the king; was often employed on royal embassies, in particular to Italy; held responsible posts at home; was thus a man of the world as well as a man of letters. He comes first before us as a poet in 1369; his poetic powers developed gradually, and his best and ripest work, which occupied him at intervals from 1373 to 1400, is his *Canterbury Tales*, characterised by an eminent critic as "the best example of English story-telling we possess"; besides which he wrote, among other compositions, *The Life of St. Cecilia*, *Troilus and Criseida*, the *House of Fame* and the *Legend of Good Women*. His influence on English literature has been compared with that of Dante on Italian, while his literary life has been divided into three periods—the French, the Italian and the English, according as the spirit of it was derived from a foreign or a native source. (1340?-1400).

Chauvinism, the French equivalent for what is known as Jingoism among the English—i.e., an extravagant zeal for the glory of one's country or party, from one Nicholas Chauvin a veteran soldier, who was famous for his blind devotion to Napoleon.

Cheadle, (1) residential district of Stockport, Cheshire, England. (2) Market town of Staffordshire, England, engaged in metal-working, and the manufacture of silk and tape. Near are collieries. Pop. 6,000.

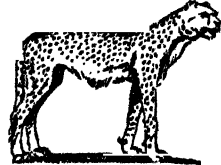
Cheapside, a London thoroughfare, running from St. Paul's Churchyard to Poultry, formerly a market, a street with many historical associations.

Cheddar, a village of Somersetshire, England, on the Mendip Hills, near Cheddar gorge and its wonderful stalactite caves. Has given its name to a famous cheese. Pop. 2,000.

Cheese, a highly nourishing food prepared from milk. The curd or casein of milk is separated from the whey, and dried under pressure in a mould, or in a wrapping of cheese-cloth. There are several different kinds of cheeses, hard and soft. Of the former are Cheddar, Cheshire, Gloucester, Wiltshire, Gorgonzola, Stilton, Wensleydale, and Dutch, Bel Paese and Gruyere. Soft cheeses are Camembert, Limburger, Brie, Neuchâtel and various cream cheeses.

Cheetah, *Cheeta*, *Chita*, or *Hunting Leopard* (*Cynaurus jubatus*),

a genus of the cat family, native of India and Africa, characterised by its small head, light build, and semi-retractible claws. It is exceedingly fleet-footed, especially for short distances, for which reason it is frequently trained both in India and Africa for purposes of hunting.



AFRICAN HUNTING CHEETAH

Chefoo, or **Chifu**, treaty-port of China, in Shantung province, on the Gulf of Chih-li, with a large, sheltered harbour open all winter. There is a trade in silk, embroidered linens, beans and groundnuts. It is a health resort in summer, and has a large foreign settlement. Pop. 119,000.

Cheke, Sir **John**, a zealous Greek scholar, born at Cambridge, and first Regius professor of Greek there; did much to revive in England an interest in Greek and Greek literature; was tutor to Edward VI., who granted him landed estates; favouring the cause of Lady Jane Grey on the accession of Mary, left the country, was seized and sent back; for fear of the stake abjured Protestantism, but died soon after. (1511-1557).

Chekhov, **Anton Pavlovich**, Russian in Taganrog of peasant stock, he was educated at the local grammar school, became a pupil teacher at the age of 16, studied medicine at Moscow and took to writing. His first play, *Ivanov*, was produced when he was 27, and was followed by *The Seagull* and *Uncle Vanya*. Ill-health compelled him to settle in the Crimea, where he wrote *The Cherry Orchard*, a few months before he died in Germany. He was buried in Moscow. (1860-1904).

Chekiang, a maritime province of China, an agricultural province, the chief products being silk, cotton and tea. Area 39,780 sq. m. Pop. 21,000,000. Cap. Hangchow.

Chellean, name given to the early part of the Paleolithic or old Stone Age, from Chelles, in France, where large numbers of the flint tools characteristic of this age have been found.

Chelmsford, the county town of Essex, England, on the Chelmer. It was the site of one of the earliest wireless stations. Pop. 27,000. Also a town in Massachusetts, U.S.A. Pop. 5,700.

Chelmsford (title of Nobility). (1) **Frederic Thesiger**, First baron, Lord Chancellor of England; began life as a naval cadet; studied law with a view to practising in the W. Indies and managing the family estates, which, however, were destroyed by volcanic action; called to Bar, 1818; M.P. Woodstock, 1840; Solicitor-General, 1844; Attorney-General, 1845; ennobled 1858, and Lord Chancellor till 1859. Chancellor again, 1866-1868. (1794-1878). (2) **Frederic Augustus Thesiger**, Second baron, son of preceding, a soldier, served at Sebastopol and against Indian mutineers; Adjutant-General in the Abyssinian expedition 1867-1868. (1827-1903). (3) **Frederick John Napier Thesiger**, Third baron and First viscount, son of second baron; member of London School Board and L.C.C.; Governor of Queensland, 1905-1909; of New South Wales, 1909-1913; Viceroy of India, 1916-1921—he and Edwin Montagu, Secretary of State, in 1918 issued report on which was founded the "dyarchy" system in Indian government; made viscount, 1921; First Lord of the Admiralty in 1924. (1868-1933).

Chelonia, an order of reptiles with toothless jaws and horny beaks and body enclosed in a bony case; comprising the tortoises, turtles and terrapins.

Chelsea, a western suburb of London, on the N. of the Thames, famous for its hospital for old and disabled soldiers, and the place of residence of sundry literary celebrities, among others Sir Thomas More, Swift, Steele and Carlyle. Pop. 59,000. Also a manufacturing town in Massachusetts, U.S.A. Pop. 45,000.

Cheltenham, a healthy watering-place and educational centre in Gloucestershire, England; first brought into repute as a place of fashionable

resort by the visits of George III. to it; contains a well-equipped college, where a number of eminent men have been educated, and Cheltenham Ladies' College. Pop. 49,000.

Chelyuskin, Cape, in Siberia, at the N. of the Taimyr Peninsula, the most northerly point in the Eastern hemisphere.

Chemical Warfare. See **Poison Gas.**

Chemin-des-Dames, a district N. of the River Marne in the dept. of Aisne, France. During the Great War there was much fighting over this area, the most important battle being the successful advance of the German 1st and 7th Armies in May and June 1918. The Allied troops were taken by surprise and driven back across the Aisne. The German armies pushed their front line to form an enormous loop, stretching from Noyon to Rheims and encircling Château-Thierry, a depth of 30 m. Later this loop proved a difficult defensive position, and the attack, although successful, failed in its object, which was to paralyse the Allies before the American forces were mobilised. In September the Germans were driven back over this sector by the army of General Mangin.

Chemist, or **Druggist**, a person permitted and licensed by law to sell medicines, drugs and poisons. Under the Pharmacy Act (1868) he must have qualified by serving an apprenticeship and passing an examination conducted by the Pharmaceutical Society. He may become a member of this Society, but may not be registered as a Pharmaceutical Chemist unless he has passed a higher examination.

Chemistry, **Analytical.** The object of chemical analysis is to discover the composition of bodies, and consists of two parts—viz., the detection of the constituents (qualitative analysis) and the estimation of their respective proportions by weight or by volume (quantitative analysis). The compounds of carbon are mostly non-electrolytes, and the qualitative analysis of such compounds thus narrows down to the detection of the individual elements in them. The compounds of other elements ("inorganic" compounds, as opposed to carbon compounds or "organic" compounds) are very largely electrolytes, and qualitative analysis here is often concerned with the detection of the ions which these substances give on solution in water.

In quantitative analysis two main types of procedure are adopted: either a known weight of the substance is converted into a solid of known composition, which is weighed (gravimetric analysis), or a solution of known concentration of the substance is made to react with a solution of known concentration of another substance, the end point being marked by a change of colour or in some alternative suitable way (volumetric analysis). Methods for the analysis of very small quantities of substances have recently been worked out by Pregl and others, and form the subject of an elaborate technique (microchemical analysis). Special branches of analytical chemistry deal with water-analysis, food-analysis, and so on.

Chemistry, Biological. See **Biochemistry.**

Chemistry, History of. Chemistry is the study of the various substances which compose the universe, and of the changes in composition they may undergo. The fusion of the practical knowledge of Egyptian craftsmen with late Greek philosophical speculations at Alexandria in the early centuries of the Christian era marked the effective beginnings of chemistry as a science, though China and possibly India made important original contributions. The chemists of Islam, the chief of whom was the celebrated

Geber (Jabir son of Hayyan, c. A.D. 900), greatly extended the bounds of chemical knowledge, and from them chemistry was introduced to Western Europe through the medium of translations from the Arabic during the 12th and 13th Centuries.

The chief aim of nearly all early chemists, was the transmutation of inexpensive metals into gold and silver by means of eagerly sought but always elusive elixirs or philosopher's stones, and the science fell into disrepute as alchemy. Paracelsus (1493-1541), a Swiss character of remarkable but eccentric genius, rehabilitated it as the handmaid of medicine, urging its value as the source of more, better and purer drugs, and chemistry became an essential part of the training of medical students. The Hon. Robert Boyle (1627-1691) envisaged chemistry as an independent and primo branch of natural philosophy, and gave it a new outlook by destroying the old Aristotelian idea of matter as composed of the four "elements" fire, air, water and earth. According to Boyle, an element was to be considered as a substance that could not be split up into simpler bodies, and he suggested that instead of postulating the existence of hypothetical elements, as Aristotle had done, it would be sounder to find by experiment how many indivisible substances there actually were.

Boyle's work changed the whole atmosphere, chemistry becoming much more fully experimental and less trammelled by scholastic dogma. In the 17th Century, Georg Ernst Stahl (1660-1734), extending a previous suggestion of Johann Joachim Becher (1635-1683), supposed that all combustible bodies contain a peculiar substance, phlogiston (Greek, fire-stuff), which is lost on combustion. This theory correlated a large number of previously unconnected facts, and gave rise to much research. Under its inspiration, chemistry took a great leap forward, and during the 18th Century such important substances as oxygen, hydrogen, chlorine, glycerol and urea were discovered, while the classical work of Joseph Black (1728-1799) on chalk and limestone first manifested the value of exact quantitative investigations.

After the isolation of oxygen by the Rev. Joseph Priestley (1733-1804), it was perceived by the French chemist Antoine Laurent Lavoisier (1743-1794, guillotined during the Terror) that the theory of phlogiston failed to explain the newly observed facts, and he substituted for it the modern theory of combustion—viz., that when a substance burns it combines with the oxygen of the air. Shortly after Lavoisier's execution, John Dalton (1766-1844) advanced the theory that matter is composed of minute, indivisible and uncreatable atoms, each element possessing its own type of atom. The adoption of the oxygen theory and atomic theory marks the beginning of modern chemistry, and subsequent progress can modestly be described as amazing.

Chemistry, Inorganic. See **Inorganic Chemistry.**

Chemistry, Organic. See **Organic Chemistry.**

Chemnitz, a manufacturing town in Saxony, called the "Saxon Manchester," at the foot of the Erzgebirge, in a rich mineral district; manufactures cottons, woollens, silks, machinery, etc. Pop. 351,000.

Chemulpo, a town on the W. coast of Korea; a thriving town since it became a treaty-port in 1883. Pop. 73,000.

Chenab, an affluent on the left bank of the Indus, one of the five rivers, and the largest, which give name to the Punjab; is 600 m. long.

Chengtzu, the capital of the province of Szechwan, China, standing in a fertile plain, on a tributary of the Yang-

tsze-kiang, a prosperous trading town, the products of the district including silk, rice, etc. Pop. 400,000.

Chénier, André, French poet, born at Constantinople; author of odes, idylls and elegies, which place him high among French poets; offended Robespierre, and was guillotined a few days before the fall of the latter. (1762-1794).

Chenopodium, a genus of some 60 plants of the order Chenopodiaceae, 9 of which are found in Britain, including goosefoot (*Ch. olidum* and *Ch. varia*), and good King Henry or Mercury (*Ch. bonus-Henricus*) a perennial which grows wild. The young shoots of this species may be used as a substitute for asparagus, or the plant may be allowed to grow and the leaves used as a substitute for spinach.

Cheops (Khufu), King of Memphis, in Egypt, the greatest of the 4th dynasty; builder of the Great Pyramid, largest of all, at Gizeh, about 3,000 B.C.

Chepstow, a port on Monmouthshire, England, 15 m. E. of Newport; with a tubular suspension bridge, and noted for the tides, which are higher than anywhere else in Britain. Pop. 4,300.

Cheque, strictly a "Bill of Exchange payable on demand." In practice it takes the form of a written order, usually on a form specially printed, on a bank with which the drawer has an account. They are printed in many forms, such as to "bearer" or "order," and may be crossed or "open"—that is, uncrossed. If crossed, they must pass through another bank for collection. Large cheques are sometimes "certified" as being good for the sum mentioned. Cheques often have a form of receipt printed on them for the signature of the drawee, so as to save a separate receipt being sent through the post, though, as they are always returned to the drawer after payment, they are evidence of payment in absence of a formal receipt in any case. The Clearing banks in London have a Clearing House, where cheques on each other are sent and exchanged. At the end of the day the balance payable by one bank to another is settled by a transfer at the Bank of England.

Chequers, country residence of British Prime Ministers, situated in the Chilterns, and presented to the nation by Lord Lee of Fareham in 1917.

Cher, an affluent of the Loire below Tours, over 200 m. long. Also the dept. in France to which it gives name; an agricultural and pastoral district. Area 2,800 sq. m. Pop. 294,000. Cap. Bourges.

Cherbourg, a French port and arsenal, opposite the Isle of Wight, 70 m. distant, on the construction and fortifications of which immense sums have been expended; the fortifications were begun by Vauban in the 17th Century. It is a port of call for Atlantic liners. Pop. 38,000.

Cheribon, a Dutch residency and its chief town and seaport on the N. coast of Java. Pop. (residency) 1,000,000; (town) 32,000.

Cherith, a brook E. of the Jordan, Elijah's hiding-place during the first part of the 3 years' drought. (1 Kings xvii.).

Cherokees, a tribe of American Indians in the NW. of the Indian Territory (now Oklahoma), U.S.A.; civilised, self-governing and increasing; formerly occupied the region about the R. Tennessee.



CHENOPODIUM
(MERCURY)

Cherry (*Prunus Cerasus*), a native English fruit-tree, a plant of the *prunus* (plum) genus of the Rosaceae order. The cultivated varieties have been derived from the *Prunus Cerasus* and the *Prunus Avium* or Gean. They are mostly self-sterile, and propagation is by budding (preferably) or grafting on wild cherry stock. Cherries may be grown as standard, half-standard or espalier. The wood of the cherry tree is also useful. Kent is the best centre of cultivation in England.

Chersonesus (i.e., continent island), a name which the Greeks gave to several peninsulas, viz., the Tauric C., the Crimea; the Thracian C., Gallipoli; the Cimbric C., Jutland; the Golden C., the Malay Peninsula.

Chertsey, a very old town of Surrey, England, 21 m. SW. of London, on the right bank of the Thames. Pop. 17,000.

Cherubim, an order of angelic beings conceived of as accompanying the manifestations of Jehovah, supporting His throne and protecting His glory, guarding it from profane intrusion; winged effigies of them overshadowed the Mercy Seat.

Cherubini, Maria Luigi Carlo, a celebrated musical composer, born at Florence; settled in Paris, the scene of his greatest triumphs; composed operas, of which the chief were *Phigeneia in Aulis*, *Edisa*, *Médée* and *Les Deux Journées*, considered his masterpiece; also a number of sacred pieces and requiems of the highest merit. (1760-1842).

Cherusci, an ancient people of Germany, whose leader was Arminius, under whom they defeated the Romans, commanded by Varus, in 9 A.D.

Chervil, the name of several plants of the natural order Umbelliferae, in particular of the *Anthriscus Cerefolium*, which is cultivated to a small extent in S. Europe for the sake of the leaves, which are used in soups and salads, of *Anthriscus sylvestris* of the woods, and of *Charophyllum temulum*, the British wild chervil.

Cherwell, an English river, tributary of the Thames, 30 m. long. It rises in Northants, and flows through Oxfordshire to join the Thames at Oxford.

Chesham, a town of CHERVIL (*A. Cerefolium*) shire, England, on the R. Chess, the centre of manufacture of wooden articles (chairs, etc.) from beech. Pop. 8,800.

Chesapeake Bay, a northward-extending inlet on the Atlantic coast of the United States, 200 m. long and from 10 to 40 m. broad, cutting Maryland in two; the scene of a naval battle between French and British fleets in 1781.

Cheshire, a western county of England, between the Mersey and the Dee, the chief mineral products of which are coal and rock-salt, and the agricultural, butter and cheese; has numerous manufacturing towns, with every facility for inter-communication, and the finest pasture-land in England. Area 1,020 sq. m. Pop. 1,087,000. Cap. Chester.

Cheshunt, a town in Hertfordshire, England, 14 m. N. of London, on the R. Lea, where in 1792 the Countess of Huntingdon founded a theological college. Pop. 14,600.

Chesh Bank, or Beach, a neck of land on the Dorset coast 18 m. long, being a ridge of loose pebbles and shingle, and ending at the so-called Isle of Portland. U.S.



Chess, a game of Eastern origin but uncertain antiquity. Known in Persia and India from early days, it was introduced into Europe in the 10th Century, probably by the Moors into Spain, and reached England via France. Of modern players Capablanca (q.v.) has been the most famous. It is played by two persons on a board which has 64 squares, usually white and black. The pieces are also white and black or white and red. Each side has 16 pieces—king, queen, 2 knights, 2 bishops, 2 castles (or rooks), and 8 pawns. They are placed at each end of the board, the pawns occupying the penultimate row, the remainder the last row. Each piece has set moves allowed to it. The object of the game is to take one's opponent's chessmen with the ultimate purpose of "checkmating" the king. This is to manoeuvre the king into such a position that he is unavoidably threatened with capture.

Chest, or Thorax, compartment of the human body from the neck to the abdominal cavity. Its bony structure comprises the ribs, 12 on each side, meeting at the back with the 12 dorsal vertebrae. In the front of the thorax is the breastbone or sternum, at the lower end of which is the ensiform cartilage. Ten ribs on each side are joined either to the sternum or the cartilage; two are "floating" or unconnected. The intercostal muscles lie between the ribs. The vitally important organs contained in the thorax are the heart and the lungs.

Chester, the county town of Cheshire, England, on the Dee, 10 m. SE. of Liverpool; an ancient city founded by the Romans; surrounded by walls nearly 2 m. long and from 7 to 8 ft. thick, forming a promenade with parapets. The streets are peculiar—along the lower storeys of the houses there stretch piazzas called "Lows," 16 ft. wide, for foot-passengers, and approached by steps; it abounds in Roman remains, and is altogether a unique town. There is a fine Norman cathedral. Pop. 41,000. Also a town in Pennsylvania, U.S.A., with shipyards, boiler works and textile industries. Pop. 59,000.

Chesterfield, a town in Derbyshire, England, 24 m. N. of Derby; in a mineral district; manufactures cotton, woollen and silk goods; has a canal connecting it with the Trent. Pop. 64,000.

Chesterfield, Philip Dormer Stan-Philip, hope, Earl of, statesman, orator and man of letters, eldest son of the third earl; born in London; sat in the House of Commons from 1715 to 1726; was an opponent of Walpole; held office under Pelham, and distinguished himself during his short Lord-Lieutenancy of Ireland; in 1748 retired from deafness, or perhaps disgust, into private life. He is more celebrated for his *Letters to his Son*, models of elegance, though of questionable morality, which it appears he never intended should be published, and for the scorn with which Dr. Johnson treated him when he offered help which was no longer needed. (1694-1773).

Chester-le-Street, an ancient market town of Durham, England, with iron-works and collieries. Pop. 17,000.

Chesterton, Gilbert Keith, British Paul's School, he early made a name as a critic and an original writer, delighting in paradox. Besides poems, essays and biographies he wrote *The Napoleon of Notting Hill*, *The Innocence of Father Brown* and other novels. Was a noted Catholic apologist. (1874-1936).

Chestnut, the name of two different kinds of tree and their nuts. The Horse Chestnut (*Aesculus hippocastanum*).

belonging to the order Hippocastanaceae, is a large, handsome flowering tree, introduced into England in the 17th Century. The Sweet or Spanish Chestnut (*Castanea vulgaris* or *sativa*), order Fagaceae (the oak and beech family), was probably introduced into Britain by the Romans during the 1st Century. The nuts are edible when cooked.

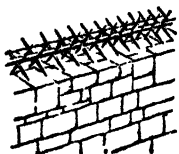
Chetwode, Sir Philip Walsgrave, seventh baronet, Field-Marshal since 1933; son of Sir George Chetwode, sixth baronet, whom he succeeded in 1905. Fought in Burma, 1892-1893, and in South Africa, 1899-1902. In Great War commanded 5th Cavalry Brigade and 2nd Cavalry Division. Major-General, 1916; commanded in Egypt, 1916-1917; with 20th Army Corps which captured Jerusalem, 1917-1918. Chief of General Staff, India, 1928-1930; Commander-in-Chief, India, 1930-1935. (1869-).

Chevalier, Albert, music-hall impersonator of the actor of the oostermongering class, was born at Notting Hill, London, son of a French-master at Kensington Grammar School. His mother was Welsh. He appeared on the stage in 1877. In 1891, at the London Pavilion, Piccadilly Circus, he began his "ooster" impersonations; thenceforward for years the foremost figure in the halls. Many of his songs were written, and some composed, by himself; he also wrote plays and sketches. His most famous song was *My Old Dutch*. (1861-1923).

Chevaux-de-Frise, a military fence composed of a beam or a bar armed with long spikes; literally Friesland horses, having been first used in Friesland.

Cheviot Hills,

a range on the borders of England and Scotland, extending 35 m. south-westwards, the highest being The Cheviot in Northumberland, 2,676 ft. high; famous for its breed of sheep.



CHEVAUX-DE-FRISE

Chevron, in heraldry an ordinary of descending to the extremities of the shield; representing the two rafters of a house, meeting at the top. In architecture, a zigzag outline moulded as a decoration. Also a badge, similarly shaped to the heraldic design or inverted, worn on the coat-sleeve of a non-commissioned officer, designating his rank.

Chevrotain, the Tragulina, a group of the Artiodactyla (even-toed) sub-order, and about the size of a rabbit. Though sometimes called mouse-deer, they are not true deer at all, but have feet more like those of pigs, and stomachs in 3 instead of 4 sections. There are 2 genera: *Tragulus*, ranging from Borneo to India, and *Dorcatheirium*, of which there is only 1 species, the Water-chevrotain (*D. aquaticum*) of Equatorial Africa.

Chevy Chase, the subject and title English ballad preserved in Percy's *Reliques* and presumed to refer to an event in connection with the battle of Otterburn.

Chewing-gum, a sweetmeat very popular in the U.S.A., usually flavoured with malt. Its main constituent is chicle, a gum from a rubber tree (the *Acacia Sapota* of the order Sapotaceae) grown in Mexico.

Cheyennes, a once-warlike tribe of stock, now much reduced and partially settled at Oklahoma, U.S.A.; noted for their horse-men.

Chiang Kai-Shek, Chinese general. Left fatherless in infancy at Fengkua village; brought up by a remarkable mother, who came of small merchant stock; spent four years in Japan, where he learned something of the art of war at the Tokyo Military Academy; these years also brought him into the fold of the Chinese Revolution, for it was in Japan that he joined the Kuo Min Lin, the forerunner of the Kuomintang. On the death of Sun-Yat Sen, 1925, one of whose daughters, Soong Maling, he married, he was appointed Commander-in-Chief of the army. In 1926 he advanced through Hunan to the Yangtze, and founded a government at Wuhan, which disagreement in the party caused him to remove to Nanking. In 1928 he returned to leadership of the Nanking army, and in October was inaugurated President of the Chinese National Government. Was the leader and inspirer of the Chinese people in their struggle against the Japanese invasion which began in 1937. (1886-).

Chianti, a range of hills, near Siena, dept. of Tuscany, Italy, and part of the Apennines. Their slopes are covered with vineyards, and the hills give name to a popular Italian wine.

Chiapas, Las, a Pacific State of Mexico bordering on Guatemala, and watered in parts by the R. Chiapas; heavily forested, it yields hardwoods, coffee, rubber, fruit, etc. Stock-raising is carried on. Area, 28,700 sq. m. Pop. 530,000. Cap. Tuxtla Gutierrez.

Chiaroscuro, the reproduction in art and shade in nature as they mutually affect each other.

Chialosite, a variety of Andalusite, a pale grey mineral consisting of silicate of alumina, found in the form of rhombic prisms.

Chibchas, or Muisca, a civilised people, though on a lower stage than the Peruvians, whom the Spaniards found established in districts of what is now Bogota and Colombia in the 16th Century; now merged in the Spanish population.

Chica, an orange-red colouring matter of the *Bignonia chica*, which grows in S. America and is used as a dye.

Chicago, the metropolis of Illinois, U.S.A., in the N.E. of the State, on the SW. shore of Lake Michigan, is the second city in the Union. Its unparalleled growth, dating only from 1837 (in 1832 it was a mere log-fort, called Fort Dearborn, built in 1803, with a population in 1890 of half a million and at the present day 3½ million), is due to its matchless facilities for communication. Situated in the heart of the Continent, a third of the United States railway system centres in it, and it communicates with all Canada, and with the ocean by the Great Lakes and the St. Lawrence River.

It is laid out with absolute regularity. It has many magnificent buildings, enormously tall office "sky-scrapers," and an unrivalled system of parks and avenues. It suffered severely from fire in 1871 (this began in the Union Stockyards and, at one time, threatened the whole city). It is one of the greatest grain and pork markets in the world, and its enormous grain elevators and huge stockyards are a feature of the town.

The population is a mixture of all European peoples; native-born Americans are a small minority, outnumbered by the Germans, and almost equalled by the Irish. Its growing suburbs include Pullman, a modern town built by the Pullman Car Company for its numerous employees. It suffered from a crime wave after the Great War, and a serious race riot occurred in 1919. Pop. 3,577,000.

Chicherin, Georgy Vasilievich, Russian statesman, *Commissar for Foreign Affairs, 1918-1939*; born in the province of Tambov, the son of a Foreign Ministry official; educated at St. Petersburg (Leningrad) University; renounced his estates and joined the social democratic movement in Berlin; took part in revolutionary movements in London, Paris and Berlin until the Revolution of November 1917, when he was imprisoned at Brixton as an enemy alien, and finally allowed to return to Russia. (1872-1924).

Chichester, a cathedral city in the W. of Sussex, England, 17 m. E. of Portsmouth, with a port on the Channel 2 m. SW. of it; chief trade in agricultural produce. Pop. 15,000.

Chickasaws, a tribe of N. American Choctaws, now settled in a civilized state in Oklahoma. They number about 3,000.

Chicken-pox, a contagious fever, identified filter-passing virus. It is prevalent in the autumn, and children are the most liable. It is not a serious disease, the fever generally being mild. The incubation period is from 2 to 3 weeks. For quarantine 3 weeks are necessary. The chief symptoms are the spots, which form mostly on the upper parts of the body. They contain a fluid which later turns to pus, and finally escapes. A scab forms, and if scratched owing to the irritation, a scar may form.

Chickpea, or *Gram (Cicer Arictinum)*, a leguminous plant of the genus *Cicer*, cultivated in the East and in S. Europe for the seeds, which, smaller than the common pea, are used for food in the same way as lentils.

Chickweed (*Stellaria media*), a species of weed of the order Caryophyllaceae. It is an annual, and must be eradicated by hoeing or dug in before flowering. It is a favourite food of cage-birds, and flowers all the year round. The name is also popularly applied to other species of Caryophyllaceae, including *Cerastium arvense*, the Field Mouse-ear Chickweed, and *Cerastium villosum*, the Viscid Mouse-ear Chickweed.

Chicory, or *Succory*, a plant, genus *Cichorium*, of the natural order Compositae. *Chicory intybus* is a bitter aromatic cultivated for its roots, which are dried, roasted, ground and used to mix with coffee. The leaves are also blanched in the dark, and used as a salad in the same way as those of its close relative the endive (*C. Endivia*).

Chieti, a city in Central Italy, in the dept. of Abruzzi & Molise, 8 m. from the Adriatic, with a fine Gothic cathedral. It is the capital of a mountainous prov. of the same name. Area (prov.) 1,138 sq. m. Pop. (prov.) 359,000; (town) 36,000.

Chiffchaff (*Sylvia hippodamia*), a small British singing-bird, a member of the Warbler (Sylviidae) family. Its name is a popular imitation of its song. It has olive-green upper parts, buff underparts and a yellow streak over the eyes.

Chignecto Bay, NE. extremity of the Bay of Fundy, Canada, separating New Brunswick from Nova Scotia, the territories being joined only by Chignecto Isthmus.

Chigoe, or *ligger*, a tropical sand flea, which infests the skin of the feet, and multiplies incredibly.

Chihuahua, a town in Mexico; capital of a State of the same name, the largest in Mexico, with famous silver and also copper mines and a cattle-rearing industry. Area (State) 94,860 sq. m. Pop. (State) 291,000 (mainly Mestizos); (town) 60,000.

Chilblains, an inflammation and swelling, affecting the hands and feet, and more rarely the nose and cheeks and ears, due to the effect of cold on the nerves, diminishing the action of the capillaries or small blood-vessels. Contributory causes are defects in the circulatory system, which make an individual especially liable.

Child, average weight at birth 7 lb. Weight increases by 5 or 6 oz. a week. Length at birth 18 to 20 in. Average growth first year 8 in., second year 4 in., subsequently 2 or 3 in. a year. The fontanelles in the skull generally close after 6 months. The head is about 13 in. round at birth, and some 17 or 18 in. at a year old. Teething takes place at different ages, but should take place within the first year. A child should walk with support at the age of a year, at which time also the child can form words. During the first 8 months most of the child's life is spent in sleeping. Breast-feeding may be supplemented or replaced if necessary by artificial food. At the age of 6 months other food than milk should be given, and the breast-fed baby should be weaned at 8 or 9 months.

Childebert I., son of Clovis, King of Paris, reigned from 511 to 558. C. II., son of Sigebert and Brunhilda, King of Austrasia, reigned from 575 to 586. C. III., son of Thierry III., reigned over all France from 695 to 711, under the mayor of the palace, Pépin d'Héristal.

Childeric I., the son of Meroving and father of Clovis, King of the Franks; d. 481. C. II., son of Clovis II., King of Austrasia in 660, and of all France in 670; assassinated 675. C. III., son of the preceding, last of the Merovingian kings, from 743 to 752; was deposed by Pépin le Bref; died in the monastery of St. Omer in 755.

Childermas, (Dec. 26), the festival commemorating the massacre of the children by Herod.

Childers, Robert Erskine, Irish republican, son of Robert Caesar Childers, clerk in the House of Commons, 1895-1914. Hostile to the Free State constitution of 1922, rebelled and was executed. Wrote *The Riddle of the Sands*, a story of German war preparation (1903). (1870-1922).

Children Acts. The present care of children dates back to the Act of 1908, which consolidated laws hitherto existing. The law thus enacted was made more effective and its provisions were enlarged by the Children and Young Persons Act passed in 1933, which provides for the supervision by the local authorities of any private persons who have the care of a child under 9 years old away from its parents. This applies also to Homes, other than those maintained by the Government.

The Act also (Part II) deals with cruelty to children under 14 and young persons (14 to 16), and with exposure to immorality. Part III of the Act makes provision against smoking and the sale of cigarettes, etc., to children under 16. The sale of intoxicating liquor is not permitted to a child under 14 years of age, nor is it permitted to give any intoxicants at all to a child under 5. The law also restricts the employment of children, giving powers to local authorities to enact bye-laws for particular occupations. The age of criminal responsibility is placed at 6 years, and in various respects the law is brought into line with the laws relating to juvenile offenders.



CHICKWEED

Chile, a S. American State with a population of 4,500,000, occupies a strip of country on the average 100 m. broad, between the Andes and the Pacific Ocean, and stretching from Cape Horn northward 2,500 m. to Peru, with Argentine and Bolivia on its E. borders. In the N. are rainless tracts of mountains rich in copper, manganese, silver and other metals, and deserts with wonderful deposits of nitrate. The most productive region is the Atacama desert. In the S. are stretches of pastoral land and virgin forest, with excessive rains, and cold, raw climate. The central portion enjoys a temperate climate with moderate rainfall, and produces excellent wheat, grapes and fruits of all kinds.

The Andes tower above the snow-line, Aconcagua reaching 23,000 ft. The rivers are short and rapid, of little use for navigation. The coast-line is even in the N., but excessively rugged and broken in the S., the most southerly regions being weird and desolate. The people are descendants of Spaniards, mingled with Araucanian Indians; but there is a large European element in all the coast towns. Mining and agriculture are the chief industries; manufactures of various kinds are fostered with foreign capital.

The chief trade is with the U.S.A., Great Britain and Germany. Exports include nitrates and iodine, copper, wool, etc.; imports include textiles, machinery, petroleum and sugar. Santiago is the capital; Valparaiso and Iquique are the principal ports. Railways link up the ports with the industrial centres; that from Valparaiso to Buenos Aires crosses the Andes at the famous Uspallata Pass (9,843 ft.) by a tunnel of over 6 m.

The Government is republican; Roman Catholicism the State religion; education is fairly well fostered; there is a university at Santiago.

Chile Pine, popularly called the coniferous tree of the genus *Arucaria*. This species (*Arucaria imbricata*) is a native of S. Chile, and grows to a height of over 100 ft. It has been grown in England since 1780.

Chillianwalla, a village in the Punjab, 85 m. NW. of Lahore, the scene in 1849 of a bloody battle in the second Sikh War, in which the Sikhs were defeated by Gen. Gough; it was also the scene of a battle between Alexander the Great and Porus.

Chillingham, a village in Northumberland, 8 m. SW. of Belford, with a park attached to the castle, the seat of the Earl of Tankerville, containing a herd of native white wild cattle.

Chillingworth, William, an able and broad-minded English versal divine, born at Oxford; championed the cause of Protestantism against the Pope in *The Religion of the Protestants* and *A Safe Way to Salvation*, summing up in the words, "The Bible, the Bible alone, is the religion of Protestants." (1602-1644).

Chillon, Castle of, a castle and state prison built on a rock, 62 ft. from the shore, at the eastern end of the Lake of Geneva; surnamed the Bastille of Switzerland, in which Bonivard, the Genevese patriot was, as celebrated by Byron, incarcerated for six years; it is now an arsenal.

Chiloe, the name of a province in the S. of Chile, also of a thickly wooded island off the coast, the chief constituent part of the province. The island is 11½ m. long from N. to S. and 43 m. broad; inhabited chiefly by Indians; exports timber; is said to contain vast deposits of coal. Area (prov.) 12,680 sq. m. Pop. (prov.) 215,000.

Chilperic, the name of two Frankish kings. Chilperic I., attempted to rule the whole of the kingdom on the

death of his father Clotaire, but got a portion only. He married Galswintha, a sister of Brunhilda, but murdered her and married a concubine, Fredegond, who herself later murdered Chilperic's brother Sigebert. Chilperic himself was assassinated in 583. Chilperic II., his son, became King of Neustria in 715, but died 720.

Chiltern Hills, a range of chalk hills, in England, extending about 40 m. NE. from the Thames in Oxfordshire through Buckinghamshire, from 10 to 15 m. broad; the highest point, Cooombe Hill, near Wendover, is 852 ft.

Chiltern Hundreds, a wardship of beech forests on the Chiltern Hills against robbers that at one time infested them; now a sinecure office, the acceptance of which enables a member of Parliament to resign his seat if he wishes to retire, the office being regarded as an office of profit under the Crown.

Chimæra, a fire-breathing monster of the Greek mythology, with a goat's body, a lion's head, and a dragon's tail; slain by Bellerophon, and a symbol of any impossible monstrosity.

Chimborazo, one of the loftiest in Ecuador, 20,498 ft.; is an extinct volcano, and covered with perpetual snow; first ascended by Whymper in 1880.

Chimney, an opening in the roof of a house or a passage built in a room up to the roof for the purpose of giving outlet to the smoke of a fire. It also serves to create a draught to help the fire burn. Ornamented chimneys have been a feature of various architectural styles, notably the Elizabethan.

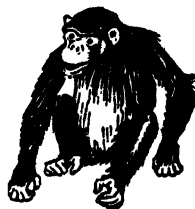
At one time chimneys were swept by small boys who climbed them, a practice which was regulated by various Acts of Parliament in the 19th Century and finally discontinued owing to the invention of a round, flat brush on jointed rods by George Smart in 1805.

Chimpanzee (*Anthropopithecus troglodytes*), a large

African anthropoid ape, from 3 to 4 ft. in height, closely related to the Gorilla, though larger and more allied in several respects to man than any other ape; it is found chiefly in W. Africa.

China, a vast, and densely peopled country in E. Asia; bounded on the N. by Mongolia; W. by Tibet and Burma; S. by French Indo-China and the China Sea; and E. by the Pacific. In the W. are lofty mountain ranges running N. and S., from which parallel ranges run E. and W., rising to greatest height in the Yunnan plateau in the S. The Nan Shan form the main ridge, separating the Yangtze-Kiang basin from that of the Si-Kiang. On the W. the Peling Mts., a continuation of the Kwen Lun, divided the Hoang-ho basin from the Yangtze, and form a serious barrier to communication between N. and S. The lofty Nan Shan Mts. (20,000 ft.) form a boundary between China and Tibet.

Three great rivers traverse the country, the Hoang-ho and the Yangtze-Kiang, the latter with many large lakes in its course, and bearing on its waters an innumerable fleet of boats and barges, while in the S. the Si-Kiang, or West River, is the chief waterway of S. China, and is navigable for the greater part of its course. Between the lower courses of



CHIMPANZEE

these rivers lies the Great Plain, one of the vastest and richest in the world, whose yellow soil produces great crops with little labour and no manure. The coast-line is long and much indented, and out of it are bitten the gulfs of Pe-chihli, the Yellow Sea, and Hangchow. There are many small islands off the coast; the mountainous Hainan is the only large one still Chinese.

The climate in the N. has a clear, frosty winter, and warm, rainy summer; in the S. it is hot. The country is rich in evergreens and flowering plants. Agriculture is the chief industry, and, though primitive, it is remarkably painstaking and skilful. Forests have everywhere been cleared away, and the whole country is marvellously fertile. In the N. wheat, millet and other cereals, and cotton are grown; in the S. rice, tea, sugar, silk and indigo. Its mineral wealth is enormous. Iron, copper and coal abound in vast quantities; coalfields exist in every province of China proper and Manchuria. Those in E. Shansi and S. Hunan, Kaiping, N. Hopei and Poshan are very productive. Anthracite is yielded at Fanchanghsien, E. Shansi and in E. Hunan. Iron is abundant in Shansi, Manchuria and W. Hopei. Over 60 per cent. of the world's antimony comes from China, and there are tin deposits in Yunnan.

Water is the chief means of communication, and the Yangtze affords unrivalled navigation for ocean steamers through a densely peopled region. Hankow, 700 m. from the mouth, can accommodate steamers drawing 30 ft. of water during April to November. Where boats cannot be used transport is chiefly by human porters and pack-animals. The canal system is highly developed. Most of the railways have been constructed with foreign capital, and are under the nominal control of the Chinese government.

The chief exports are oils, oilcake, silk products, textiles, metals, cereals, tea, sugar, pottery, furs and hides, tallow, peas and beans, while the principal imports are cotton and cotton goods, hardware, machinery, ship-building material, railway material, petroleum and timber. About twenty-five ports are open to British vessels, of which the largest are Shanghai and Canton, others being Hong-Kong (British), Foochow and Tientsin.

The people are a mixed race of Mongol type, kindly, courteous, peaceful and extremely industrious, and in their own way well educated. Buddhism is the prevailing faith of the masses, Confucianism of the upper classes. The Japanese War of 1894-1895 betrayed the weakness of the national organisation, and in 1911 a revolution broke out in Hankow, which resulted in the removal of the Manchu dynasty and the establishment in 1912 of a republic. Attempts to restore the monarchy from 1915 to 1917 failed, and in 1920 Canton established a separate republic. The Cantonese in 1925 started a civil war against the Peking Government, and in 1926 captured Hankow, Shanghai and Nanking. A British Expeditionary Force defended the International Settlement at Shanghai, but the concession at Hankow was surrendered. Later, Nanking broke away from the Hankow Government.

Great strides had been made in the reconstruction of the country, but the National Government has come into conflict with the Japanese on several occasions, with the result that Manchuria and Jehol were lost in 1931-1932, and hostilities, without, however, any declaration of war, began again in 1937. The Japanese soon gained control of the Peking-Tientsin area, and repeatedly bombed Shanghai, Nanking, Canton, and other great cities from the air, the Chinese government moving its capital to Hankow and later to Chungking. By the autumn most of North China was in the hands of the Japanese or of

Japanese-controlled governments; a number of "incidents" occurred, including the bombing of a car containing the British ambassador to China, resulting in serious injuries to him, and the sinking of an American warship, the *Panay*. Early in 1938 Nanking was occupied, and a ruling council under Japanese influence set up, but thereafter the Chinese troops rallied, thus holding up for a time Japanese attempts on Hankow and preventing the forward movement in South China. Both Hankow and Canton, however, fell to the Japanese in Oct. 1938. Area (China proper) 2,903,000 sq. m. Pop. 422,000,000.

China, The Great Wall of, a wall, with towers and forts at intervals, over 1,400 m. long, from 20 to 30 ft. high, and 25 ft. broad, which separates China from Mongolia on the N., and traverses high hills and deep valleys in its winding course.

China-clay, or Kaolin (from the Chinese where porcelain is made), a mineral, a silicate of aluminium, obtained from the decomposition of felspar. It is a fine white powder, free from iron, and readily miscible with water. It is used in making porcelain; also for coating art-paper, etc. China-clay is found in England (Cornwall), France, Germany and U.S.A.

Chi-Nan, or Tsi-Nan, capital of the province of Shantung, N. China, a historic city standing near the Hwang-ho, opened to foreign trade in 1904. Pop. 300,000.

Chinaware, a porcelain, a species of fine earthenware. In the making of porcelain china-clay is mixed with powdered felspar that is undecomposed, called petunse. Sand or silica may also be ground and mixed in. As there is no iron in china-clay, the resulting porcelain is pure white when fired; the finest is almost transparent. The Chinese excelled in the art of making porcelain, and invented fine coloured glazes. The art was introduced into Europe by Venetian travellers from China, in the 15th Century, and Italy became the centre for the manufacture of chinaware in Europe up to the 18th Century. The German industry also produced successful imitations of Chinese porcelain, and in France the celebrated factory at Sevres was set up in 1756. At about the same time factories were started in England at Chelsea and Worcester.

Chinchilla, a family of rodents (the Chinchillidae) of S.

America, hunted for their beautiful fur, which is soft and of a grey colour. They are found chiefly in the mountainous districts of Peru and Chile and are closely allied to the Agoutis. There are three genera, the true Chinchillas (including the *Chinchilla laniger*, the most sought after species), the *Lagidium* and the *Lepusomys* (only one species which is known also as the Viscacha). The Chinchillas are about the size of a rabbit and live in burrows.



CHINCHILLA

Chinese Eastern Railway

A railway in Manchuria (Manchukuo), running from Manchuli SE. through Harbin to Vladivostok in Russia, and from Harbin to Port Arthur, built by the Russians with Russian and French capital. It has been a source of much friction. In 1905 the S. portion of the Harbin-Port Arthur branch line, from Changchun to Port Arthur fell into Japanese hands, and in 1935 the Russian Government sold the whole system to the Manchukuo Government.

Chinese White, a pigment made of zinc oxide. It is used by artists as a foundation white, but is more successful as a water-colour than with oil.

Chingford, municipal borough of Essex, England, between the Lea and Epping Forest, a residential suburb of N. London. Pop. 22,000.

Chinkiang, treaty-port of China on the Yangtse, in the province of Kiang-su. Pop. 200,000.

Chino-Japanese War (1894-1895) was the outcome of the rivalry between China and Japan over the suzerainty of Korea. Korea, nominally independent, was in a state of total disorder. Japan's efforts to impose reform and press her economic advantages met with no response from the Koreans or the Chinese. Japan presented an ultimatum, and when the reply was unsatisfactory, captured the capital of Korea. War with China followed. In Sept. 1894 the Japanese occupied Asan, and also defeated the Chinese fleet off the Yalu R. The capture of Port Arthur in November and later of Wei-hai-wei ended the war. In April 1895 China was forced to sign the Treaty of Shimonoseki. In addition to indemnity, China agreed to cede the Liao-Tung peninsula (including Port Arthur), the island of Formosa and the Pescadore Is. France, Russia and Germany stepped in to prevent the cession of Liao-Tung; to this Japan agreed in exchange for increased indemnity. For subsequent relations between China and Japan and the wars of 1931-2 and 1937-8 see under China.

Chinook, a tribe of N. American Indians of Washington and Oregon, whose language provided the *lingua franca* which is spoken on a great portion of the Pacific coast. Only a few remain on the Columbia R. in Washington.

Chinook Wind, a warm wind blowing down the eastern side of the Rocky Mts., which keeps the pasture lands of Montana and Wyoming free from snow in the winter.

Chintz, a calico printed with flowers and other devices in different colours; originally of Eastern manufacture.

Chioggia (Chiozza), a seaport 16 m. S. of Venice, built on piles, on a lagoon island at the mouth of the Brenta, connected with the mainland by a bridge with 43 arches. Chief industry, fishing. Pop. 22,000.

Chios, a small island in the Grecian Archipelago; subject to earthquakes; yields oranges, lemons, figs, olives, and wine in great quantities; claims to have been the birthplace of Homer. There is an altar to Cybele still extant, and, at Cape Phanee, a temple to Apollo. Pop. (island) 76,000; (town) 22,000.

Chipmunk, the American burrowing Gopher, marked with dark bands on the back, and possessing a tailless bushy tuft at the end of the scaly tail.



CHIPMUNK

Chippendale, Thomas, a cabinet-maker, born in Warrackville, famous for the quality and style of his workmanship; his work still much in request (d. 1718-1770).

Chiswick, an ancient market town of Wiltshire, on the Avon, an agricultural centre,

with bacon-curing and condensed-milk factories. Pop. 8,500.

Chippeways, a N. American Indian tribe, located in Michigan, U.S.A., and in Canada, adjoining; originally occupied the N. and W. of Lake Superior; known also as Ojibways, they have mostly settled down in agricultural communities. They number about 27,000.

Chirimoyer, or Cherimolia, an edible apple type, being the *Anona Cherimolia* of the order Anonaceae, and cultivated in tropical America.

Chiron, a celebrated Centaur, in whose nature the animal element was subject to the human, and who was with the education of certain heroes of (among others Pelus, Ascalapius and Ad) was endowed with the gift of prophecy skilled in athletics as well as music and healing art. See Centaurs.

Chislehurst, a village in Kent, SE. of London. Napoleon III. died in exile in 1873. Here are the famous Chislehurst Caves which extend for miles underground, and the origin and use of which have been much discussed but never settled. Pop. 9,000.

Chiswick, a suburb of London, 7 m. W. of St. Paul's; the Church of St. Nicholas has monuments to several people of distinction. Hogarth is buried there. Pop. (with Brentford) 63,000.

Chitral, a State on the frontier of India, NW. of Cashmere; since 1895 under the protection of the British, who have maintained forces there; a place of great strategical importance, as it commands important passes through the Hindu-Kush Mts. Pop. about 60,000. Also the name of the capital. Pop. 2,500.

Chittagong, a maritime district and a seaport in the Bay of Bengal, 220 m. E. of Calcutta; the country is hilly and heavily forested; exports rice, tea and jute. Pop. 38,000.

Chivalry, a system of knight-hood, for the qualifications required were dignity, courtesy, bravery, generosity; the aim of which was the defence of right against wrong, of the weak against the strong, and especially of the honour and the purity of women, and the spirit of which was of Christian derivation; originally a military organisation in defence of Christianity against the infidel.

Chivalry, Court of, a court similar to which superseded it in the 18th Century. It was set up in the reign of Edward III. (1327-1377), and was presided over by the Earl Marshal and the Lord High Constable. The jurisdiction of the Earl Marshal was confirmed by Letters Patent of James I. in 1623.

Chive (*Allium Schoenoprasum*), a bulbous plant of the natural order Liliaceae, closely related to the onion, leek, shallot and garlic, and native to Britain. It is cultivated for the sake of the leaves, which are considered edible, and are used as flavouring in stews, etc.

Chloral, a colourless narcotic liquid, chlorine on alcohol; treated with water it produces *chloral hydrate*; was discovered by Liebig, 1831.

Chlorates, salts resulting from the union of chlorine acid with a basic metal. Several are valuable commercially, especially potassium chlorate, formed by heating potassium hydroxide and passing chlorine into it. The chlorate is rich in oxygen, and its oxidising properties make potassium chlorates useful in the manufacture of matches and fireworks.

Chlorimetry, the process by which the bleaching-power of a chlorine compound is tested. The usual method is by volumetric analysis—that is to say, the chlorine compound is added to a measured volume of some substance (e.g., arsenious acid), which can be oxidised until by means of an indicator it is found that the precise point has been reached when oxidation is complete.

Chlorine, a non-metallic chemical element belonging to the halogen ("salt-producing") family, the other members of which are fluorine, bromine, and iodine. Symbol Cl, atomic number 17, atomic weight 35.46. It was first discovered by Scheele in 1774, but was regarded as a compound of oxygen and muriatic acid (the modern hydrochloric acid) until 1810, when Sir Humphry Davy proved it to be an element. It is manufactured by the electrolysis of common salt solution, and is put on the market as a golden-yellow liquid after compression into steel cylinders; at ordinary pressures it is a greenish-yellow gas. It is a very reactive element, and combines directly with hydrogen to form hydrogen chloride ("hydrochloric acid gas"), and with many metals to form the metallic chlorides.

Chlorine is a good bleaching agent, the colouring-matter being broken up by the oxygen released from water when the chlorine combines with the hydrogen; for this purpose it is used either as the gas or in the form of bleaching-powder (q.v.). Owing to its high density compared with air and to its very toxic character, it has been used as a military weapon, but is much less effective than certain other gases such as mustard-gas.

Hydrochloric acid, HCl, is among the strongest acids known; it is made either by heating common salt (sodium chloride, NaCl) with concentrated sulphuric acid, or by burning chlorine in a stream of hydrogen. The hydrogen chloride obtained in both ways is dissolved in water, and the solution is known as hydrochloric acid ("spirits of salts"). The salts of hydrochloric acid are called chlorides. Ordinary chlorine consists of a mixture of two isotopes, of atomic weights 35 and 37. By bombardment with neutrons, chlorine has been made to show a transitory radioactivity.

Chlorite, a soft mineral of an olive-green colour. Its formation has been due to the metamorphism of various crystalline minerals.

Chloroform, or Trichloromethane (CHCl_3), a volatile liquid, in extensive use as an anæsthetic; produced by treating alcohol with chloride of lime.

Chlorophyll, the characteristic green colouring-matter of plants, is the substance which effects carbon-assimilation (q.v.) by its power of harnessing part of the energy of sunlight. Chlorophyll is actually a mixture of two bodies, known respectively as α -Chlorophyll and β -Chlorophyll; the former is bluish-green in colour, and is present to about three times the extent of the latter, which is yellowish-green.

It is an interesting, and no doubt significant fact, that the constitution of chlorophyll is related to that of hæmatin, the red colouring-matter of the blood. In the plant, chlorophyll is contained in protoplasmic bodies called chloroplasts, where it is always accompanied by two yellow substances known as carotin and xanthophyll. Chlorophyll may be extracted from leaves by macerating them in boiling water, and then steeping them in warm alcohol or acetone, in which the chlorophyll dissolves.

Chlorosis, green sickness, a form of anemia incident to young females at a critical period of life, causing a pale-greenish complexion.

Chocolate, a sweetmeat, either in prepared from the beans of the cacao tree (*Theobroma cacao*). In manufacture the fat content of the cocoa bean is not extracted, but the beans are roasted, ground and made into a paste to which flavouring materials, sugar, etc., are added.



CACAO TREE

Choctaws, of American Indians, settled to civilised life in Oklahoma, U.S.A.; formerly a powerful nation in the Mississippi region, possessing considerable culture. They number about 18,000.

Choir, a company of singers trained to sing together with or without accompaniment. The term applies especially to the organised singers who take part in a church service, usually confined to male voices only. Architecturally, the choir or chancel is that part of a church or cathedral where the choir sit, divided into two halves: the precentor's side (north) and the dean's (south).

Choke Damp, the name given by miners to carbon dioxide, owing to the fact that this gas, produced by the combustion of explosive gases, causes suffocation.

Choking, suffocation caused either by a stoppage within the windpipe or by external pressure being applied from without, paralysing the heart and lungs. Death ensues. A stoppage inside the windpipe may be due to swallowed food obstructing the epiglottis, which protects the windpipe at the back of the throat.

Cholera, Asiatic, an epidemic disease characterised by violent vomiting and purging, accompanied with spasms, great pain and debility; originated in India, and has frequently spread itself by way of Asia into populous centres of both Europe and America, especially in the epidemic of 1892. It is due to microbial infection, the microbe being the *Cholera spirillum* or Koch bacillus, which is transmitted by means of infected water, flies, food, etc.

Cholon, a municipality of French Cochinchina, near Saigon, and the greatest commercial centre of the country. The principal trade is in rice. Pop. 200,000.

Chopin, Frederic François, a musical composer, born near Warsaw, of Polish origin; his genius for music early developed itself; distinguished himself as a pianist first at Vienna and then in Paris, where he introduced the mazurkas; became the idol of the salons; visited England in 1848; formed a friendship with George Sand (Mme. Dudevant) which lasted till 1847; died of consumption in Paris. (1809-1849).

Chorale, a musical composition originally, cited by Luther and used in the German Reformed Church; sometimes based on hymn tunes, sometimes on secular airs.

Chord, originally the string of a musical instrument, is now used to mean a combination of tones, in harmony, and performed simultaneously. The notes of a chord are of different pitch. A note with its third, major or minor, and fifth, is called a common chord.

Chorea, or St. Vitus's Dance, a disease of the brain allied to acute rheumatism. Although generally confined to children, one form of it attacks adults. Symptoms are uncontrollable spasms of the limbs, body and facial muscles, which

stages are shown by anæmia, restlessness, and emotional instability.

Chorley, a manufacturing town in N. Lancashire, England, 21 m. N.E. of Liverpool, with mines and quarries near it; a centre for cotton-spinning, weaving and bleaching. Pop. 31,000.

Chorus, in the ancient drama a group of persons introduced on the stage representing witnesses of what is being acted, and giving expression to their thoughts and feelings regarding it; originally a band of singers and dancers on festive occasions, in connection particularly with the Bacchus worship.

Chosroes, the name of 2 kings of Persia, of the Sassanid dynasty. C. I., who reigned A.D. 531-579, fought successfully against the Romans on more than one occasion, though he commenced his reign by making "eternal" peace with them. C. II., his grandson, reigned 590-628, also fought successfully against the Romans, plundering Syria, Asia Minor, Damascus, Jerusalem and Egypt, though the Holy Cross was restored to Jerusalem by the Emperor Heraclius in 628, Chosroes, being assassinated shortly afterwards.

Chota Udepur, a hilly native state States Agency, India, with a capital of the same name. Area 890 sq. m. Pop. 144,600.

Chouans, France, especially in Brittany, under Jean Cottereau (1767-1794) and Georges Cadoudal (1771-1804) during the French Revolution, and even for a time under the Empire, when their headquarters were in London; so named from their muster by night at the sound of the *chat-huant*, the screech-owl, a nocturnal bird of prey which has a weird cry. Cottereau died in an ambush, Cadoudal by execution, after having been beaten at Quiberon in 1795.

Chough, a sub-family (the *Fregilinae*) family, related to magpies and jays, so named from its peculiar cry. It is usually black, with red feet and a yellow or red beak of great strength. Its food is insects and fruit. They are now somewhat rare. Species include the Cornish Chough (*Fregilinae graculus*), the Common Chough (*Pyrrhocorax graculus*) and the Alpine Chough (*P. alpinus*).

Chow-Chow, a Chinese dog, popular in Britain as a pet. It

has a black tongue and a uni-colour black, red, yellow, blue or white coat. They are good house dogs and intelligent companions.



CHOW-CHOW

Chrétien, or Chretien, de Troyes, a French poet or narrateur of the latter half of the 12th Century; author of a number of vigorously written romances which are among the earliest connected with chivalry and the Round Table. His works include *Chevalier de la Charette*, *Le Conte del Graal* and *Perceval*.

Chrism, a mixture of olive oil and balm of spices used in Roman Catholic, Greek and orthodox churches for the anointing ceremonies in the confirmation, extreme unction, baptismal and other services.

Christ, the anointed one, the Christ, the Messiah, a word which, with the Jews, implied the Great King who would free them from subjection and restore them their kingdom. See Jesus Christ.

Christ, Disciples of, a religious sect sometimes called Campbellites, founded by Alexander Campbell 1800.

Christadelphians, a sect, called Thomasites, founded by John Thomas of London in 1848, and having adherents in England and America. Their chief distinctive article of faith is conditional immortality—that is, immortality only to those who believe in Christ, and die believing in Him.

Christ Church, a college of Oxford University, founded by Wolsey, 1525; famous scholars of this college have included Gladstone, Ruskin and John Locke.

Christchurch, capital of the province, a vintal district of Canterbury, New Zealand, 5 m. from the sea; Lyttelton the port. Pop. 132,500. Also a town in Hampshire, England, at the junction of the Stour and Avon. Notable for its fine old Priory of Holy Trinity, known in Saxon times as Twineham. Pop. 9,000.

Christian, the name of ten kings of the first began to reign in 1448 and the following deserve notice: Christian II., conquered Sweden, but, proving a tyrant, was driven from the throne by Gustavus Vasa in 1522, upon which his own subjects deposed him, an act which he resisted by force of arms; he was defeated in 1531, his person seized, and imprisoned for life. (1481-1559). Christian IV., king from 1588 to 1648; took part on the Protestant side in the Thirty Years War, and was defeated by Tilly; he was a good ruler, and was much beloved by his subjects; developed and improved the Danish navy. (1577-1648). Christian IX., king from 1863 to 1906; son of Duke William of Schleswig-Holstein, father of the late Queen Alexandra, George I., King of Greece, and the dowager Empress of Russia. (1818-1906). Christian X., married in 1898 Princess Alexandrine of Mecklenburg-Schwerin, and succeeded to the throne in May, 1912. (1870-).

Christian, Prince (Frederick Christian Charles Augustus), was born at Augustenburg, son of Christian August, Duke of Schleswig-Holstein. In conflict with Christian VIII. of Denmark in 1848, and again with Denmark on that king's death 1863. Married, 1866, Princess Helena, third daughter of Queen Victoria; thenceforward England was his home. His eldest son, Prince Christian Victor, died at Pretoria 1800. (1831-1917).

Christian Brothers, a Roman Catholic educational Institute founded in Waterford, Ireland, in 1802 with branches in England and the colonies.

Christian Endeavour Societies, associations originally organised in the U.S.A., and from the first undenominational, their purpose being especially the spreading of religious influence and the promotion of the Christian life amongst members. The first was established by Dr. Francis E. Clark at Portland, Maine, in 1881, in his Congregational Church, and was called the "Young People's Society of Christian Endeavour."

Christiania, the former name of Oslo (q.v.), capital of Norway.

Christianity, the religion of which Jesus Christ is the founder and the centre, and which has spread from Jerusalem throughout the world in the last 2,000 years. Its believers see God revealing Himself in Jesus Christ, His Son, who was crucified that they might be reconciled unto Him and that sin should no more have dominion over them. The religion, with its accompanying high view of the worth of the human soul, has been the greatest civilising factor the world has ever known.

When Christianity was likely to become merely a sect of Judaism, St. Paul carried it into Europe and to Rome, which under Constantine at length adopted it as the official religion. Rome held sway over the Church till the Reformation of the 16th Century established Protestantism, which with Catholicism has since been a wing of the Christian Church in spreading the gospel to all parts of the globe.

Christian Science, a religious doctrine of faith-healing founded by Mrs. Mary Baker Eddy, and taught by her in the U.S.A. from 1836 till her death in 1910. By 1909 there were 1,100 Christian Science churches throughout the world and 4,000 Christian Science practitioners in America, who practise mental healing to cure physical diseases. The official organ is the *Christian Science Monitor*. The doctrine is expounded in the text-book *Science and Health, with Key to the Scriptures*.

Christina, Queen of Sweden, daughter Adolphus; was trained in manly exercises; governed the country well at first and filled her court with learned men, but later her royal duties becoming irksome to her and her interference in foreign politics of a flighty and unsuccessful nature, she declared her cousin as her successor, resigned the throne, and turned Catholic; her cousin dying, she attempted to reclaim the crown without success; retired to Rome, where she died. (1626-1689).

Christmas, the festival in celebration of the birth of Christ, now celebrated all over Christendom on Dec. 25, as coinciding with an old heathen festival celebrated at the winter solstice, the day of the return of the sun northward, and in jubilation of the prospect of the renewal of life in the spring.

Christmas Cards, greetings sent to friends at Christmas, a practice dating from 1844, when W. E. Dobson, R.A., designed one to send to a friend.

Christmas Island, in the Indian Ocean, 100 m. SW. of Java, forms a part of the Straits Settlements, and has large deposits of phosphates, exporting over 100,000 tons a year. The area is 60 sq. m. and the pop. 1,000. Also the name of the largest atoll in the Pacific, annexed by Britain (1888), and attached to the Gilbert and Ellice Is. Colony. Pop. 40.

Christmas Rose, or **Black Hellebore** (*Helleborus*

niger), a species of Ranunculaceae, a native of Europe, flowering in winter. It contains an acid poison. The plant bears a close resemblance to the rose. The flower is white, and the reddish calyx turns green after fertilisation.

Christophe, Henri, a negro, born in Grenada; one of the leaders of the insurgent slaves in Haiti, who, proving successful in arms against the French, became king under the title of Henry I., but ruling despotically provoked revolt and shot himself through the heart. (1767-1820).

Christopher, St. (the Christ-Bearer), according to Christian legend a giant of great stature and strength, who, after serving the devil for a time, gave himself up to the service of Christ by carrying pilgrims across a bridgeless river, when one day a little child, who happened to be none else than Christ Himself, appeared to be

carried over. As he bore Him across, the child grew heavier and heavier, till he was nearly baffled in landing Him of the opposite shore. The giant represented the Church, and the increasing weight of the child the increasing sin and misery of the world. He was martyred in 260. He is the patron saint of ferrymen.

Christopher's, St., popularly called Leeward Is., discovered by Columbus (1493), who named it after himself; belongs to England; has sugar plantations. Area 68 sq. m. Pop. 22,000. Part of the Presidency of St. Christopher (St. Kitts) and Nevis (with Anguilla).

Christ's Hospital, the Blue-Coat School, Horsham, founded in 1552, a large institution, 320 boys at Horsham and 280 girls at Hertford; entrance to it is gained partly by presentation and partly by competition, and attached are numerous exhibitions and prizes; among the *alumni* have been Bishop Stillington, Coleridge, Leigh Hunt and Charles Lamb. Until 1902 the school stood in the site of Greyfriars Monastery in Newgate Street. The boys still wear the 16th-Century costume, comprising knee-breeches, yellow stockings and blue gowns, without headgear.

Christ's Thorn, the name of certain shrubs of the order Rhamnaceae, in particular the *Paliurus aculeatus*, and the *Ziziphus Spina-Christi*, from which Christ's crown of thorns is supposed to have been made.

Chromatic Scale, in music, a succession usually written with sharps ascending and flats descending.

Chromatin, part of the protoplasm of a cell-nucleus, so called because it "colours" or dyes more readily than the rest. In the nucleus it forms a complex network—the "Chromatin network."

Chromite, a mineral, the chief source of chromium, and composed of chromium, iron and oxygen. It is sometimes called chrome-iron-ore and chromic iron. It is black or dark brown in colour, and is found in ultra-basic igneous rocks, in the U.S.A., New Zealand, Turkey, the Ural Mts. and the Shetland Isles. It is a very hard substance.

Chromium, a chemical metallic element belonging to the same family as molybdenum, tungsten and uranium. Symbol Cr, atomic number 24, atomic weight 52.01. The metal itself is used for plating other metals, since it possesses a fine bluish-white sheen and is very resistant to corrosion; the (usually steel) article to be chromium-plated is first plated with copper, then with nickel, and is afterwards immersed in a bath containing a solution of chromium sulphate and chromic acid and subjected to electrolysis, itself forming the cathode. The chromium is deposited as a thin, coherent film. Various chromium compounds are used industrially and are important in the laboratory.

Chromosome, a body—usually one of several such—formed from the chromatin network of a cell-nucleus during the process of normal cell-division (Karyokinesis or Mitosis). The chromosome is supposed to be the carrier of hereditary factors. See Cell (Biological) and Genetics and Heredity.

Chromosphere, the outer layer of the sun's atmosphere, consisting of glowing, red gases which frequently burst forth in the form of "Prominences," normally overpowered by the light of the Photosphere, but visible during a total eclipse.



CHRISTMAS
ROSE

Chronicle, a history arranged in order of time. The Anglo-Saxon *Chronicle* is the oldest existing English chronicle, and much of it is attributed to Alfred the Great. It exists in 7 manuscripts, and hand manuscript goes as far as 1154. It was first printed in 1643.

Chronicles I. and II., two historical books of the Old Testament, the narratives of which, with additions and omissions, run parallel with those of Samuel and Kings, but, written from a priestly standpoint, give the chief prominence to the history of Judah as the support in Jerusalem of the ritual of which the priests were the custodians; Esra and Nehemiah are continuations.

Chronograph, an instrument registering the passage of time either temporarily as in a stop-watch, or permanently, as in the case of those in which by a clockwork device a permanent record is made on a piece of paper or other suitable medium at regular intervals. Strictly the word chronograph should be applied only to such a recording instrument, and not to a stop-watch, which is more strictly a chronoscope. For the measurement of very small intervals of time, electrical chronographs are used.



STOP-WATCH

Chronology, the science which treats of time and has for its object the arrangement and exhibition of historical events in order of time and the ascertaining of the intervals between them. Its basis is necessarily the method of measuring or computing time by regular divisions or periods, according to the revolutions of the earth or moon. Dates are fixed from an arbitrary point or epoch, which forms the beginning of an era. The more important of these are the creation of the world among the Jews; the birth of Christ among the Christians; the Olympiads, among the Greeks; the founding of Rome among the Romans; the Hefira or flight of Mohammed among the Mohammedans, etc. As this method is applicable only to historic periods, it became necessary to devise some other means of computing time, so as to obtain some knowledge of what took place on the globe prior to the later stages of human civilisation. This new departure of chronological research is founded on the science of geology.

Chronometer, a time-keeping instrument used for determining longitude at sea or for other purposes where accuracy and portability are necessary. Some fit the pocket, though for the most part they are set in gimbals, so as to avoid any disturbance due to the motion of the boat. Though very much like a well-made watch, as a rule there are special adjustments in the mechanism to secure the greatest possible accuracy.

Chrysalis, or *Chrysalid*, the name of the pupa of an insect, especially that of a butterfly or moth. The pupa is often enclosed in a sheath of gossamer or silk forming a cocoon, of the silk-worm. The chrysalis is the resting stage in the creature's metamorphosis. The larva, having acquired a sufficient store of food, disintegrates, and the mature insect is built up of the changing tissues.

Chrysanthemum, literally the "gold-flower," a genus of Compositae comprising over 100 species and natives of all countries except Australia. The plants are shrubs or herbaceous, and are generally hardy in Britain.

The autumn varieties came originally from China and Japan. Besides the many common species in Britain, there are the corn-margold (*C. segetum*), the ox-eye or dog-daisy (*C. Leucanthemum*), the marguerite of France (*C. frutescens*), the tricolour daisy (*C. carinatum*) and the feverfew (*C. Parthenium*).

Chrysanthemum, Order of the, a Japanese order of chivalry instituted in 1877 and conferred on Japanese and foreign princes.

Chrysolite, a mineral substance, a yellowish-green variety of olivine, used for jewellery; composed of silicate of magnesium and iron. It is found as crystals having four or six-sided prisms.

Chrysostom, St. John, that is, Mouth of Gold—so called from his eloquence; born at Antioch; converted to Christianity from a mild paganism; became one of the Fathers of the Church, and Patriarch of Constantinople; he was zealous in suppressing heresy as well as corruption in the Church, and was for that reason thrice over subjected to banishment. In the course of the third exile, while on the way, he died, though his remains were brought back to Constantinople; he left behind him sermons, homilies, commentaries and epistles. (c. 345-407). Festival, Jan. 27.

Chub (*Leuciscus cephalus*), a fish belonging to the carp (*Cyprinidae*) family,

brownish-green in colour, with red ventral and anal fins, found in swift streams all over Europe and in Asia Minor. In N. America the name is given also to the *Leucosomus corporalis*.



CHUB

Chubb, Charles, locksmith, began business in Winchester, removed to Portsea, where he improved the "detector" lock patented by his brother Jeremiah in 1818. He afterwards established a factory in Wolverhampton, and in 1835 patented a burglar-proof and fireproof safe. (d. 1845).

Chubut, territory of S. Argentina, stretching from Andes to Atlantic, mainly an arid waste. Cattle, sheep and horses are reared. The R. Chubut flows through it. Rawson is the capital, Madryn the chief port. Area 87,000 sq. m. Pop. 60,000.

Chungking, treaty port and walled commercial capital of Szechwan province, at the junction of the Kiating and the Yangtse. Pop. 635,000.

Chquisaca, a dept. of Bolivia between the Andes, R. Paraguay and the Brazilian border. Area 30,300 sq. m. Pop. 307,000. The capital of the dept., Sucre (or Chuquisaca), is also the nominal capital of the whole of Bolivia.

Church, a term which from the 3rd century was used as well as *ecclesia*, to signify a Christian place of worship, a word which in its widest sense denotes, in the Teutonic languages, the whole community of Christians, thus rendering the term *ecclesia* used by the New Testament writers. In more restricted significations it denotes a particular section of the Christian community differing in doctrinal matters from the remainder, as the Roman Catholic Church, the Protestant Church, etc.; or to designate the recognised leading Church of a nation, as the English, Scottish or French Church. In yet another sense it signifies the building specially devoted to Christian worship.

After the conversion of Constantine, the basilicas or public halls and courts of justice and some of the heathen temples were consecrated as Christian churches. When

Chusan, the principal island in the Chusan Archipelago, outside the Bay of Hangchow and S. of the estuary of the Yangtze-kiang. It is some 20 m. long and 10 m. broad, and has been called "the Key of China." Pop. 250,000.

Chutney, a pickle or relish made from sweet fruits such as mangoes, sultanas, together with flavouring of chillies, green ginger, tamarinds, apples, Cayenne pepper and spices, etc., originated in E. India, but popular now in England.

Chuvash, autonomous republic of Soviet Russia, on the Volga, inhabited by a blond tribe of mixed Finnish and Tartar origin. Cheboksara is the capital. Area 18,400 sq. m. Pop. 894,000.

Chyle, a fluid of a milky colour, one of the ingredients of the food, which is separated from the chyme by the action of the pancreatic juice and the bile, and which, being absorbed by the lacteal vessels, is gradually assimilated into the blood.

Chyme, the pulpy mass into which the food is converted in the stomach prior to the separation in the small intestines of the chyle.

Ciano, Galeazzo, Count, Italian statesman; enthusiastic supporter of the Fascist régime from the beginning; married Edda, daughter of Mussolini; Under-Secretary of State for Propaganda, 1934; Foreign Minister, 1936. (1904-).

Cibber, Colley, actor and dramatist, of German descent; was manager, and part-proprietor of Drury Lane; wrote plays, one in particular, which procured for him the post of poet-laureate, which he held till his death; was much depreciated by Pope; wrote an *Apology for his Life*. (1671-1757).

Cicada, an insect of the sub-order Homoptera, closely allied to the lantern flies and frog-hoppers, and well known for the musical sounds they produce from a complex structure at the base of the abdomen. They live on plant juices. A rare species, the *Cicada hamulodes*, is found in the New Forest.



Cicero, Marcus Tullius, a Roman orator, statesman and man of letters, born near Arpinum, in Latium; trained for political life partly at Rome and partly at Athens; distinguished himself as the first orator at the Roman bar when he was 30, and afterwards rose through the successive grades of civic rank till he attained the consulship in 63 B.C.; during this period he acquired great popularity by his exposure and defeat of the conspiracy of Catiline, by which he earned the title of *Father of his Country*, though there were those who condemned his action and procured his banishment for a time; on his recall, which was unanimous, he took sides first with Pompey, then with Caesar after Pharsalia, on whose death he delivered a Philippic against Antony; was proscribed by the second triumvirate, and put to death by Antony's soldiers; he was the foremost of Roman orators, the most elegant writer of the Latin language, and has left behind him orations, letters and treatises, models of their kind. (106-43 B.C.).

Cid Campeador, a famed Castilian 11th Century, born at Burgos; much celebrated in Spanish romance. Being banished from Castile, in the interest of which he had fought valiantly, he became a free-lance, fighting now with the Christians and now with the Moors, till he made himself master of Valencia, where he set up his throne and reigned, with his faithful wife Ximena by his

side, till the news of a defeat by the Moors took all spirit out of him, and he died of grief. His real name was Don Rodrigo (Ruy) Diaz of Bivar, and the story of his love for Ximena is the subject of Corneille's masterpiece, *The Cid*.

Cider, a popular beverage in summer made from the fermented juice of apples and containing 2 to 10 per cent. of alcohol. Cider apples are largely grown in the W. of England and cider made, Hereford cider being from the orchards of Hereford, Gloucester, Worcester and Monmouth; Devonshire cider from Devon, Somerset, Dorset and Cornwall. New cider is less intoxicating than ale, but old cider is as potent as old ale.

Cilician Gates (Ghulek Boghaz), the pass across Mount Taurus by which Alexander the Great entered Cilicia.

Cimabue, Giovanni, a Florentine painter, school, which included among its members such artists as Michelangelo, Raphael and Leonardo da Vinci; was the first to leave the stiff traditional Byzantine forms of art and copy from Nature and the living model. His "Madonna," in the Church of Santa Maria, has been long regarded as a marvel of art, and of all the "Mater Dolorosas" of Christianity, his at Assisi is probably the noblest. (1240-1302).

Cimarosa, Domenico, a celebrated 20 and 30 operas, mostly comic, his masterpiece being *Il Matrimonio Segreto*; he was imprisoned for sympathising with the principles of the French Revolution, and is said by some to have been poisoned by order of his enemies. (1749-1801).

Cimbri, a warlike Celtic tribe. They led a nomadic existence, and during the 2nd Century B.C. invaded Gaul, and were often at war with the Romans. They were totally defeated by Marius in 101 B.C.

Cimiez, village of the Riviera, France, on a hill behind Nice, of which it is a suburb. Queen Victoria often stayed here.

Cimmerians, a mythical people mentioned by Homer who were supposed to live on the sunless shores of the Black Sea; hence the phrase "cimmerian darkness." Historians have tried to identify them with a race living near the Sea of Azov.

Cinchona, the name of several trees of the order Rubiaceae, from the bark of which is extracted quinine and cinchonidine. They are extensively cultivated in Java, in the valleys of the Andes (where they are natives) and in S. India, etc.

Cincinnati, the metropolis of Ohio, U.S.A., stands on the N. bank of the Ohio R., by rail 270 m. SE. of Chicago; the city stands on hilly ground, and is broken and irregular; there are many fine buildings, among them a Roman Catholic cathedral, and large parks; there is a university, the Lane Theological Seminary (Presbyterian), schools of medicine, law, music and art, an observatory, zoological garden and large libraries; it is a centre of culture in the arts; manufactures include clothing, tobacco, leather, etc.; the most noted trade is in pork and grain; a large proportion of the population is of German origin. Pop. 451,160.

Cincinnatus, Lucius Quinctius, a hero of the Roman republic, distinguished for his simplicity and austerity. Was twice called from the plough to become dictator of Rome, the first time after the defeat of the Roman army by the Aequi. On each occasion he resigned his office within a few days of achieving victory and returned to the plough without reward. He lived about 460 B.C.

Cinematograph, an adaptation of the old magic lantern, invented by Edison, and first used in England early this century for the showing of "moving pictures" for educational and entertainment purposes. Within a few years it became one of the most popular forms of entertainment, threatening the popularity of the theatre and music-hall, while in 1928 talking films gave an immense impetus to the industry. Hollywood, California, is the chief centre of the industry, but great progress has been made in the development of a British film industry since 1927, when an Act of Parliament made the showing of a definite quota of English films compulsory in all English cinemas.

The projector of a cinematograph is essentially a camera used in the converse of the normal way—i.e., the film with the photograph on it is brilliantly illuminated and the lens casts an image of it upon a suitably placed screen. In taking or "shooting" the scenes, a series of photographs is taken at the rate of about sixteen a second, while during projection the successive photographs are shown on the screen for about one-twentieth of a second each, the light being cut off by a rotating shutter while the photographs are actually being changed. This is to prevent a blurred effect, and the fact that each picture persists on the retina for a short time after it has been withdrawn produces the illusion of one continuous "moving" picture.

In the earliest sound films the sound was produced by amplifying the sound of a gramophone record run at the same time as the film, but the difficulties of exact synchronisation are very considerable. More recently the sounds have been made to record themselves on the side of the film by connecting a microphone to a suitable lamp, the brightness of which varies with the strength of the impulses registered by the microphone, and causing the lamp to shine upon the edge of the film. A varying mark is thus produced, and when the film is projected, a beam of light is shone through the edge-strip on to a photo-electric cell. This conducts electricity in proportion to the intensity of illumination falling upon it, and the fluctuating current is used to actuate a loud-speaker, from which a replica of the original sounds thus issues. The most recent development in cinematography is the colour film.

Cingalese (or Sinhalese), the most numerous native race of Ceylon.

Cinna, *Lusius Cornelius*, a leader of the Roman popular party, a friend and supporter of Marius; drove Sulla from Rome and recalled Marius from exile; participated in the murders which followed his recall, and after the death of Marius was assassinated when organising an expedition against Sulla, 84 B.C.

Cinnabar, a sulphide of mercury, HgS , which the mercury of commerce is obtained.

It is dark red, and is often found in crystalline masses, the chief countries of production being Austria, Spain, California, Peru, etc.

Cinnamon, the aromatic bark of a small tree *Cinnamomum zeylanicum* (natural order Lauraceae), native to Ceylon and cultivated in Asia, Brazil and the West Indies. Oil of cinnamon, which has medicinal value in the treatment of digestive disorders, is distilled from the bark after maceration in salt water.



CINNAMON TREE

que Cento, the abbreviation for the 16th Century ring especially to the revival in culture in Italy during that century, represented by Donatello and Michelangelo in sculpture, Benvenuto Cellini in metal-work, Leonardo da Vinci, Raphael, Titian and Correggio in painting and Ariosto and Tasso in literature.

Cinquefoil, in architecture, an ornament in the Gothic style, consisting of five foliated divisions, often seen in circular windows.

Cinque Ports, the five ports of Hythe, Dover and Sandwich, to which were added Winchelsea and Rye, which, until the reign of Henry VII., possessed certain privileges in return for supplying the royal power with a navy. The privileges and other duties of the organisation have long since passed, but the title of Lord Warden of the Cinque Ports remains as an honorary dignity.

Cintra, a Portuguese town, 17 m. NW. of Lisbon, where a much-reprobated convention between the French and the English was signed in 1808, whereby the former were allowed to evacuate Portugal with all their arms and baggage. Pop. 7,000.

Circars, The Northern, a territory in Bengal, from 18 to 100 m. wide; ceded to the East India Company in 1766, now forming part of the Madras Presidency. The modern corresponding districts are Ganjam, Vizagapatam, Godavari and Krishna.

Circassia, a territory on the W. Caucasus, once inhabited by the Circassians, a Caucasian tribe, the noblest professing Mohammedanism, and the lower classes a certain impure form of Christianity; they are Semitic, and resemble the Arabs in their manners.

Circe, a sorceress, the daughter of Helios *Odyssey*. Ulysses having landed on her Isle, she administered a potion to him and his companions, which turned them into swine, while the effect of it on himself was counteracted by the use of the herb moly, provided for him by Hermes against sorcery. She detained him for a year, and disenchanted his companions on his departure.

Circle, in Geometry, a plane figure—i.e., the revolution of a point around another point (the centre), the distance apart of the two points being constant. The word is used sometimes to denote the circumference of the enclosed figure. The distance from the centre to the circumference is called the radius, the straight line drawn through the centre of the circle from circumference to circumference is called the diameter. The formula for the calculation of the circumference of a circle is $2\pi r$ ($\pi = 3 \cdot 1416$; r = the radius); that for the area is πr^2 .

Circuits, the eight districts outside London into which England and Wales are divided for judicial purposes, for the trial of civil as well as criminal cases connected with them. They are the Midland, the Oxford, the North-Eastern, the South-Eastern, the Northern, the Western, the North Wales and Chester, and South Wales; the courts are presided over by a judge sent from London, or by two, and are held about the middle of January, the middle of May and the middle of October, with an additional assize for Lancashire and Yorkshire only, in May.

Circulation, of the blood, the movement through the arteries to all parts of the body and returning through the veins to the heart again. The circulation depends upon (1) the heart's action; (2) the action of the capillaries; (3) the elasticity of the coats of the arteries;

(4) the pressure of muscles on the veins which pass by them, and (5) the movements of the chest in respiration. The returning blood is called *venous* and is purified by the oxygen supplied by the lungs, becoming *arterial*. The discovery of the circulation of the blood was made by Harvey, court physician to Charles I., in 1628.

Circumcision, the practice of cutting away the foreskin, chiefly of males, as observed by the Jews and the Mohammedans, as well as other nations of remote antiquity: regarded by some as a mark of belonging to the tribe, and by others as a sacrifice in propitiation by blood.

Circus, a large enclosed space resembling the Greek Stadium. That of Maximus was the greatest, and held 500,000 spectators. Entertainments included, besides chariot races, wrestling and running and combats with wild beasts, and sometimes a sea-fight was presented. The contestants, who were professional, were called gladiators. The modern travelling circus is a much smaller canvas covered "ring" where performing animals and acrobatics are representative of the entertainment offered.

Cirencester, a market town of Gloucestershire, England, 16 m. S.E. of Gloucester. It is the centre of an agricultural district, and site of the Roman station, *Corinium*. Many antiquities have been found in the neighbourhood. Pop. 7,000.

Cirrhosis, a condition to which certain organs of the body, especially the liver, kidney, heart and spleen, are liable. As a result of having been chronically inflamed, they become fibrous and hard. The liver is the most usual organ to suffer.

Cisalpine Republic, a republic of the Cispadane and Transpadane republics, on both sides of the Po, established by Napoleon in 1797; became the Italian Republic in 1802, with Milan for capital, and ceased to exist after the fall of Napoleon.

Cissbury, a great prehistoric earthwork in Sussex, England, 2 m. N. of Worthing. Stone-age flint instruments abound, and there are a number of deep, circular pits. Roman antiquities are also found.

Cistercians, a monastic order founded at Cîteaux, near Dijon; they followed the rule of St. Benedict. In 1112 St. Bernard joined the Order and founded the Abbey of Clairvaux, which became the centre; became an ecclesiastical republic, and were exempt from ecclesiastical control; contributed considerably to the progress of the arts. Among their most famous abbots were those at Tintern, Kirkstall, Melrose and Deer, and, in France, at Clairvaux and Pontigny.

Cists, places of interment of an early or pre-historic period, consisting of an irregular stone chest or enclosure formed of rows of stones set upright and covered with flat stones. They are usually found in barrows or mounds.

Citadel, a fortress in or near a city, built to dominate the city and maintain the citizens in order, and as the heart and centre of defence of the city against attackers. Such fortresses play very little part in modern municipal affairs. Famous citadels of the past have included the Acropolis of Athens and the Capitol of Rome.

Cities of Refuge, among the Jews, three cities on the E. and three on the W. of the Jordan, in which the unintentional manslayer might find refuge from the avenger of blood; so appointed by law (see Joshua xx.).

Citric Acid, a strong acid found in numerous fruits, especially lemons and limes, extensively used in

dyeing and calico printing and in making effervescent beverages, which afford relief during fever.

Citron (*C. Medica*), a straggling, wild, evergreen shrub of the genus *Citrus*, natural order Rutaceae. It grows to a height of about 10 ft., bears large pale green leaves, a purplish flower and largish fruit, the skin of which is candied, but the pulp not edible. It has yielded the varieties *Limonum*, the lemon, and *acida*, the lime.

Citrus, a genus of aromatic, evergreen shrubs and trees of the order Rutaceae, containing many species cultivated in warm climates, including the orange, lemon and allied fruits.

City, in a general sense, a town holding, from extent of population, favourable situation, or other causes, a leading place in the vicinity in which it is situated. In Britain and France the term is popularly used to designate the old and central nucleus as distinguished from the suburban growths of large towns. In the ecclesiastical sense of the term it is a town which is, or has been the see of a bishop. Since the latter part of the 19th Century the official style of city has, in the United Kingdom, been conferred by royal authority on certain important towns, Birmingham, in 1889, being the first to be so distinguished.

Ciudad Bolívar, capital of the Venezuela, 240 m. up the Orinoco, previously called Angostura. Pop. 16,700.

Ciudad Real (real city), a province of New Castile, Spain, with an area of 7,620 sq. m. and a population of 520,000, in which quicksilver is mined. Also the capital of the province with a trade in grain, olive oil and wine. Pop. 23,400.

Ciudad Rodrigo, a Spanish town of Salamanca near the Portuguese frontier; stormed by Wellington after a siege of 11 days, in 1812, for which he earned the title of Earl in England and Duke of Ciudad Rodrigo. Pop. 10,000.

Civet, or Civet-cats, the name of the

of the Carnivora, which yield a musky perfume valued in the East.

With the exception of two S.W. European species they are confined to Africa, India,

China and the Malay Peninsula, and are small animals with a long, bushy tail.

Civil Air Guard, an organisation established in Great Britain in 1938 to arrange training in flying for civilians of both sexes whose services might be used in time of emergency. It is operated through light aeroplane clubs, and comprises a gliding section.

Civil Engineer, one engaged in a construction, a term used in contradistinction to military engineer. Their work includes the designing and building of bridges, tunnels, dams, reservoirs and foundations, the construction of roads, docks, harbours and canals, also the problems of irrigation and reclamation of land. The directing body is the Institute of Civil Engineers, whose definition of the profession is "the art of directing the great sources of power in Nature for the use and convenience of man."

Civil Estimates, is the term denoting expenditure for civil purposes as distinct from that for the armed forces and the revenue



CIVET (INDIAN SPECIES)

departments. They are divided into nine classes, Central Government and Finance; Foreign and Imperial; Home Department, Law and Justice; Education and Broadcasting; Health, Labour and Insurance; Trade and Industry; Common Services; War Pensions, and Miscellaneous.

Civil Law, a system of laws for the communities based on Roman law. In its primary signification, civil law is synonymous with the *corpus juris civilis* which denotes the whole body of Roman law, i.e., the Institutes, Pandects or Digest and Codes of Justinian.

Civil List, the yearly sum granted by the Parliament of England at the commencement of each reign for the support of the royal household and to maintain the dignity of the Crown. In the present reign it amounts to £410,000, from which is to be deducted, pending the birth of a Duke of Cornwall, the balance of the Duchy of Cornwall revenues after payment of certain annuities to the Princess Elizabeth, etc.

Civil Service, those engaged in carrying out the executive work of government and administration of civil affairs, and therefore excluding military and naval services. The service is divided into various departments, such as the Home Office, Foreign Office, Treasury, Ministry of Health (formerly the Local Government Board), Board of Education, Ministry of Labour, Scottish Office, etc. In 1876 the system of appointment by examination was introduced. For some special classes nomination proceeds a qualifying competitive examination.

The numerous classes of the Civil Service include administrative, executive, clerical, writing assistants, typists. The administrative class is the highest in the service and includes posts of great responsibility. The junior grade is assistant-principal, and recruits enter by an examination similar to that reached on leaving a university. The duties are concerned with the improvement and co-ordination of government machinery and administration and control of government departments.

The executive class is next in importance, and carries out the higher work of supply and account departments and specialised branches of the service. The examination for entry into the lowest grade of this class is based on a syllabus equal to the standard at the end of a secondary school course. Executive staffs in the defence departments differ in that women are ineligible, that service abroad is likely and that the full London scale of salary is paid wherever employed, while provincial executives receive 5 per cent. less.

The audit staff is concerned with the issue of money from the National Exchequer and the auditing of accounts of other departments, and assistant auditors are required to undergo a course of accountancy in their own time, but at Government expense, before advancement. The examining staff, Estate Duty Office, is responsible for assessing and collecting estate and other death duties, and candidates require a knowledge of legal principles. Assistant examiners are required to obtain a University degree in Law or be called to the Bar before promotion. The actuarial staff includes those engaged in carrying out actuarial work in connection with Unemployment and Health Insurance and Contributory Pension Schemes, Old Age Pensions, Friendly Society Valuations, etc. A training in actuarial science is essential, and candidates for advancement are required to pass the examination of the Faculty of Actuaries.

The clerical classes include the General Clerical Class, which is open to men and women, the Customs and Excise Clerical class and

other departmental clerical classes. Candidates are recruited through the clerical examination. Writing assistants are confined to women, and carry out copying, transcribing, addressing, card indexing, etc. Promotion is through the clerical grade.

The age for candidates for the general classes is between 17 and 20, and notice of competitive examination is advertised in the *Times* and the *Daily Telegraph*. For detailed regulations application should be made to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1.

Civil War, a war between citizens of the same state. Outstanding civil wars of the past were that in England from 1642 to 1649, between Charles I. and Cromwell's Parliamentary party, and the American Civil War of 1861-1865 between the Southern and the Northern States, when the former sought to establish a separate union. Civil war broke out in Spain during 1936 between the Spanish Socialist Government and anti-socialist forces under General Franco.

Clackmannanshire, the smallest county in Scotland, lies between the Ochils and the Forth; rich in minerals, especially coal; chief industries woollens and shipbuilding. Area 55 sq. m. Pop. 31,900. County town Clackmannan.

Clacton-on-Sea, a popular seaside resort of Essex, England. Pop. 16,000.

Clair, a lake in N. America, 30 m. long by 12 broad, which with the R. St. Clair connects Lake Erie with Lake Huron.

Clairvaux, a village of France, on the Aube, where St. Bernard founded a Cistercian monastery in 1115, and where he lived and was buried.

Clairvoyance, in spiritualism and the term used to describe the power of seeing and describing events at a distance or future events.

Clam, the popular name of many different bivalve mollusks having the faculty of closing their shells like a vice. In Scotland the scallop is so called; in England certain species of *Macra* and *Mya*. The scallops are edible.

Clan, a tribe of blood relations descended from a common ancestor, ranged under a chief in direct descent from him, and having a common surname, as in the Highlands of Scotland; at bottom a military organisation for defensive and predatory purposes.

Clan-na-Gael, a Gaelic organisation founded at Philadelphia, U.S.A., c. 1881, to secure by violence the emancipation of Ireland from British control. Headquarters were at Chicago.

Clapham, a SW. suburb of London, England, in the borough of Wandsworth, 4 m. from St. Paul's, with a large common; an important railway junction.

Clapton, a residential district of N.E. London, England, in the borough of Hackney. John Howard, the philanthropist, was born here.

Claque, a number of men hired to applaud the success of a theatrical performance. At the end of the 18th Century the theatres of Paris employed people to express applause by clapping, weeping, laughing and demanding encores. The practice, which was in vogue in ancient Rome, still exists to some extent.

Clare, a maritime county in Munster, Ireland (Eire), between Galway Bay and the Shannon, where cattle and sheep are largely reared. Pop. 55,000. Cap. Ennis. Also an island at the mouth of Clew Bay, Co. Mayo, Ireland.

Clare, John, the peasant poet of Northamptonshire, born near Peterborough; wrote *Poems Descriptive of Rural*

Life and Scenery, which attracted attention, and even admiration, and at length, with others, brought him a small annuity, which he wasted in speculation; fell into despondency, and died in a lunatic asylum. (1793-1864).

Clare, *de*, Family of, descended from the Fearless, Duke of Normandy. Godfrey's younger grandson, Richard FitzGilbert, took surname from the castle and honour of Clare in Suffolk. Richard's grandson was made Earl of Hertford; and a successor, Richard (d. 1217), was father of Gilbert, Earl of Gloucester and Hertford (d. 1230). Gilbert, Earl of Gloucester and Hertford (1242-1295), was father of Elizabeth, who married John de Burgh, son of the Earl of Ulster, and founded (1347) Clare College, Cambridge (d. 1360). The seventeenth holder of the honour of Clare was Edward IV., so that it became merged in the Crown.

Clare, *St.*, a virgin and abbess, born at Poor Clares, nuns of the Franciscan rule. (1194-1253).

Claremont, town of Cape Province, South Africa, 6½ m. from Cape Town. Here are the National Botanic Gardens and the site of Herschell's observatory. Pop. (white) 6,000.

Clarence, *George*, Duke of, brother of treason he was condemned to death, and being allowed to choose the manner of his death, is said to have elected to die by drowning in a butt of Malmsey wine. (1449-1478). The last to bear the title was Albert Victor, eldest son of King Edward VII.

Clarenceux, or *Clarenceux*, one of the arms. His jurisdiction extends from and includes all England S. of the Trent.

Clarendon, a place 2 m. SE. of Salisbury, England, in the royal palace of which the magnates of England, both lay and clerical, met in 1164 under Henry II., and issued a set of ordinances, called the *Constitutions of Clarendon*, 16 in number, to limit the power of the Church and assert the rights of the Crown in ecclesiastical affairs.



Clarendon, *Edward* CLARENCEUX *Hyde*, Earl KING-OF-ARMS

of, sat in the Short and the Long Parliaments on the popular side, but during the Civil War became a devoted royalist; was from 1641 one of the chief advisers of the King; on the failure of the royal cause, took refuge first in Jersey, and then in Holland with the Prince of Wales; contributed to the Restoration; came back with Charles, and became Lord Chancellor; fell into disfavour and quitted England in 1687; died at Rouen; wrote among other works, a *History of the Rebellion*. (1609-1674).

Clarendon, *George Villiers*, fourth Earl served as a Cabinet minister under Lord Melbourne, Lord John Russell twice, Lord Aberdeen, Lord Palmerston and Mr. Gladstone. As Foreign Secretary handled the crisis which led to the Crimean War; was Lord-Lieutenant of Ireland at the time of the potato failure, and represented Britain at the Congress of Paris. (1800-1870).

Clarendon Code, so called after first Earl of Clarendon, are the four laws against nonconformists, viz., the Corporation Act, 1661; Act of Uniformity, 1662; Conventicle Act, 1664; and the Five Mile Act, 1665. The Corporation Act compelled all

holders of municipal office to take the Sacrament according to the rites of the Church of England. The Act of Uniformity enjoined episcopal ordination and the use of the Book of Common Prayer and compelled ministers and schoolmasters to take the oath of non-resistance. The Conventicle Act forbade, under heavy penalties, all assemblies for religious worship other than those of the Church of England. By the Five Mile Act, clergy who would not take the oath of non-resistance imposed on all who had not subscribed to the Act of Uniformity were forbidden to settle within 5 miles of a corporate town.

Claret, the general English term for the red wines of Bordeaux, produced principally in the prov. of Gironde.

Clarinet, a wooden wind instrument of music. It has a reed mouth-piece through which it is sounded, and a tube having 18 holes, 13 of which have keys.

Clarion, a kind of trumpet with a narrow tube giving a very shrill sound. It is also an organ stop of similar note.

Clark, *Francis Edward*, originally surname Symmes, founder of the Young People's Society of Christian Endeavour in 1881, was born at Aymer, Quebec, and adopted by an uncle at Auburndale, Mass., whose name he took. President of the World's Christian Endeavour Union which was organised 1895, and incorporated 1902. (1851-1927).

Clarke, *Edward Daniel*, a celebrated English traveller, born in Sussex; visited Scandinavia, Russia, Circassia, Asia Minor, Syria, Palestine, Egypt and Greece; brought home 100 MSS. to enrich the library of Cambridge, the colossal statue of the Eleusian Ceres, and the sarcophagus of Alexander, now in the British Museum; was professor of Mineralogy at Cambridge University, 1808; his *Travels* were published in six volumes. (1769-1822).

Clarke, *Sir Edward George*, British lawyer. After early struggles as a reporter, he was called to the Bar in 1869, made his name in the Penge murder trial; entered Parliament in 1880 as a Conservative, and was Solicitor-General from 1886 to 1892. (1841-1931).

Clarke, *William Branwhite*, English geologist, born in Suffolk; graduated at Jesus College, Cambridge; entered Church, 1821. Went to Australia, where his announcement in 1841 of his discovery of gold in Macquarie R. preluded the gold rush of 1851. Discovered tin in Australia, 1849; and diamonds, 1859. Elected F.R.S. in 1876 and honoured by the Geological Society of London, 1877. (1798-1878).

Clarkson, *Thomas*, born in Wisbech, Cambridgeshire, the great English anti-slavery advocate, who lived to see in 1833 the abolition in the British Empire of the slavery he denounced, in which achievement he was assisted by the powerful advocacy in Parliament of Wilberforce. (1760-1846).

Classic Races, the English horse-races, the St. Leger, the Two Thousand Guineas and the One Thousand Guineas.

Classics, originally, and often still, the standard authors in the literature of Greece or Rome, now authors in any literature that represent it at its best, when, as Goethe has it, it is "vigorous, fresh, joyous, and healthy."

Claude Lorrain (properly *Claude Gellée*), a great landscape painter, born in Lorraine, of poor parents, and apprenticed to a pastry-cook; went as such to Rome; became servant and colour-grinder to Tassi, who instructed him in his art; was eminent in his treatment of aerial perspective, and an artist whom it was Turner's ambition to rival. He compiled six books (called *Libri di Verità*) of outline

drawings of his paintings in order to avoid repetition and to detect imitations. These have since been engraved and published. His pictures are found in every gallery in Europe, and a goodly number of them are to be met with in England. (1600-1682).

Claudian, a Latin epic poet of the 4th Century, born in Alexandria, panegyrist of Stilicho on his victory over Alaric; a not unworthy successor of Catullus and Propertius, though his native tongue was Greek.

Claudius, **Appius**, a Roman decemvir and patrician in 451 B.C.; outraged Virginia, a beautiful plebeian damsel, whom her father, on discovering the crime, killed with a knife snatched from a butcher's stall, rousing thereby the popular rage against the decemvir, who was cast into prison, where he killed himself, 449 B.C.

Claudius, **Appius**, censor in 312-307 B.C.; wrought important changes in the Roman constitution; set on foot the construction of the Applan Way and the Applan Aqueduct, named after him.

Claudius I., **Tiberius Drusus**, sur-named **Germanicus**, brother of Tiberius, Emperor of Rome from 41 to 54, born at Lyons; after spending 50 years of his life in private, occupying himself in literary study, was, on the death of Caligula, raised, very much against his wish, by the soldiers to the imperial throne, a post which he filled with honour to himself and benefit to the State; but he was too much controlled by his wives, of whom he had in succession four, till the last of them, Agrippina, had him poisoned to make way for her son Nero. (10 B.C.-54 A.D.).

Claudius II., surnamed **Gothicus**, Roman Emperor from 268 to 270; an excellent prince and a good general; distinguished himself by his ability and courage against the Goths and other hordes of barbarians.

Clausen, **Sir George**, British painter, of Danish parentage. He studied at S. Kensington and in Paris, was elected A.R.A. in 1895 and R.A. in 1908. His "Gleaners Returning", and "The Girl at the Gate" are in the Tate Gallery. Knighted 1927. (1852-).

Clausewitz, **Karl von**, a Prussian general, born at Burg; distinguished himself against Napoleon in Russia; an authority on the art of war, on which he wrote a treatise in three volumes, entitled *Vom Krieg*. (1780-1831).

Claustrophobia, a morbid dread or dislike of confinement, as within closed rooms and narrow passages.

Claverhouse, **John Graham of, Vis-count Dundee**, commenced life as a soldier in France and Holland; on his return to Scotland in 1677 was appointed by Charles II. to the command of a troop to suppress the Covenanters; was defeated at Drumlog 1679, but by the help of Monmouth had his revenge at Bothwell Brig; affected to support the Revolution, but intrigued in favour of the Stuarts; raised in Scotland a force in their behalf; was met at Killiecrankie by General Mackay, where he fell. (1649-1689).

Clavichord, or **Clavicord**, an ancient musical instrument in

form like a harpsichord; one of the forerunners of the modern pianoforte. The keys had brass pins projecting, which struck the strings and set them in motion.



CLAVICHORD

Clavicle, or collar-bone, which in man is connected with the breast-bone and the shoulder-blade. With the latter it forms the arm socket. It is easily fractured or dislocated, though such injuries are seldom of a very serious nature.

Clavie, **Burning the**, an ancient Scottish custom, now limited to the village of Burghhead, held on Jan. 12, the New Year's day of old times. A bonfire is made of split casks and a piece of charcoal from one of the burned casks is placed in the chimneys to scare away evil spirits.

Clavius, **Christopherus (Christoph Claus)**, mathematician and astronomer; born at Bamberg, Bavaria. Became Jesuit, 1538, and was called to Rome, where he was employed by Pope Gregory XIII. to superintend reform of the Calendar. Called "the Euclid of the 16th Century." (1537-1612).

Clay, a plastic material abundant in silicates of aluminum with varying quantities of iron, magnesia, potash and soda, and used in the manufacture of bricks and earthenware. It is composed of the finer particles resulting from the weathering of rocks.

Clay, **Frederick**, English composer, born in Paris; son of James Clay, writer on whist; wrote and conducted much light music for the stage, but is best known as composer of *I'll Sing Thee Songs of Araby*. (1839-1889).

Clay Cross, a market town of Derbyshire, England, the centre of a large coal- and iron-mining district. Pop. 8,700.

Claymore, the two-edged broadsword of the ancient highlanders of Scotland. The name is also improperly applied to the basket-hilted single-edged sword of the 16th Century.

Clayton, **Rev. Philip Thomas Byard**, British padre, and one of the founders of Talbot House (Toc H) in Popperinghe, near Ypres, during the Great War, which was continued as a peacetime movement among young men. (1885-).

Clayton-Bulwer Treaty, 1850, pledged Great Britain and the U.S.A. to respect the neutrality of the proposed ship canal across Central America. The neutrality rule was incorporated in the Hay-Pauncoforte Treaty, 1902, relating to the Panama Canal.

Clayton-le-Moors, a market town of Lancashire, England, 5 m. N.E. of Blackburn. Here are collieries, calico-printing and machinery works and cotton mills. Pop. 7,900.

Clazomenae, an ancient town of Ionia, between Smyrna and Chios (modern Vurla), and one of the Ionian Confederation of Twelve Cities. It is noted for the terra-cotta sarcophagi found there. It was founded by the Ionians 98 years before the foundation of Rome and was the birthplace of Anaxagoras and other famous men.

Clear, **Cape**, a headland at the S. of Clear Island in Co. Cork, most southerly point of Ireland, and the first land sighted coming from America.

Clearchus, a Spartan general who accompanied Cyrus on his expedition against Artaxerxes; commanded the retreat of the Ten Thousand; was put to death by Tissaphernes in 401 B.C. and replaced by Xenophon.

Clearing-house, a house for inter-pective claims of banks and of railway companies. The London bankers' Clearing-house enables the claims of the member banks to be set off against each other, only the balance of account (e.g., cheques) being met by a transfer of funds at the Bank of England.

Darwen, a market town of Lancashire, England, 20 m. NW. of Manchester, with cotton mills, blast-furnaces, paper-mills, collieries and stone quarries. Pop. 36,010.

Darwin, or Port Darwin, seaport of Northern Territory, Australia, with a fine safe harbour and pearl fisheries. It is also an air port. Pop. 1,000.

Darwin, Charles Galton, mathematical physicist, son of Sir G. H. Darwin and grandson of Charles Darwin. He published many papers on mathematical and physical subjects; appointed Tait professor at Edinburgh University in 1923. (1887-).

Darwin, Charles Robert, great English naturalist and biologist, born at Shrewsbury, grandson of Erasmus Darwin on his father's side, and of Josiah Wedgwood on his mother's; studied at Edinburgh and Cambridge; in 1831 accompanied, as naturalist without salary, the *Beagle* on her voyage of exploration in the Southern Seas, on the condition that he should have the entire disposal of his collections, which he ultimately distributed among various public institutions. He was absent from England for five years, and on his return published his *Naturalist's Voyage Round the World*, in 1839-1843, accounts of the fruits of his researches and observations in the departments of geology and natural history during that voyage, in 1842 his treatise on the *Structure and Distribution of Coral Reefs*, and in 1859 his work on the *Origin of Species by Means of Natural Selection*, a work which proved epoch-making and went far to revolutionise thought in the scientific study of life. This work was followed by others more or less confirmatory, finishing off with *The Descent of Man and Selection in Relation to Sex*, in 1871, in which he traced the human race to an extinct animal related to that which produced the orang-outang, the chimpanzee and the gorilla. He may be said to have taken evolution out of the region of pure imagination, and, by giving it a basis of fact, to have set it up as a reasonable working hypothesis. Other works of his include *The Variation of Plants and Animals under Domestication*, *The Effects of Cross and Self-Fertilisation* and *The Expression of the Emotions in Man and Animals*. He was buried in Westminster Abbey. (1809-1882).



CHARLES DARWIN

Darwin, Erasmus, physician and natural philosopher, grandfather of Charles Darwin; born in Nottinghamshire; studied at Cambridge and Edinburgh; practised medicine in Lichfield, and finally settled in Derby; occupied his mind with the study of fanciful analogies in the different spheres of nature, and committed his views to verse. His chief works were the *Botanic Garden* and the *Zoonomia*; or, *The Laws of Organic Life*, in which he anticipated the evolutionary doctrines of Lamarck. (1731-1802).

Darwin, Sir George Howard, mathematical physicist and astronomer; second son of Charles Darwin. He carried out much work upon tides, rotating masses and the moon. He was appointed Plumian professor at Cambridge in 1883. (1845-1912).

Darwinian Theory, the theory formulated by Charles Darwin (q.v.) that the several species of plants and animals now in existence were not created in their present form but have

been evolved by sexual selection, with modifications of structure, from cruder forms.

Dasyure, the scientific name for a small Australian marsupial, known

popularly as the Native Cat; derives its name from its thick grey-and-white coat and bushy tail; of nocturnal habits; found in Australia, Tasmania, New Guinea and adjacent islands. They live on eggs, small animals and insects, and belong to the family Dasyuridae, which includes, among other highly developed carnivorous marsupials, the Thylacine or Pouched Wolf, now nearly extinct, and the Tasmanian Devil.



DASYURE

Date, the fruit of the date palm (*Phoenix dactylifera*), a tree of fairly wide distribution, being native to Arabia, N. Africa and SW. Asia, and grown elsewhere. As a tree it is of great beauty, and is notable for the old leaf-bases on the trunk and for its head of pinnate leaves. The fruit, which is eaten fresh in Arabia and is an important article of food there, is well known elsewhere in dried form. The fleshy portion, being rich in sugar, is eaten raw, roasted or ground and pressed into cakes. Large quantities are exported. The stone is ground by Arabs into camel-food. The leaves are used in the manufacture of hats, mats, thatch, etc.

Daubenton, Louis Jean Marie, a French naturalist, associated with Buffon in the preparation of the first 15 vols. of his *Histoire Naturelle*, and helped him materially by the accuracy of his knowledge, as well as his literary qualifications; contributed largely to the *Encyclopédie*, and was for 50 years curator of the Cabinet of Natural History at Paris. (1716-1800).

D'Aubusson, Pierre. See Aubusson, Pierre d'.

Daudet, Alphonse, a noted French novelist, of great versatility, born at Nîmes, of poor parents; early selected literature as his career in life; wrote poems and plays, and contributed to the *Figaro* and other journals; worked up into his novels characters and situations that had come under his own observation, often in too satirical a vein to become universally popular; has been likened to Dickens in his choice of subjects and style of treatment. Among his most popular works are *Lettres de mon Moulin*; *Tartarin de Tarascon*, *Jack* and *Les Rois en Exil*. (1840-1897).

Dauphin, a name originally given to the *Seigneurs* of the province of Dauphiné, in allusion to the dolphin which several members of the family wore as a badge, but in 1349 given to the heir-presumptive to the crown of France, when Humbert II., Dauphin of Vienne, ceded Dauphiné to Philippe of Valois, on condition that the eldest son of the King of France should assume the name. The title was abolished after the Revolution of 1830.

Dauphiné, one of the old provinces of France, of which the capital was Grenoble; ceded to the French crown under Philippe II. in 1349. It now forms the depts. of Isère, Drôme and Hautes Alpes.

Davenant, Sir William, an English playwright, godson of William Shakespeare, born at Oxford. He succeeded Ben Jonson as Poet Laureate, and was for a time manager of Drury Lane; was knighted by Charles I. for his zeal in the Royalist cause. His theatrical enterprise had small success during the Commonwealth, but interest in it revived with the Restoration.

at which time the drama broke loose from the restrictions imposed upon it by Puritanism, to indulge in considerable licence. He was the author of *Gondibert*, a tedious and unequal romantic epic, and *The Siege of Rhodes*, which is claimed as marking the foundation of the English opera. Among his plays, written between 1628 and 1638, the best are *The Cruel Brother* and *The Will*. (1606-1668).

Daventry, a market town of Northamptonshire, England, 12 m. W. of Northampton. Boots and shoes are made. Here is the important short-wave Empire broadcasting station. Pop. 3,608.

David, King of Israel, 11th Century B.C., born in Bethlehem. He was the younger son of Jesse, and tended the flocks of his father. He slew the Philistine giant, Goliath, with a stone and a sling; was anointed by Samuel, and succeeded Saul as king in spite of Saul's mad opposition in the later years of his reign, which drove him finally into exile; conquered the Philistines; captured and set up his throne in Jerusalem and reigned thirty-three years. He ruled as an Eastern potentate, had more than one wife, and many children, from and on account of whom (especially Absalom) he suffered much, and was succeeded by Solomon. He was in his youth a talented harpist, but though the book of Psalms was till recently accepted by the Church as wholly his, that hypothesis no longer stands the test of criticism. His story is told in the Books of Kings and Chronicles.

David I., King of Scotland, younger son of Malcolm Canmore and Queen Margaret; was brought up at the English Court; was Prince of Cumbria under the reign of his brother Alexander, on whose decease he succeeded to the throne in 1124; on making a raid in England in support of Queen Matilda, to whom he had sworn fealty, he was defeated at Northallerton in the Battle of the Standard; addressed himself after this to the unification of the country and civilisation of his subjects; founded and endowed bishoprics and abbeys at the expense of the Crown; the death of his son Henry was a great grief to him, and shortened his life. (1084-1153).

David II., King of Scotland, son of Robert the Bruce, born at Dunfermline; succeeded his father when a boy of four, and was the first Scottish king to be anointed with oil in token of reigning as an independent monarch. When Edward Balliol, with the help of the English King Edward III., defeated the Scots at Halidon Hill, he fled the country, and spent from 1334 to 1341 in France; was taken prisoner by the English at the Battle of Neville's Cross, and was afterwards, till his death, dependent on England. (1324-1371).

David, Gérard, a Flemish painter; painted the life of Christ, his greatest works being great altar-pieces, of which one, "The Marriage of St. Catherine," is in the National Gallery, London. (c. 1450-1523).

of the Revolution; joined the Jacobin Club, swore eternal friendship with Robespierre; designed a "statue of Nature with two *mammelles* spouting out water" for the deputies to drink to, and another of the sovereign people, "high as Salisbury steeple"; was sentenced to the guillotine, but escaped out of regard for his merit as an artist; appointed first painter by Napoleon, but on the Restoration was banished and went to Brussels, where he died; among his paintings are "The Oath of the Horatii," "The Rape of the Sabinas," "The Death of Socrates" and "The Coronation." (1748-1825).

David, Pierre Jean, known as David of Angers; a French sculptor, born at Angers; came to Paris, and afterwards proceeded to Rome and was associated with Canova; executed in Paris a statue of the Great Condé, and thereafter the pediment of the Pantheon, his greatest work, as well as numerous medallions of great men; when on a visit to Weimar he also modelled a bust of Goethe. (1789-1856).

David, or Dewi, St., the patron saint of Wales, lived about the 6th Century; Archbishop of Caerleon; transferred his See to St. David's; founded churches and opposed Pelagianism. Little is known of his life. Festival March 1.

Davidson, John, poet and journalist, born at Barrhead, Renfrewshire, Scotland; wrote novels and plays as well as poems, his most important work being *Smith, a Tragic Farce*; *Scaramouch in Name*; *Ballads and Songs*; *Fleet Street Eclogues* (especially the Second Series); *New Ballads*; and *The Last Ballad*. He was drowned at sea in circumstances which pointed to suicide. (1857-1909).

Davidson, Lord (Dr. Randall Davidson), Archbishop of Canterbury.

As a young man he acted as domestic chaplain to Queen Victoria; married a daughter of Archbishop Tait, and was made Dean of Windsor. Successively Bishop of Rochester and Winchester, he became Archbishop of Canterbury in 1903, resigning in 1928, in which year he was raised to the temporal peerage as a baron. Two notable events in his career were his crowning of King George V. in 1911 and his championship of the new Prayer Book, which was rejected in the House of Commons in 1927 and 1928. (1848-1930).



LORD DAVIDSON

Davies, Ben, a popular tenor vocalist, born near Swansea, sang in light opera (e.g., *Dorothy*) first of all, then in Carl Rosa for some years. Left stage for concert platform and for oratorio work. (1858-).

Davies, Sir Henry Walford, English composer and conductor, born at Oswestry, Shropshire, organist of St. George's Chapel, Windsor, 1924. Prior to that he had held posts as professor of Music at Aberystwyth, director of music and chairman of the National Council of Music, University of Wales and Gresham professor of Music and for a time (1903-1907) had conducted the London Bach choir. Composer of two symphonies, choral works, etc. Knighted 1922. Appointed Master of the King's Music, 1934. (1869-).

Davies, Sir John, poet and statesman, born in Wiltshire; wrote two philosophic poems, *The Orchestra*, a poem in which the world is exhibited as a dance, and *Noce Teipsum* (Know Thyself), a poem on human learning and the immortality of the soul; became a favourite with James I., and was sent as Attorney-General to Ireland. (1569-1626).

Davies, William Henry, British poet. Born in Newport (Mon.), he, to quote his own words, "picked up knowledge among tramps in America, on cattle-boats and in common lodging-houses of England." He acted as a hawker on coming back from America, sang hymns in the street, and published his first volume of poems in 1904, at the age of 33, publishing several subsequently. He was author also of *The Autobiography of a Super-Tramp*, a work to which George Bernard Shaw wrote a preface. (1871-).

Davis, Jefferson, President of the Confederate States during the American Civil War; born in Kentucky; entered the army, fought against the Indians; turned cotton-planter; entered Congress as a Democrat; distinguished himself in the Mexican War; defended slave-holding and the interests of slave-holding States; was chosen President of the Confederate States and headed the conflict with the North; died on defeat, which he was the last to admit; was arrested and imprisoned. He was released after two years and thereupon retired into private life, and wrote a *History of the Rise and Fall of the Confederate Government*. (1808-1889).

Davis, or Davys, John, an English navigator, born near Dartmouth; took early to the sea; conducted (1585-1587) three expeditions to the Arctic Seas in quest of a N.W. passage to India and China, as far N. as 73°; discovered the strait which bears his name; sailed as pilot in two South Sea expeditions, and was killed by Japanese pirates near Malacca; wrote the *Seaman's Secrets*. (c. 1550-1605).

Davis, Thomas Osborne, an Irish patriot and poet, born at Mallow; educated at Trinity College, Dublin, and called to the Irish Bar; took to journalism in the interest of Irish nationality; founded the *Nation* newspaper, and by his contributions to it, which included a series of noteworthy lyrics, did much to wake the intelligence of the country to national interests; author of *An Essay on Irish Songs*. (1814-1845).

Davis Cup, a lawn-tennis trophy connected for internationally, presented in 1900 by Dwight F. Davis, an American player, who represented his country in the first two contests. It is a knock-out tournament for men, consisting of four matches of five sets of singles, and one doubles match of five sets, the winners being the best of the five matches. Competing nations can challenge in either the American or European group, the challenge round being played in the country which holds the cup. It was held by Great Britain from 1935 (when it was won from France) to 1937, when, after some of the hardest play ever seen at Wimbledon, America won the cup. In 1938 Australia were challengers to America.

Davison, William, of Scottish birth, Secretary to Queen Elizabeth. He was employed on diplomatic work; took part in the trial of Mary, Queen of Scots, and secured Elizabeth's signature to the execution warrant. He incurred her displeasure as a result, was arrested and committed to the Tower, fined heavily and, though released, never restored to favour. (1541-1608).

Davis Strait, the strait between Land and connecting Baffin Bay with the Atlantic, discovered by John Davis (q.v.).

Davitt, Michael, a noted Irish patriot, born in Co. Mayo, son of a peasant, who, being evicted, settled in Lancashire; joined the Fenian movement, and was sentenced to 15 years' penal servitude; released on ticket-of-leave after 7 years; helped Parnell to found the Land League; was for over a year imprisoned again for breaking his ticket-of-leave; published in 1885 *Leaves from a Prison Diary*; entered Parliament in 1895 for West Mayo, though he had been elected several times before—e.g., in 1882, when as a convict, he was not allowed to sit, and in 1892, when he was unseated on petition. (1846-1906).

1845-1912 **Platz,** a village 5,015 ft. above the sea-level, in Davos, Switzerland; ten of Grisons, Switzerland; by Charles Darwin in winter by invalids suffering from plants and animals, the dry air and sun not treated in the being favourable for them; for winter sports.

Davout, Louis Nicolas, Duke of Angoulême, städt, Prince of Eckmühl, Marshal of France, born at Annoux, in Burgundy; was fellow-student with Napoleon at the military school in Brienne; entered the army in 1788, served in the Revolutionary wars under Dumouriez and Desaix, and became general; served under Bonaparte in Egypt; distinguished himself at Austerlitz, Angers, Eckmühl, and Wagram; was made governor of Hamburg; accompanied Napoleon to Moscow; returned to Hamburg, and defended it during a siege; was made Minister of War in 1815, and assisted Napoleon in his preparations for the final struggle at Waterloo; commanded the remains of the French army which capitulated under the walls of Paris; adhered to the Bourbon dynasty on its return, and was made a peer; was famous before all the generals of Napoleon for his rigour in discipline. (1770-1823).

Davy, Sir Humphry, a great English chemist, born at Penzance; professor at the Royal Institution, London, 1802-1812; conceived early in life a passion for the science in which he made so many discoveries; made experiments on gases and the respiration of them, particularly nitrous oxide and carbonic acid gas; discovered the function of plants in decomposing the latter in the atmosphere, prepared sodium and potassium by electrolysis of their fused hydroxides, proved chlorine to be an element and showed its affinity with iodine; invented the safety-lamp, his best-known achievement; he held appointments and lectured in connection with all these discoveries and their applications, and received a baronetcy and numerous other honours for his services; died at Geneva. (1778-1829).

Davy Jones' Locker, the sailors' name for the sea as a place of safe-keeping, and the resting-place of those who die at sea.

Davy Lamp, a lamp encased in gauze wire which, while it admits oxygen to feed the flame, prevents the heat of the flame being communicated to any combustible or explosive gas outside. Invented by Sir Humphry Davy in 1816.

Dawes, Brigadier-General Charles Gates, American politician and soldier. Working at the Bar, he was comparatively unknown till he went to France in 1917 with the American troops. On his return he was made Director of the Budget in 1921, and elected Vice-President of the U.S.A. in 1925, after the Reparations Commission had called on him to preside in 1923 over a committee which re-established German finances after the collapse of the mark. He was American Ambassador in London, 1929, and took part in negotiations for naval disarmament. He took charge (1932) of the Reconstruction Corporation. (1865-).

Dawes Plan, the scheme to stabilise German currency and reparations payments drawn up in 1924 by a committee over which Gen. C. G. Dawes (q.v.) presided. The standard German reparations payment was fixed at 2,500,000,000 marks per annum, which was actually reached in 1928-1929. The Dawes Plan was replaced by the Young Plan (q.v.) in 1930.

Dawkins, Sir William Boyd, geologist and palaeontologist, born in Montgomeryshire, Wales; has written *Cave Hunting and Early Man in Britain*, and in 1882 was employed by the Channel Tunnel Committee to make a survey of the French and English coasts. (1837-1929).



DAVY LAMP

Dawlish, a seaside resort of S. Devon, England, 3 m. NE. of Teignmouth. Pop. 4,578.

Dawson, a river of Queensland, Australia, tributary of the Fitzroy. It flows through a coalfield, as yet incompletely developed.

Dawson, **George Geoffrey**, English journalist. Educated at Eton and Oxford, he was private secretary to Lord Milner in South Africa, 1901-1905, became editor of the *Times* in 1912, resigned the editorship in 1919, and was reappointed four years later. (1874-).

Dawson, **Sir John William**, geologist and naturalist, born in Picton, Nova Scotia; studied in Edinburgh; distinguished himself as a palaeontologist; 1855-1893 professor of Geology and principal of McGill University, Montreal; president of the British Association in 1886; published in 1872 *Story of the Earth and Man*; in 1877 *Origin of the World*; and later, *Geology and History*; he opposed the Darwinian theory as to the origin of species. (1820-1899).

Dawson City, capital of Yukon Territory, Canada, on the Yukon R., and centre of the Klondyke goldfields. Its population, 30,000 during the gold rush of 1898, is now only 800.

Dawson of Penn., **Sir Bertrand Edward Dawson**, first Viscount, G.C.V.O., K.C.B., K.C.M.G., physician, studied at University College and at the London Hospital, where he was physician from 1906. Authority on gastric affections. Physician Extraordinary to Edward VII., Physician in Ordinary to George V. and Edward VIII. Raised to the peerage as a Baron, 1920; Privy Councillor, 1929; President of the Royal College of Physicians, 1931; created a Viscount, 1936. (1865-).

Day, **John**, English dramatist, contemporary of Ben Jonson; collaborator with Dekker and others; author of the *Parliament of Bees*, a comedy in which all the characters are bees. (1574-1640?).

Dayaks. See **Dyaks**.

Daylight Saving, an expedient of moving clocks on during the spring, summer and autumn months, in order to secure a little extra daylight for workers. The amount that clocks are moved on varies from 20 minutes in Sarawak and the Gold Coast to 1 hour in Great Britain, Ireland, France and the majority of other countries. Though Summer time has been adopted in many countries, it has not been adopted in all, and the actual date on which clocks are moved forward is not standard. In England, by the Acts of 1922, 1924 and 1925, it has been established as a permanent arrangement that clocks shall be put forward one hour at 2 a.m. on the morning following the third Saturday in April (unless that day is Easter day, in which case clocks are put on at 2 a.m. on the morning of the day following the second Saturday in April) and put back again at 2 a.m. on the morning following the first Saturday in October. Although the idea of Summer time was first originated in America by Benjamin Franklin, its practice is purely an outcome of the War, when it became necessary in order to economise fuel and light in the evenings. In England the idea was first championed by William Willett in 1907, but did not come into operation until May 21, 1916.

Dayton, a prosperous town in Ohio, U.S.A., on the Miami R., a great railway centre and manufacturing town, particularly of electrical equipment and machinery, aeroplane parts, etc. It suffered severely from flooding in 1913, but flood-control works have minimised the possibility of a recurrence. Pop. 200,948. There is

another town of the same name in Tennessee, U.S.A., which gained notoriety in 1925, when a science master in the local high school was found guilty of violating a State law by teaching the evolution of man from the lower animals. Pop. 2,600.

Daytona Beach, a town in Florida, U.S.A., with a long stretch of firm sand used for motor speed trials. Pop. 16,598.

Deacon, an officer in the Christian Church whose chief functions were, in the 3rd Century, the care of the poor, the collection and distribution of alms and attendance on the bishop. In time those duties, which partook of the nature of social work, were transferred to hospitals and other charitable organisations. To-day in the Catholic and Anglican churches the post is considered a preliminary step to the priesthood, in the Catholic Church being the third order of the ministry, in the Church of England a man not under 23 years of age who, after a year of such service is usually ordained. In the Church of England a deacon may conduct the services, but not consecrate the elements. In the Presbyterian Church a deacon is a layman elected to manage the church affairs, and in particular to take charge of finances. The office is mentioned in the New Testament, where the qualifications appear to be substantially the same as those of a bishop. (See 1 Tim. iii.)

Deaconess, an office in the early Christian Church, the function of the holders of which was to assist at baptisms, minister to the sick and conduct women to their seats in Church. An order of Deaconesses existed in the Eastern Church from the 4th Century, but fell into abeyance in the Middle Ages. It was revived in the Church of England in the 19th Century for the purpose of carrying on social work under licence from a bishop and of carrying on missionary work.

Deadly Nightshade (*Atropa belladonna*), a highly poisonous plant with a berry and leaves which yield belladonna (q.v.) used medicinally to allay pain. See also *Atropine*.

Deadman's Handle, a device attached to the control gear of an electric train which ensures that the train is automatically brought to rest if the driver releases his grip through sudden illness.

Dead Nettle, a genus (*Lamium*) of herbs of the order

Labiatae native to temperate countries as wayside weeds. The principal varieties found in England are White (*L. album*), Purple (*L. purpureum*) and Yellow Archangel (*L. Galeobdolon*).

Dead Sea, the Salt Sea and the Asphalt Lake; a sea, or lake, of Palestine, lying between Palestine and Trans-Jordan, formed by the waters of the Jordan, 46 m. long, 10 m. broad, and in some parts 1,300 ft. deep, while its surface is 1,315 ft. below the level of the Mediterranean. It has no outlet, but its waters, owing to the great heat, evaporate rapidly, and are intensely salt. It is enclosed N. and W. by steep mountains, rising to a height of 4,000 ft.

Dead's Part, in Scotch law, the movable estate which may be bequeathed by will or, in intestacy, devolves upon next-of-kin. A person may not will all his money out of his family according to Scotch Law, the



WHITE DEAD NETTLE

properties which he may so bequeath varying from one-half to only one-third in the case of a married man with children.

Deaf-mute, a person unable to hear or speak. The condition is sometimes congenital and sometimes acquired. In the former case intermarriage of deaf-mutes and inbreeding are common causes. Acquired deaf-mutism frequently arises from an affection of the middle ear, often after some febrile disease, such as scarlet fever, small-pox, etc. Special education in language is necessary if imbecility is to be avoided, and visual training, including the two-handed manual alphabet, is practised widely in England and America. The Elementary Education Act of 1870-1891 provides for the compulsory education of deaf-mute children, and training in such trades as bookbinding, carpentry, cigar manufacture, jewellery, law-writing and instrument-making is successfully undertaken. Societies and institutions in England for the welfare of deaf-mutes include the Royal School for Deaf and Dumb Children, Margate, and the Royal Association in Aid of the Deaf and Dumb, 413, Oxford Street, London, W. 1.

Deafness, a diminished or destroyed congenital or acquired. When congenital, it arises from a malformation of the ear, and is accompanied by dumbness (see *Deaf-mute*). When acquired, it is caused by a number of diseases affecting different parts of the ear. Vitiating secretion of the wax is a common cause, while inflammation of the auditory passage, leading to formation of purulent matter, ulceration and perforation of the drum, is another cause. Measles, scarlet fever, etc., often lead to impairment of the hearing. When the ear is blocked with hardened wax, almond oil should be applied to soften it, and syringing is then efficacious. Perforations of the membrane can be plugged, and a catheter is often of advantage where the eustachian tube is closed, while a variety of instruments are available from instrument-makers for the treatment of various types of deafness. Injury to the external ear alone has little or no effect upon hearing where there is no associated injury of the inner ear. There are a number of societies for the deaf, including National Benevolent Society for the Deaf, 23, Queen Anne's Gate, London, S.W. 1; National Institute for the Deaf, 105, Gower Street, London, W.C. 1, and the Deafened Ex-Service Men's Fund, 23, Queen Anne's Gate, London, S.W. 1.

Deal, a town 14 m. ESE. of Canterbury, on the E. of Kent, opposite the Goodwin Sands, with a fine sea-beach; much resorted to for sea-angling. Pop. 13,680.

Dean, the name of various ecclesiastical dignitaries. 1. *Rural Dean*, a parish priest who also presides over the clergy of a deanery, a subdivision of an archdeaconry. He has the care of a part of a diocese. In the Church of England they have an especial duty to see that the fabric of churches and parsonages is maintained in proper repair. 2. *Dean in a Cathedral Church*, one who presides over the canons who form the bishop's council of the dean and chapter. In some cases the office is included in that of a bishop. 3. *Deans of Peculiarities*, being Deans of certain "peculiar" churches and having cure of souls but no chapter, and not subject to visitation by the bishop of the diocese. Such are the deaneries of Battle (Sussex), Stamford (Rutland) and Bocking (Essex). The title is also used of the judge of the Court of Arches, the chief court and consistory of the Archbishop of Canterbury, and of officers of the English Universities charged with the discipline of a college.

Dean, Forest of, a forest in the W. of Gloucestershire, between the Severn and the Wye; the property of the Crown for the most part. There is coal in the district, and the inhabitants are chiefly miners.

Death, cessation of life, which occurs naturally by a process of gradual decay, but in the majority of cases is accidental, being caused by disease or violence and resulting from failure of the action of the heart, the brain or the lungs, these being the vital organs. They are mutually dependent, and the functional failure of one may follow injury to one of the other two. Death from failure of the heart may be sudden, as in syncope, or gradual, as in the action of slow poison or from anæmia. Death resulting from disease of the brain is caused by violence, poison or a clot of blood. Failure of the respiratory organs causes asphyxia (q.v.). Notification of deaths to the Registrar of Births, Deaths and Marriages is compulsory.

Death Duties, consist of estate duty (which includes probate duty), legacy duty, succession duty and increment value duty. Estate duty is a stamp tax payable on estates over £100 at the rate of £1 per cent. on estates up to £500, £2 per cent. up to £1,000 and £3 per cent. up to £5,000 and upon estates of £5,000 or over percentages increasing to 50 per cent. on estates exceeding £2,000,000. It is graduated according to the aggregate net value of the estate after just debts and funeral expenses have been paid. Settlement and estate duty are payable on estates over £1,000 and consist of a further £2 per cent. Legacy and succession duties are taxes on the interest of the beneficiary (q.v.) in personal and real property respectively, received on the death of another. See *Legacy Duty and Succession Duty*.

Death Rate, the number of deaths on a basis of every 1,000 of the population estimated annually, but owing to variations due to sex, age, climate, occupation, etc., the rate is standardised according to a fixed proportion of age and sex groups. The advance of national hygiene is shown by the decrease of the death rate of the British Isles as shown in the following figures: 1880, 20.5; 1900, 18.2; 1920, 12.4; 1930, 11.7; 1935, 11.4. The death rate is higher among non-European races and in tropical regions than in temperate areas. In most countries the death rate of males exceeds that of females, and is higher during the early years of life.

Death's Head Moth (*Acheronia atropos*), the popular name for the largest British hawk moth, its body bearing markings which resemble a skull.

Death-watch Beetle, the popular name

of a number of timber-boring beetles. It is more properly applied to the *Xestobium tessellatum*, an insect responsible for the complete honey-combing of rafters and woodwork in many old buildings. The ticking noise is produced by the insect striking its head against the wood. The *Anobium punctatum* is responsible for the "wormholes" in old furniture but is not properly referred to as a "death-watch beetle." *Atropos divinatoria* is another true "death watch," producing ticking noises.

Deauville, a popular seaside resort on the R. Touques in the dept. of Calvados, Normandy, France.



DEATH-WATCH BEETLE (Magnified)

Debenture, a written acknowledgment of a debt; a deed of mortgage given by a railway or other company for borrowed money, secured on the company's property and registered at Somerset House. Also a certificate entitling an exporter of imported goods to a refund of the duty paid on their importation.

Deborah, a Hebrew prophetess; wife of Lapidoth, and reckoned one of the judges of Israel for her enthusiasm to free her people from the yoke of the Canaanites. She incited Barak to lead out the children of Naphtali and Zebulun against Sisera, the captain of Jabin, the Canaanite's army. Sisera's army was discomfited, and Sisera, taking refuge with Jael, was slain by her. Deborah sang a song of exultation over their defeat instigated at once with plous devotion and with revengeful feeling (see Judges iv. and v.).

Debrecen, a Hungarian town, 130 m. E. of Budapest, the headquarters of Protestantism in the country, and has an amply-equipped Protestant College; is a seat of manufactures and enjoys a large trade in grain and cattle. Pop. 125,000.

Debrett, John, publisher, succeeded John Almon, opposite Burlington House, Piccadilly, 1871. His shop was a Whig resort. First edition of his *Peerage* appeared 1802; the last edition he edited was the 15th, 1823. He published a *Baronetage* in 1808. (d. 1822).

Debt, an ascertained sum of money due from one person to another. As the money must be *due*, rent or the instalment of an annuity is not a debt till it becomes due. But a debt is none the less a debt because the payment is deferred until the happening of an event which must happen. On the other hand, a contract to pay a certain sum on the happening of an event which may never happen does not create a debt unless and until the event happens. A contract to lend money does not create a debt and if the money is not lent the intended borrower is only entitled to damages for the actual loss caused by the breach of contract. A contract of suretyship is not a debt, or, at most, is only a contingent debt. There are three kinds of debts: those of record, i.e., recorded in a court with power to fine and imprison, and judgment debts; specialty debts, i.e., those created by deed or confirmed by special evidence, such as covenants to pay rent on a lease or a bond to repay money with interest, and thirdly, simple contract debts.

Debts are recoverable in the High Court, or by an action in a County Court where the debt does not exceed £100 or those in a foreclosure action up to £500. Actions on simple contract debts are barred after six years and judgment and specialty debts after twelve years (see Limitations, Statutes of). A county-court judgment debt does not carry interest, and interest on debts cannot be demanded unless an agreement to pay such interest has been made. No person can be imprisoned for debt except under certain conditions laid down in the Debtors Act of 1869 and 1936. After judgment for a debt has been pronounced, the various methods of enforcing payment include execution, attachment, sequestration or charging order. A person indebted to a judgment debtor is called a garnishee, and a garnishee order may be sought by the creditor to attach the debt.

Debt Conversion, the process of changing one form of security to another, usually, though not always, for the purpose of reducing indebtedness or reducing rates of interest on indebtedness. The operation is designed to ease a financial situation created by large public debts such as are caused by war, earthquake, famine, etc.

Debussy, Claude Achille, foremost born at St. Germain-en-Laye, studied at Paris Conservatoire; won Grand Prix de Rome with *L'Enfant Prodigue* cantata, 1884. His masterpiece is *L'Après-midi d'un Fœneur*, symphonic poem, 1902. His only opera was *Pelléas et Mélisande*, 1902. (1862-1918).

Decadence, the, a literary movement its reaction against the world as the "decadents" saw it. It had its beginnings in the Romantic Movement, and though its ultimate source is to be found in the poetry of S. T. Coleridge, its chief prophet is Baudelaire. Its characteristic note is defiance in despair. The decadents rejected the lessons of both the French and the Industrial Revolutions, especially in the shape of the bourgeois democracies which had superseded the rule of monarchs and autocracies. Science, in their view, was the mere handmaid of democracy and industrialism, the destroyer of beauty and the agent of the individual's sacrifice to wealth. Some of the names in the movement, besides Baudelaire, are Verlaine, Poe, Mallarmé, Rimbaud, Samain, Henri de Régnier, Maeterlinck, Dehmel, Rilke, Fröding, Oscar Wilde and Verhaeren.

Decalogue, the name of the ten Israel through Moses by the voice of Jehovah on Mount Sinai. There are two versions, one in Exod. xx. 2-17, and the other in Deut. v. 6-21.

Decameron, a collection of tales between 1348 and 1388, conceived of as related in ten days at a country house during the plague at Florence; are of a licentious character, but told with great humour and literary skill. The tales have been drawn upon by generations of writers, including Chaucer, Shakespeare and Tennyson.

Decamps, Alexandre Gabriel, a distinguished French painter, born in Paris; brought up as a boy among the peasants of Picardy; studied under David and Ingres; represented nature as he in his own way saw it, and visited Switzerland and the East, where he found materials for original and powerful pictures. (1803-1860).

De Candolle, Augustin Pyrame, eminent botanist, born at Geneva, of Huguenot descent; studied in Paris; attracted the attention of Cuvier and Lamarck, whom he assisted in their researches; published his *Flore Française*, in six vols.; became professor at Montpellier, and then at Geneva; is the historical successor of Jussieu; his great contribution to botanical science is connected with the classification of plants. (1778-1841).

Decapoda, a sub-class of crustacea, including the crab, lobster, crayfish and shrimp. The name refers to the ten limbs borne on the thorax. It includes crabs, lobsters, shrimp, prawns, etc.

Decapolis,

a league of ten ancient cities E. of the Jordan probably formed c. 63 B.C., after Pompey's campaign in the East.

Deccan, a triangular plateau of from 2,000 to 3,000 ft. of elevation in the Indian peninsula extending S. of the Vindhya Mts.; is densely peopled, and contains some of the richest soil in the globe.

Decemviri (the ten men), the patricians of Rome, with Consul powers, appointed in 451 B.C. to prepare



DECAPODA

a code of laws for the Republic, which, after being agreed upon, were committed first to ten, then to twelve tables, and set up in the Forum that all might read and know the law they lived under.

Decimals, a system of fraction calculation in arithmetic by units of tenths, hence the name. Thus decimal one, .1, equals one tenth; .35, two tenths and five hundredths and so on. The system is less cumbersome than the vulgar fraction, since the four rules involve no process of finding the least common multiple, while it is also comprehended with greater speed. It is the basis of the metric system of weights and measures in use in France, Germany, Russia and other European countries. The system is said to have been adopted from the Hindu system of notation in which the value of a number was increased for every place it was set to the left by ten, whereas in the decimal system the value of a figure is decreased by ten for every place it is set to the right from the decimal point. Decimal fractions can be more readily compared with one another than vulgar fractions. At a glance .825 is greater than .717, but a somewhat laborious operation is necessary to see whether $\frac{1}{3}$ is greater than $\frac{1}{4}$. On the other hand, certain quantities, such as thirds, sevenths, etc., cannot accurately be represented by decimals.

Decius, Roman emperor from 249 to 251; successor of Philip, who sent him to Moesia to appease the country, instead of which he assumed the purple; was a cruel persecutor of the Christians; perished in a morass fighting with the Goths, who were constant enemies all through his reign.

Decius Mus, the name of three Romans, father, son and grandson, who on separate critical emergencies (338, 296, 280 B.C.) devoted themselves in sacrifice in order to secure victory to the Roman arms. The father and son both devoted themselves to the Manes (the infernal deities). The grandson, arrayed in unusual dress, inspired his men by rushing to death in the thickest part of the foe.

Decken, Karl Klaus von der, African explorer, of German extraction, served in the Hanoverian army before attempting a journey from Zanzibar to Lake Nyasa. In company with Kersten, he attempted, in 1863, the ascent of Kilima-Njaro, reaching a height of 13,700 ft. He was murdered by Somalis in E. Africa while engaged on an expedition to explore the East African lakes. (1833-1865).

Declaration of Independence, the document adopted on July 4, 1776, by the Congress of the American colonies of New England in which they publicly declared their independence of England. It was based on a draft by Thomas Jefferson, embodies some of the highest political ideals ever formulated and has proved to be one of the most important and far-reaching documents in the history of the world. It is on permanent exhibition in the Library of Congress. The day is commemorated as a public holiday in America.

Declaration of London, a pronouncement issued by the International Naval Conference in London in 1909 with the object of regulating the mutual rights and responsibilities of countries during war, to establish an International Prize Court and reach an agreement on questions of International Law. The provisions of the Declaration of Paris (1864) were included, and an important ruling defining the area of a blockaded port was made. The articles relate chiefly to questions of blockade, contraband and neutrality of vessels. When the Great War broke out

the Declaration of London was adopted by Orders in Council but, found to be impracticable, was superseded by the Maritime Rights Order in Council of 1918.

Declaration of Paris, an agreement signed by nearly every civilized State at the Congress of Paris in 1856. The U.S.A. and Spain did not sign, but during the American Civil War the Declaration was observed, and in 1898 both countries signed. Its principal articles declared privateering abolished, that neutral goods under a hostile flag, unless contraband, were not liable to confiscation, that a state of blockade was not binding unless the blockade were effective. The general purpose of the Congress declaration was to define the principle of maritime law of those countries who had signed, in the eventuality of war.

Declaration of Rights, The, was passed by Parliament in 1689; it declared William and Mary King and Queen of England in succession to James II., and laid down regulations for their successors; in declaring the rights and liberties of the English people it provided for the supremacy of the Parliament in all matters affecting religion and law.

Declarations of Deceased

Persons, statements admissible as evidence in law, and include the following: a declaration made by a person in actual danger of death, such declaration being relevant only in a trial for the manslaughter or murder of the declarant and referring only to the cause or circumstances of the death; a declaration against the pecuniary or proprietary interest of the declarant; statements made by a person in the ordinary course of business or duty; declarations as to pedigree; statements referring to disposal of property where there is no will and statements with reference to a public right of way. The declaration may be taken down in writing and used on proof that the deponent is dead or unlikely ever to give evidence.

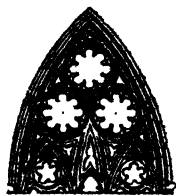
Declension, in grammar the inflections or changes a word (noun, pronoun or adjective) undergoes according to its meaning or relation to other words in a sentence. Most languages were originally, and many (as, e.g., German) are still, inflected. Many languages, however (e.g., English, which until the early Middle Ages was highly inflected), have discarded the case-endings and precede the word by prepositions where necessary to achieve the same end. In English there are now only few relics of the previous case-ending. Among these may be noted the "s" or "es" of the genitive or possessive case, the "s" or "es" of the plural and the existing inflection of the personal pronouns (for gender, number and case).

Declination, the name given in astronomy to what corresponds to latitude in geography; it is measured in degrees north or south of the celestial equator.

Declination, Magnetic, the angle between the true north or geographic meridian and the direction in which the compass needle points or magnetic meridian. The declination varies at different places and it also varies at the same place. This steady change in one direction for some years is called the *Secular variation* of the needle. In England the declination, at present W., is decreasing at the rate of about 5.3 seconds per year. In the year 1977 a compass needle set up in London will point due north (as it did in 1857), and subsequently will move to the east. The complete cycle of changes takes 320 years.

Decorated Period, a period in English Gothic

architecture of the 14th Century, showing development from the geometric to the curvilinear style. A feature of the former is the window tracery comprising the arch, circle, quatrefoil, trefoil, while the latter appeared in mouldings based on the ogee curve. Fine examples are at Lincoln and Ely Cathedrals.



DECORATED PERIOD
WINDOWS

Decoy, a device for enticing wild ducks within gun range; more generally any trap. A decoy duck, a tame bird, is used, though in America and sometimes in England artificial decoys are employed. The word also applies to a card-swindler's confederate.

Decree, a term denoting a decision or magistrate by which some disputed point of judicial inquiry is settled. The term, of Roman origin, is used to express a judgment of the Court of Chancery. Decrees by the Pope are Decretals, and a collection of them forms the basis of Roman Canon Law.

Decretals, The, a collection of laws added to the Canon Law of the Church of Rome, being judicial replies of the popes to cases submitted to them from time to time for adjudication. The False Decretals, dating from the 9th Century, contained a basis of authentic material and additions which were forgeries. The author, the "Pseudo-Isidore," lived in Spain, and took the name of the Archbishop of Seville (Isidore), to which he added the surname Mercator. The False Decretals had some considerable influence on ecclesiastical history.

Dedham, a town of Essex, England, on the Stour, in the midst of Constable country. It was once a centre of the cloth trade. Pop. 1,500. There is a manufacturing town in Massachusetts, U.S.A., bearing the same name. Pop. 15,000.

Deduction, a term used in logic, process of inference in arriving at particular conclusions or consequences from general principles. It is now debated whether deduction is a form of induction. A science passes from the inductive to the deductive stage when, having reached a general principle, deductive or consequential inferences may be made from the principle reached. In geometry a deduction is a solution to a problem arising out of, and employing, a former theorem.

Dee, name of several British rivers. One rises in Lake Bala, Merionethshire, Wales, flows through Chester, and empties into the Irish Sea through a sand-blocked estuary. Another, a famous Scottish salmon stream, flows mainly through Aberdeenshire, entering the North Sea at Aberdeen.

Dee, Doctor John, an astrologer and alchemist, he claimed to have the power of transmuting base metal into gold and of invoking spirits; became warden of Manchester College. (1527-1608).

Deed, an instrument or document in writing or print upon parchment or paper, duly sealed and delivered. There are two kinds, indentured and poll. An indenture is a deed between more than one party (i.e., where each party to the contract undertakes liabilities). A deed poll is one in which one person only binds himself to do something, as, e.g., to pay an annuity. An indenture was formerly drawn up in two (or whatever number necessary) parts on one

sheet of parchment and separated by a wavy (indented) line, so that by piecing them together they were identifiable as parts of one and the same document. This indentation is no longer necessary. An indenture begins, "This indenture made, etc." Fraud may invalidate a deed, as indeed it does anything; but valuable consideration is not necessary for a deed in English law. A deed poll has straight cut edges (polled) and begins, "Know all men by these presents, etc.," and usually takes the form of a declaration. The most familiar document in the form of a deed is that proclaiming ownership of a house or land. An Escrow is a deed delivered to a person and only becoming effective on the happening of a certain event.

Deemster, the title of a judge in the for the northern part and one for the southern. Formerly there was an officer bearing the same title attached to the High Court of Justice in Scotland.

Deer, a family of animals (the Cervidae) belonging to the Pecora (the

Ruminants which include the sheep, cattle, goats, etc.). Most of them bear antlers, bony outgrowths on the head which during growth are covered with sensitive skin with blood-vessels, but which at maturity are bloodless and used for fighting. Except in the case of the reindeer or caribou, the females are hornless. The musk-deer has no antlers. The antlers are usually lost and renewed annually, and increase in size and number of branches at each renewal. Most species live in herds. Different species are found in almost every quarter of the globe. They are even-toed (Artiodactyl), cloven-hoofed, and feed on grass, twigs, lichens, moss and juicy plants. The female deer is called a "hind" or "doe," while males are "stags," "bucks" or "bulls." The more important kinds are the red deer, fallow deer, roebuck, reindeer (caribou in America), wapiti, elk (moose in America), Thorold's Deer, Muntjac and the musk-deer.



FALLOW DEER

Deerhound, a hound akin to the bush in Scotland. Its coat is rough, and its height about 28 in., its weight between 75 and 90 lb.

Defence of the Realm Act,

a number of laws passed at different times during the World War, designed especially to prevent persons from communicating with the enemy or obtaining information harmful to the armed forces, to safeguard H.M. Forces as well as ships and means of communication, and later to remove risk of hindrance to munitions manufacture. The first act in 1914 authorised trial by courts martial and allowed the Admiralty or Army Council to take over, if necessary, the output of any factory engaged in munitions. In May 1915 wide powers were given to the authorities over the supply and sale of intoxicating liquors in certain areas. The initials of the Act earned for it the nickname DORA.

Defender of the Faith (Fiduciary)

a title conferred by Pope Leo X. in 1521 upon Henry VIII. for his defence of the Catholic faith in a treatise against Luther, and retained ever since by the sovereigns of England, though revoked by Pope Paul III. in 1545 in consequence of Henry's apostasy.

Deflation, a process in the manipulation of currency whereby a diminution of volume is brought about, resulting in a rise in the value of money and consequent fall in prices. It results in a reduced money yield from taxation and reduced profits of business, while fixed incomes rise in value during the fall in prices.

Defoe, Daniel, born in London, the son of James Foe, he himself changing the name to De Foe; trained for the Dissenting ministry; turned to business, but took chiefly to journalism and pamphleteering, was a zealous supporter of William III. His ironical treatise, *The Shortest Way with Dissenters* (1702), which, treated seriously, was burned by order of the House of Commons, led to his imprisonment and exposed him for three days to the pillory, amidst cheers, however, not the jeers of the mob; in prison wrote a *Hymn to the Pillory*, and started his *Review*. After his release he was employed on political missions, and wrote a *History of the Union*. The closing years of his life were occupied mainly with literary work, and it was then, in 1719, he produced his world-famous *Robinson Crusoe*. He has been described as "master of the art of forging a story and imposing it on the world for truth." Wrote also *Captain Singleton*, *A Journal of the Plague Year*, *Moll Flanders* and *A Tour through Great Britain*. (1659-1731).

De Forest, Lee, American scientist, who devoted himself to the study of wireless; was employed by the U.S.A. navy to design the first high-power station; invented the triode valve, thus making possible the later developments in radiotelegraphy, and also carried out early experiments on phonoflms, later known as talkies. (1873-).

Degas, painter. Born in Paris, son of a banker, he was educated for law, but took to art, and became friendly with Manet and other Impressionists. He abandoned his historical line of work and started depicting modern life, the race-course, cafés, theatres and ballet-dancers providing him with ample material. (1834-1917).

Degeneration, in biology, a gradual change of cell structure whereby the organism adapts itself to simpler life conditions. Certain lizards, for example, bear only vestiges of limbs. The term also refers to retrogressive changes which occur, e.g., during senile onset, as in the brain cells of the summer bee, and in human beings, as, e.g., fatty degeneration of the heart.

Degree, a unit of measurement of angles and arcs of circles. A complete circle subtends 360° at the centre. A semi-circle contains 180°, and a right angle 90°. On the assumption that the earth is a perfect sphere, a system of degrees has been used for the measurement of the surface. In thermometry, the equal subdivisions of an interval, e.g., between boiling and freezing point, are also called degrees.

Dehra, town and hill-resort of India, in Dehra Dun district. Possesses military and forestry colleges. Pop. 47,000.

Deism, belief on purely rational grounds, in the existence of God, and distinguished from theism as denying His deuce.

Deists, a set of freethinkers of various shades, who in England, in the 17th and 18th Centuries, discarded revelation and the supernatural generally, and sought to found religion on a purely rational basis.

Dekker, Thomas, a dramatist, born in London; was contemporary of Shakespeare. Ben Jonson, Ford, Rowley, Webster and Middleton, with some of whom

he collaborated in play-writing; wrote lyrics as well as tragedies and light comedies, and prose as well as poetry. The most famous among his prose works is *The Gull's Hornbook*, a pamphlet in which he depicts the life of a young gallant. He spent some years in the King's Bench prison for debt. (1578-1641).

De la Bêche, Sir Henry Thomas, geologist, published a *Manual of Geology* and the *Geological Observer*; secured the establishment of the Geological Survey of Great Britain and was appointed head of it. (1796-1855).

Delacroix, Eugene, a French painter, born at Charenton, dept. of Seine; one of the greatest French painters of the 19th Century; was the head of the French Romantic school, a brilliant colourist and a daring innovator. His very first success, "Dante crossing Acheron in Charon's Boat," forms an epoch in the history of contemporary art. Besides his pictures, which were numerous, he executed decorations and produced lithographic illustrations of *Hamlet*, *Macbeth* and Goethe's *Faust*. (1798-1863).

Delagoa Bay, an inlet in the SE. of the Transvaal, in Portuguese territory (Mozambique), also known as the Bahia de Lourenço Marques. The Delagoa Bay Railway, with a terminus at Lourenço Marques, has a length of 57 m. in Portuguese territory, and was built with English capital, the shareholders being indemnified to the extent of £1,000,000 after seizure of the railway by the Portuguese.

De La Mare, Walter John, poet and novelist; born at Charlton, Kent; educated at St. Paul's Choir School; in 1902 published *Songs of Childhood*, and in 1904 *Henry Brocken*, a fantastic novel. *The Return*, 1910, won the Polignac prize, and *Memoirs of a Midget*, 1921, was a notable success. (1873-).

Delambre, Jean Joseph, an eminent French astronomer, born at Amiens, a pupil of Lalande; measured with Méchain the arc of the meridian between Dunkirk and Barcelona towards the establishment of the metric system; produced numerous works of great value, among others *The Basis of the Metric System*, *Theoretical and Practical Astronomy* and the *History of Astronomy*. (1749-1822).

Delane, John Thaddeus, born in London; studied at Oxford; after some experience as a reporter was put on the staff of the *Times*, and in 1841 became editor, a post he continued to hold for 36 years; was the inspiring and guiding spirit of the paper, but wrote none of the articles. (1817-1879).

Delaroche, Hippolyte, commonly known as Paul, a French historical painter born in Paris; was the head of the modern Eclectic school, so called as holding a middle place between the Classical and Romantic schools of art. Among his early works were "St. Vincent de Paul preaching before Louis XIII." and "Joan of Arc before Cardinal Beaufort." The subjects of his later pictures, such as "The Princes in the Tower" and "Cromwell contemplating the corpse of Charles I.," are from history, English and French. The best-known monument of his art is the group of paintings with which he adorned the *École des Beaux Arts* in Paris, which he completed in 1841. (1797-1856).

Delaware, one of the Atlantic and original States of the American Union, as well as the smallest of them, with the exception of Rhode I. It lies on the E. side of the peninsula of land which is cut off by Chesapeake Bay on the W. and Delaware Bay on the E. It is mainly an agricultural state, the chief crops being maize,

wheat, fruit and vegetables. The chief mineral resource is china clay. It is named after Lord De la Warr, who is reputed to have entered Delaware Bay in 1610. Area 2,370 sq. m. Pop. 238,000. Cap. Dover.

Delaware, the name of a river in the U.S.A. It rises in New York, bounds that state, Pennsylvania and New Jersey, and enters Delaware Bay through a long estuary. Philadelphia stands on its banks. Length 410 m.

Delawares, a once powerful North American Indian people in whose confederacy of the Five Nations were included the Mohicans. Their power was broken by the Iroquois; now settled, like other tribes, in the Indian Reservations.

De la Warr, title of nobility first conferred 1299, came 1427 to Reynold West as sixth Baron (or first of a new foundation). Thomas West, ninth Baron, was a soldier and a courtier. (1472-1544). Thomas West, twelfth (or third) Baron, imprisoned in connection with Essex's rising, was a member of the Virginia Company Council and appointed Governor of Virginia 1609; proved efficient and just as a ruler, and gave his name to the state of Delaware. He died on voyage to Virginia. (1577-1618). John West, sixteenth (or 7th Baron), was made Earl, 1761, Treasurer of Household, General of Horse. (1693-1766). The present Earl, the ninth, Herbrand Edward Donald Brassey Sackville, born 1900, succeeded 1915. He joined the Labour Party, and in 1937 became Lord Privy Seal, after holding various Parliamentary Under-Secretaryships. (1900-).

Delcassé, *Théophile*, French Minister of Foreign Affairs, born at Pamiers; began life as a journalist; was elected to the Chamber in 1889; became Colonial Minister; advocated colonial expansion; as Foreign Minister dealt skilfully with the Fashoda affair. He was a supporter of the Entente Cordiale. (1852-1924).

Delft, a Dutch town, 8 m. NW. of Rotterdam, once famous for its pottery; is intersected by canals. It has an important polytechnic school. Pop. 53,060.

Delhi, the name of a province in India, formerly part of the Punjab Province, and containing within it the town of Delhi, on the Jumna, the capital of India, once the capital of the Mogul Empire and the centre of the Mohammedan power in India. The town contains the famous palace of Shah Jehan, and the Jamma Masjid, which occupies the heart of the city and is the largest and finest mosque in India, and also owes its origin to Shah Jehan. The old city is walled. It is 5½ m. in circumference, and divided into Hindu, Mohammedan and European quarters. It was captured by Lord Lake in 1803, and during the Mutiny by the Sepoys, but after a siege of seven days was retaken in 1857. Proclaimed capital of the Indian Empire at the Coronation Durbar in 1911. New Delhi standing some 5 m. to the S., is the site of the Government buildings planned in 1912 and executed in magnificence since the war, and designed by Sir Edwin Lutyens and Sir Herbert Baker. They were opened formally in 1931. A university was founded at Delhi in 1922. Area (prov.) 573 sq. m. Pop. (prov.) 636,000; (town including New Delhi) 447,000.

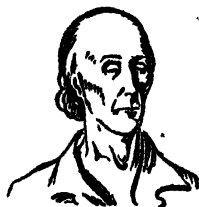
Delibes, *Clément Philibert Léo*, French composer. He studied at the Paris Conservatoire at the age of 12, sang in the Madeleine choir, and then became jointly church organist and theatre accompanist, and later second chorus master at the Grand Opera. He composed several short comic operas, of which the best known are *Coppélia*, *Lakmé* and *Le Roi s'amuse*. (1836-1891).

Delilah, the Philistine woman who betrayed Samson. For 1,100 pieces of silver she successfully (at the fourth attempt) coaxed from him the secret of his strength, so that while he slept on her knees she cut off his hair and delivered him to the Philistines. (Judges xvi.).

Delirium, a state in which the consciousness is deranged and a release of nervous energy is perverted into unaccustomed and meaningless expressions, such as incoherent talk, delusions and uncontrolled muscular action. It differs from insanity by being an accompaniment of actual physical disease or disorder, such as feverishness. It may be a symptom only of such diseases as acute rheumatism and encephalitis. It may follow childbirth, or it may be due to a drug. Trembling delirium (*delirium tremens*) is the result of alcoholism.

Delius, *Frederick*, British composer. Born in Bradford, he left England

at 21 for Florida, where he stayed two years, returning to Europe to study music at Leipzig. He then settled in France at Grez-sur-Loing, where he became blind. He wrote six operas, a number of choral and orchestral works, four concertos and a number of songs. His best-known works are *A Mass of Life*, *A Village Romeo and Juliet*, and the incidental music to Flecker's *Hasan*. He was made a Companion of Honour in 1929. (1863-1934).



FREDERICK DELIUS

Dell, *Ethel May (Mrs. Savage)*, English novelist, writing in a popular romantic style. Her first and best-known work was *The Way of an Eagle*, 1912. She is the author in all of 35 books, including novels, a few collections of stories and one volume of verse. Married Lt.-Col. Gerald T. Savage, 1922. Published *Honeyball Farm* in 1937.

Della Cruscan, a set of Englishasters that appeared towards the close of the 18th Century, and that for a time imposed on many by their extravagant panegyrics of one another. The founder of the set was Robert Morry, who was actually a member of the Florentine Accademia Della Crusca and who signed himself *Della Crusca*. He first announced himself by a sonnet to Love, in praise of which Anna Matilda wrote an incomparable piece of nonsense, "The epidemic spread for a term from fool to fool," but was soon exposed and laughed out of existence. James Boswell, Mrs. Piozzi, Sheridan and Colman the younger were members of this school. The school was attacked by, among others, William Gifford.

Delorme, *Marion*, a French courtesan, celebrated for her wit and fascination, born in her father's château near Champaubert; came to Paris in the reign of Louis XIII., where her drawing-room became the rendezvous of all the celebrities of the time, many of whom, including St. Evremont, the Duke of Buckingham and Richelieu, are said to have been her lovers. She gave harbour to the chiefs of the Fronde, and was about to be arrested when she died; the story that her death was a feint, and that she had subsequent adventures, is distrusted. She is the subject of a drama by Victor Hugo. (1613-1656).

De l'Orme, *Philibert*, a French architect, born at Lyons; studied in Rome; was patronised by Catherine de' Medici; with Jean Bullant built the Palace of the Tuilleries, and contributed to the art of building. (c. 1510-1570).

Delos, the smallest and central island of the Cyclades, the mythological birthplace of Apollo and Artemis, and where the former had a famous oracle. It was, according to the Greek mythology, a floating island, and was first fixed to the spot by Zeus to provide Leda with a place, denied her elsewhere by Hera, in which to bring forth her twin offspring. It was at one time a centre of Apollo worship, but is now uninhabited, and only frequented at times by shepherds with their flocks.

Delphi, a town of ancient Greece in Phocis, at the foot of Parnassus, where Apollo had a temple. Here he was wont to issue his oracles by the mouth of his priestesses the Pythia, who when receiving the oracle used to sit on a tripod over an opening in the ground through which an intoxicating vapour exhaled, which was deemed the breath of the god, and which proved the vehicle of her inspiration. The Pythian games were celebrated in the neighbourhood.

Delphinium, a genus of annual, biennial flowering plants of the order Ranunculaceae. There are some 150 species, mostly natives of Northern temperate regions, and including the *D. Ajacis* or Rocket Larkspur common in England. The perennial delphiniums, grown in the herbaceous border, are mostly hybrids, and have sprung from such species as *grandiflorum* and *formosum*. The colours are chiefly blue or white, but there are also red and yellow species. The annual delphinium, more usually known as larkspur, is bred from the species *Ajacis* and *Consolida*.



ROCKET
LARKSPUR

Delta, a tract of land in the shape of the Greek capital letter Δ, especially the land enclosed by the branching arms of a river where it has divided before entering the sea. Such land is generally very fertile owing to the alluvium brought down by the river. The most notable Deltas are those of the Nile (area 8,500 sq. m.) and of the Ganges (32,000 sq. m.).

Deluge, name given to the tradition, common to several races, of a flood of such universality as to sweep the land, if not the earth, of all its inhabitants, except the pair by whom the land was re-peopled. Geological and archaeological discoveries tend to give support to the tradition in the main, at least as regards a local flood in the Euphrates valley.

Delville Wood, a district in France, of Somme), officially part of the Union of S. Africa, having been presented to the latter for the erection of a war memorial on account of the severe losses among the S. African troops there during the World War in the Battle of the Somme (1916).

Demaratus, King of Sparta from 510 of his crown, fled to Persia and accompanied Xerxes into Greece.

Demavend, Mount, an extinct volcano, the highest peak (18,500 ft.) of the Elburz chain, in Persia.

Dementia, a form of insanity consisting of mental weakness and absence of thought and reason, and being a permanent breakdown of the reason. It may result from disease or be the aftermath of melancholy or mania. It may also occur in old age (senile dementia), when the mind wears out before the body. A more serious form is dementia praecox, in which the intellect and emotions are deranged owing to repression of desires or a failure to face the

realities of life. The patient withdraws into a world of his own, and is governed by unaccountable motives.

Demerara, a county of British Guiana; takes its name from the river, which is 200 m. long and falls into the Atlantic at Georgetown. Chief export is sugar. Demerara (brown) sugar was first produced here.

Demeter (Hk. Earth-mother), the great Greek goddess of the earth, daughter of Kronos and Rhea, sister of Zeus and mother of Proserpine. She ranks with Zeus as one of the twelve great gods of Olympus. She left Olympus and came down to earth when she discovered the rape of Proserpine by Pluto, and brought a great drought on earth until it was granted that Proserpine should be with her for two-thirds of the year. She is specially the goddess of agriculture, and the giver of all the earth's fruits; known to the Romans as Ceres.

Demisemiquaver, in music, a note equal in duration to a half a semiquaver. Its symbol is like a crotchet with three tails.

Demiurgus, a name employed by the world-soul, the medium by which the idea is made real, the spiritual made material, the many made one. Adopted by the Gnostics to denote the world-maker as a being derived from God, but estranged from God, being environed in matter, which they regarded as evil, and so incapable of redeeming the soul from evil.

Democracy, a form of government based on the equality of man. In practice it means the government of the State by the majority of the people, as opposed to its government by one (monarchy) or by a few (oligarchy). It has been accurately described as inverted monarchy, and historically it has come about, not by a gradual expansion of power through the medium of municipalities and guilds as they existed in the Middle Ages, but by a direct replacement of the absolute power of a monarch by the will of the major part of the community.

Democracy, being, therefore, not necessarily incompatible with monarchy, may even work within the framework of a monarchy, as in the British constitution; and it is to be remembered that the American constitution, as also the French republican constitution, was drawn up by a people accustomed to thinking in terms of monarchy. In the words of Abraham Lincoln, democracy is defined as "the government of the people by the people and for the people."

The difficulties of democratic government on these lines, however, are so great that, as Sir Henry Maine says, "in large and complex modern societies, it could neither last nor work if it were not aided by certain forces which are not exclusively associated with it, but of which it greatly stimulates the energy. Of these forces, the one to which it owes most is unquestionably Party."

In a democracy a Party governs only by right of representing the will of the majority of the community. When, through the decay of political vitality among the people, a Party comes to represent only its own theory of government or the will of its leader, a democracy is again inverted back into a system of autocracy—a transition which has taken place in several European countries in the years following the World War.

Democrats, a political party in the United States that contends for the rights of the several states to self-government as against government by a central authority. It was founded by Thomas Jefferson. Historically, the party originated with the opposition to the Federalists led

by Washington and Hamilton. Thomas Jefferson, the leader of the Democrats, was elected President in 1801. Subsequent Democratic presidents have been Monroe, Adams, Jackson, Van Buren, Taylor, Woodrow Wilson and Franklin Roosevelt.

Democritus, a Greek philosopher, born in Abdera, Thrace, of wealthy parents; spent his patrimony in travel, gathered knowledge from far and near, and gave the fruits of it in a series of writings to his compatriots. Only fragments of his work now remain, though they must have come down comparatively entire to Cicero's time, who compares them for splendour and music of eloquence to Plato. The philosophy of Democritus was called the *Atomic*, as he traced the universe to its ultimate roots in combinations of atoms, in quality the same, but in quantity different, and referred all life and sensation to movements in them. He regarded quiescence as the *summum bonum*. He has been called the Laughing Philosopher from, it is alleged, his habit of laughing at the follies of mankind. (460-361 B.C.).

Demoivre, Abraham, a mathematician, born in Champagne; lived most of his life in England to escape, as a Protestant, from persecution in France; became a friend of Newton, and a Fellow of the Royal Society, and was of such eminence as a mathematician that he was asked to arbitrate between the claims of Newton and Leibnitz to have been the inventors of fluxions. (1667-1754).

Demon, or *Daimon*, according to the ancients a kind of spirit which watched over the thoughts and actions of men, eventually delivering the body to judgment in accordance with the account it rendered. The *daimon* of Socrates was particularly famous, it being the name he gave to an inner divine instinct which corresponds to a man's destiny, and guides him in the way he should go to fulfil it. It is more or less potent in a man according to his purity of soul.

Demonology, that branch of learning which deals with the existence and character of evil spirits. Among many primitive races the belief in these takes the form of animism.

De Morgan, Augustus, an eminent mathematician, born in Madras, S. India; was professor of Mathematics in London University from 1828 till his death, though he resigned the appointment for a time in consequence of the rejection of a candidate, James Martineau, for the chair of logic, on account of his religious opinions; wrote treatises on almost every department of mathematics, on arithmetic, algebra, trigonometry, differential and integral calculus, the last pronounced to be "the most complete treatise on the subject ever produced in England." (1806-1871).

De Morgan, William Frend, a notable son of Augustus De Morgan; author of *Joseph Vance, Alice-for-Short* and *When Ghost Meets Ghost*. He was an artist also, and a member of the Chelsea circle which included Burne-Jones, Rossetti and William Morris. At one stage of his career he set up a kiln for pottery-making, and embarked with success on tile-making, the De Morgan ware becoming famous. It was only in 1905, at the age of 85, that he commenced novel-writing, *Joseph Vance*, his first novel, being published in 1906. (1839-1917).

Demosthenes, the great Athenian orator, born in Athens; had many impediments to overcome to succeed in the profession, but by ingenious methods and indomitable perseverance he subdued them all. He became the first orator not of Greece only, but of all antiquity. A U.K.

stammer in his speech he overcame by practising with pebbles in his mouth, and a natural diffidence by declaiming on the seashore amid the noise of the waves; while he acquired a perfect mastery of the Greek language by binding himself down to copy five times over in succession Thucydides' *History of the Peloponnesian War*. He employed 15 years of his life in denunciation of Philip of Macedonia, who was bent on subjugating his country; pronounced against him his immortal *Philippics* and *Olynthiacs*; took part in the Battle of Cheronea, and continued the struggle even after Philip's death. On the death of Alexander he gave his services as an orator to the confederated Greeks, and in the end made away with himself by poison so as not to fall into the hands of Antipater. (384-322 B.C.). See *Cicero*.

Dempsey, William Harrison (known as "Jack"), boxer; born at Manassa, Colorado, U.S.A. He fought his first professional fight in 1914; became world's heavy-weight champion in 1919 by defeating Willard; defeated Carpenter at Jersey City in 1921; victorious until defeated by Tunney, 1926; defeated again by Tunney in 1927. (1896-).

Demurrage, payment for extra time after the date on which it is due to sail by the terms of the charter-party. The shipowner allows a certain time, called lay-days, for loading. The demurrage beyond that time is paid for by the charterer.

Denarius, a silver coin among the Romans, first coined in 269 B.C., and worth somewhere about 8½d.; originally equal to 10 of the copper coins called *as*.

Denbigh, the town of Denbighshire, Wales, in the Vale of the Clwyd, 23 m. W. of Chester. Pop. 7,249.

Denbighshire, a county in N. Wales, of rugged hills and fertile vales, 40 m. long and 17 m. on an average broad, with a coalfield in the S.E. and with mines of iron, lead and slate. Area 668 sq. m. Pop. 157,600.

Dendera, a village in Upper Egypt on the left bank of the Nile, 28 m. N. of Thebes, on the site of ancient Tentyra, with the ruins of a temple of Hathor in almost perfect preservation. On the ceiling of a portico of the building was found a zodiac, now in the Bibliothèque Nationale in Paris. The temple dates from the period of Cleopatra and the early Roman emperors, and has sculptured portraits of that queen and her son Caesarion.

Dendrite (from the Greek, meaning "tree"), geological term, a stone marked with figures resembling a tree or shrub, due to the action of mineral solutions which have filtered through the interstices of the rock.

Dengue, a tropical fever, epidemic and infectious, accompanied by rheumatic pains in the joints, puffing of the face and vomiting, also by a body-rash; lasts three days, followed by a relapse. Also called breakbone fever, dandy-fever and three-day fever. Rarely fatal.

Denham, village of Buckinghamshire, England, 2 m. N.W. of Uxbridge on the Colne and the Grand Junction Canal; has large film studios. Pop. 2,500.

Denham, Sir John, an English poet, born at Dublin, the son of an Irish judge; took to gambling and squandered his patrimony; was unhappy in his marriage,



DENARIUS

and his mind gave way. He is best known as the author of *Cooper's Hill*, a descriptive poem that was the model of Pope's *Windsor Forest*. (1615-1669).

Denia, seaport of Alicante, Spain, on the *rales* trade, also exports nuts, oranges and onions. Pop. 12,000.

Denikin, Anton, Russian general, and *shavik* forces in S. Russia in 1918-1919. He was of humble birth, rose to the rank of lieutenant-general during the World War, but followed Kornilov on the outbreak of the Revolution. He became commander of the forces on the death of Kornilov, and supreme leader on the death of Alexeeff. He achieved some success, in particular the capture of Stavropol, but suffered reverses in 1919, and finally fled to Constantinople. (1872-).

Denis (Dionysius), St., the apostle of the Gauls, the first Bishop of Paris, and the patron saint of France; suffered martyrdom c. 270. Feast, Oct. 9.

Denis, St., a town 6 m. N. of Paris, within the line of the fortifications, with an abbey which contains the remains of St. Denis, and became the mausoleum of the kings of France.

Denmark, the smallest of the three Scandinavian kingdoms, consisting of Jutland, the N. part of Sleswig and an archipelago of islands in the Baltic Sea, the total area being 16,576 sq. m. It is a low-lying country, no place being more than 500 ft. above the sea-level; as a consequence it has no river to speak of, only meres or lakes. The land is laid out in corn-fields and grazing pastures. There are very few minerals, but abundance of clay for porcelain, while the exports consist chiefly of horses, cattle, pigs, bacon, butter and eggs, etc. The population is 3,706,000; about one-third live by agriculture.

In the 14th Century Denmark was united with Sweden and Norway, and was the dominant kingdom. Sweden separated in 1523, and the next century saw the two countries at war. Denmark was defeated, and took little part in European affairs until at war with England, being an ally of Napoleon. Norway was separated by the Peace of Kiel, 1814, following Nelson's victory at Copenhagen.

In 1864 Denmark was invaded by Austria and Prussia, over the Schleswig-Holstein question, and lost these provinces. After the World War, however, in which Denmark was neutral, North Schleswig was restored by a plebiscite and named South Jutland. The present king, Christian X., succeeded in 1912 and granted a democratic constitution in 1915. There is a Senate, 76 members, elected for eight years, and a Lower House, 149 members, elected every four years. Education by the State is compulsory and free. The religion of Denmark is Lutheran, established 1536. Defence is entrusted to a national militia on the lines of the Swiss Army.

Dennewitz, a village in Brandenburg, 40 m. SW. of Berlin, where in 1813 Marshal Ney, with an army of 58,000 French, Saxons and Poles, was defeated by Marshal Blücher, with 50,000 Russians.

Dennis, John, English dramatist and critic, born in London. He was involved in constant broils with the wits of his time. His productions were worth little, and he is chiefly remembered for his attacks on Addison and Pope, and for the ridicule these attacks brought down on his own head, from Pope in *Narrative of the Frenzy of John Dennis*, and the "damnation to everlasting fame" in the *Duncados*. He became blind, and was living in poverty, when Pope wrote a preface to a play produced for his benefit. (1657-1734).

Denotation. See *Connotation*.

Density, in chemistry and physics, the mass per unit volume of substance. It is estimated in grams per cubic centimetre, or pounds per cubic foot, under normal pressure and temperature. The density of most substances grows less with a rise in temperature. The densities of different substances are brought into relation by comparison with a standard. Water is the standard of comparison for liquids and solids and hydrogen for gases.

Dentatus, Manius Curius, a Roman general; as consul gained victories over the Samnites and the Sabines and two triumphs in one year; drove Pyrrhus out of Italy (275 B.C.) and brought to Rome immense booty, of which he would take nothing to himself; in his retirement took to tilling a small farm with his own hands.

Dentistry, the art or profession of *ing* or extracting natural teeth, and of making and inserting artificial teeth. Care of the teeth by a dentist includes corrective measures which may be necessary to overcome abnormality of growth, especially in childhood. The cleaning operation is called *scaling*. Instruments, including an electrical brush, are used to remove concretions of tartar—salivary mucus, etc.

Dental decay, or caries, results from bacteria, which cause fermentation of food residue and form acid deleterious to the tooth enamel. If unchecked, decay exposes the softer portions of pulp and breaks down the tooth altogether. It is then the business of the dentist to extract the tooth, choosing those instruments out of a wide range which are most suitable to the particular tooth. Extractions are usually carried out while the patient is under an anesthetic, general or local. Decay, however, may be arrested by drilling the tooth, extracting the decayed matter and filling the hole either with gold, porcelain or a dental amalgam.

The mechanical side of dentistry involves taking a mould of the mouth to be fitted with artificial teeth. From this a gold plate is shaped to which porcelain teeth are fixed by platinum pins. Another method is to mould an artificial set out of rubber which is afterwards vulcanised, thus fixing the teeth. Broken teeth are mended by capping—that is riveting a porcelain crown to the lower part of the tooth.

Dentistry is an ancient art, going back to the time of ancient Egyptians, but only in quite recent years has the importance of dentistry in relation to the medical profession been recognised. By an Act of 1878 practitioners in England were required to be registered, but it was not until a further Act in 1921 that the regulations were made more stringent. Most universities give degrees or diplomas in dental work and there are recognised dental schools. The Licensing Corporations are the Royal Colleges of Surgeons in England, Scotland and Ireland, and the Royal Faculty of Physicians and Surgeons of Glasgow. To practise under the title "Dental Surgeon," it is necessary to possess the qualification L.D.S. (Licentiate in Dental Surgery). The penalty for an unregistered person practising is a fine not exceeding £100.

Dentition, the process of cutting the teeth. Teeth do not appear above the gums until normally six months after birth. The lower central incisors are cut first; then the upper central incisors after eight months, followed by the upper and lower lateral incisors. After twelve months the first molars are cut; six months later the canines and, after twenty-four months, the second molars. The permanent teeth begin

to show at about six years old. The term dentition is also used in zoology with reference to systems of teeth in animals, e.g., deciduous dentition, permanent dentition.

Denton, (1) a town 7 m. SE. of Manchester, manufactures felt and silk hats. Pop. 17,500. (2) Village of Yorkshire, West Riding, 2½ m. N.E. of Ilkley; the birthplace of Sir Thomas Fairfax. (3) A manufacturing city of Texas, U.S.A., centre of an agricultural district; chief industries flour-milling, etc.; seat of the State College of Industrial Arts. Pop. 13,800.

Denudation, the act of wearing away the covering, making bare. In geology the word is used to express the action of water, frost and other natural agents on the earth's surface. For instance, rocks are laid bare by the action of rain wearing away the covering of earth. Rivers have a denuding effect on their banks and the sea upon rocks and cliffs.

Denver, the capital of Colorado, U.S.A., on a plain 5,196 ft. above the sea-level; originally founded as a mining station in 1858, now a large and flourishing and well-appointed town; the centre of a large trade, and a mining district. Pop. 288,000.

Deodar, (1) a small native state in the NW. of Gujarat, India. Pop. 19,700. (2) *Cedrus Deodara*, the "god tree," a coniferous evergreen tree, a species of Cedar (q.v.), growing high up in the Himalayas.



DEODAR TREE

Department,

a territorial division in France, instituted in 1790, under which the old division into provinces was broken up. Each department, of which, including (since 1881) the three of Algeria, there are now 90, is divided into arrondissements. Each department is under a government-appointed Prefect, and has representatives of all the ministries.

Dephlegmator, a fractional column, a fractional distilling tube; scientific apparatus used in distilling to collect distillates of varying degrees of volatility. Some types return the less-volatile substances to the still, and thus allow only the most volatile to reach the condenser.

Deportation, the act of sending into exile. A person may be deported from his native country (e.g., Belgians deported to Germany during the World War) or from a foreign country where he is resident. In England the deportation of aliens was originally a royal prerogative. The present controlling Acts are the Aliens Restrictions Act 1914 and the Amending Act 1919. By an Order in Council (amended 1923) it is laid down that the Home Secretary is to make out deportation orders if the alien has been convicted of certain crimes or if deportation is "conducive to the public good." Deportation (or transportation) as a punishment for crime as an alternative to capital punishment commenced in England in the reign of James I. Shiploads of convicts were sent to New South Wales every year from 1787, and the system was not finally abandoned until 1840.

Deposition (legal), a witness's statement of evidence at a preliminary examination, taken down in writing in the presence of the Justices by the magistrate's clerk, and signed by the witness. An accused person is allowed to have copies of depositions made against him. He may obtain these from the clerk of the court at which he is committed for trial. Witness must

appear in court at the trial to repeat his evidence, and may be cross-examined on the deposition if his evidence varies at the trial. The deposition can only be accepted as evidence at the trial if the witness is either dead or unable to appear for a valid reason such as serious illness.

Deposits (geological), are the strata in the earth's surface which are formed by the action of wind (aeolian deposits—e.g., sand-dunes, etc.) and water. Mineral matter which has been split up may be carried by a river or glacier and deposited at some point where the current lessens, either at the foot of a hill or in the delta. Marine deposits consist of river detritus carried out to sea or of shore deposits following denudation of the coast by the action of waves. Decayed organic matter, shells, etc., form a deep-sea deposit.

Depreciation, the estimated decrease in value of assets, industrial plant, etc., owing to wear and tear. The fact that machinery may grow obsolete or its value fluctuate is to be taken into account in calculating depreciation, which is often fixed at an annual sum. The basis is the original cost, annual repairs, market value and its eventual value—e.g., machinery as scrap being assessable. Under the Companies Act a deduction for depreciation must be made from profits before payment of a dividend. Some deduction from profits may also be made for depreciation in assessment for income tax.

Depression, or Cyclone, an area of low pressure round which the wind circulates in an anti-clockwise direction in the northern hemisphere. At the centre there is an upward current of air which frequently gives rise to rain-fall. As a rule cyclones move across the British Isles in an eastward or south-eastward direction. See also Cyclone.

Deptford, a borough of London on the S. bank of the Thames; once with an extensive Government dockyard and arsenal. The site was purchased by the Corporation of London as a market for foreign cattle. Pop. 105,000.

De Quincey, Thomas, English prose-

writer, born in Manchester; on the death of his father he was placed under a guardian, who put him to Manchester Grammar School, from which in the end he ran away, wandered about in Wales for a time, and then found his way to London; in 1803 was sent to Oxford, which in 1807 he left in disgust. It was here he took to opium, and acquired that habit which was the bane of his life. On leaving Oxford he went to Bath to his mother, where he formed a connection by which he was introduced to Wordsworth and Southey, and led to settle to literary work at Gramere, in the Lake District. Here he wrote for the reviews and magazines, particularly *Blackwood's*. Till in 1821 he went up to London and published his *Confessions* under the nom de plume of *An English Opium-Eater*. Leaving Gramere in 1828, he settled in Edinburgh, and at Bolton, near Larnard, where he died. (1785-1859).



Derating Act, a measure passed in 1929 under which a large part of local rates on industry and agricultural land and buildings were transferred to the State, and which at the same time effected reform of local government, chiefly

the abolition of Boards of Guardians. In the case of industry the relief amounted to three-quarters, in the case of agriculture to the whole, of previously existing rates.

Derbend, a town in the Republic of Daghestan, Russia. It is situated on the shore of the Caspian Sea. The caliph Harun-al-Raschid lived here at various times. Pop. 23,000.

Derby, county town of Derbyshire, England, on the Derwent, with manufactures of silk, cotton, hosiery, lace, porcelain, etc.; it is the centre of a great railway system. Pop. 142,406.

Derby, Charlotte, Countess of, wife of the seventh Earl, who was taken prisoner at Worcester in 1651, and was beheaded at Bolton; famous for the gallant defence of Lathom House against the Parliamentary forces, to which she was obliged to surrender; lived to see the Restoration and died in 1663.

Derby, fourteenth Earl of, British statesman, born at Knowsley Hall, Lancashire; entered Parliament in 1820 in the Whig interest, supported the cause of reform. In 1830 he became Chief Secretary for Ireland under Earl Grey's administration; introduced a coercive measure against the Repeal agitation of O'Connell; contributed to the passing of the Reform Bill in 1832; succeeded from the Whigs in 1834, and became Colonial Secretary in 1845 under a Conservative administration, but when Sir Robert Peel brought in a Bill to repeal the Corn Laws he retired from the Cabinet. He entered the House of Lords in 1844 as Lord Stanley. In 1846 he became the head of the Protectionist party in the House of Lords; succeeded to his father's title in 1851; was after that Prime Minister three times over, and it was with his sanction Disraeli carried his Reform Act of 1867. He resigned his Premiership in 1868, and the last speech he made was against the Irish Disestablishment Bill; was distinguished for his scholarship as well as his oratory, and gave proof of this by his scholarly translation of the *Iliad* of Homer. (1799-1869).

Derby, fifteenth Earl of, eldest son of the M.P. for Lynn in 1848; was a member of the three Derby administrations. In the first and third in connection with foreign affairs and in the second as Secretary for India, at the time when the Government of India passed from the Company to the Crown. He became Earl in 1869; was Foreign Secretary under Disraeli in 1874, but retired in 1878. In 1880 he joined the Liberal party, and held office under Gladstone, but declined to follow him in the matter of Home Rule, and joined the Unionist ranks; was a man of sound and cool judgment, and took a deep interest in economic questions. (1836-1893).

Derby, seventeenth Earl of, British politician. After serving in the Guards he entered the House of Commons in 1892, and was Lord Roberts's private secretary during part of the Boer War. In 1900 he became Financial Secretary to the War Office, in 1903-1905 Postmaster-General, and succeeded to the earldom in 1908. During the World War he organised the Derby Scheme (see); Secretary for War 1916 and again 1922-24, and from 1918 to 1920 was British Ambassador in Paris. He is also well known as an owner of racehorses, including the Derby winners of 1924 and 1933 (Sansovino and Hyperion). (1865-).

Derby Day, usually the first Wednesday, day in June, always on the second day of the Summer Meeting at Epsom, on which the Derby Stakes for three-year-old colts (carrying 9 stone) and fillies (carrying 8 stone 9 lb.) are competed for. So called as having been started by the 13th Earl of Derby in 1780. The day used to be

held as a London holiday, and the race is still remarkable for the enormous crowd of spectators.

Derby Scheme, a method of recruiting by Lord Derby, whereby a man could "attest" and wait for his "group" to be called up. "Groups" were divided according to age and whether the recruit was married or single.

Derbyshire, a northern midland county of England, hilly in the N., undulating and pastoral in the S., and with coalfields in the E.; abounds in minerals, and is more a manufacturing and mining county than agricultural. Area 1,012 sq. m. Pop. 757,000. County town, Derby.

Dereham, or East Dereham, a market town of Norfolk, England. George Borrow was born and William Cowper buried here. Pop. 6,000.

Derelict, in law, refers to anything and forsaken voluntarily and utterly by its proper owner; applies especially to a ship deserted by its captain and crew. Salvage can be claimed by the first to arrive at a derelict wreck. Land gained owing to the sea receding is called derelict, and falls to the owner of adjoining land, except in the case of a sudden and considerable receding, in which case it falls to the Crown.

Derg, Lough, an expansion of the waters of the Shannon, Ireland (Eire), 24 m. long, from 2 to 6 broad. Also a small lake in the S. of Donegal, with small islands, one of which, Station I., was a place of pilgrimage to thousands as the reputed entrance to St. Patrick's Purgatory.

De Robeck, Sir John Michael, British admiral. He entered the navy at the age of 15, and in 1915 was given command of the naval forces at Gallipoli; made an admiral in 1920 and given charge of the Mediterranean Fleet. (1862-1928).

De Rougemont, Louis (real name Henri Louis Grin), impostor; addressed anthropological section, British Association, Bristol, Sept. 9, 1896, claiming nearly 30 years' residence among Australian aborigines. His apocryphal adventures in company with an Esquimaux named Etukishuk appeared serially in *Wide World Magazine*. A native of Gressy, Switzerland. True history exposed in *Daily Chronicle*. Died in Kensington infirmary. (1847-1921).

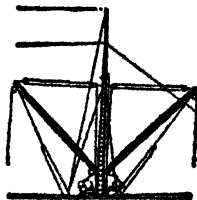
Derrick, a temporary crane used on board ships; so named after a Tyburn hangman of the 17th Century. It consists of a swinging pole attached at the base to a mast.

De Ruyter.

See Ruyter.

Dervishes, a name given to members of certain mendicant orders connected with the Mohammedan faith in the East. Of these there are various classes, under different regulations, and wearing distinctive costumes, with their special observances of devotion, and all presumed to lead an austere life. Some live in monasteries, and others go wandering about, while some of them show their religious fervour in excited whirling dances, and others in howlings. All are held sacred by the Moslems.

Derwent, the name of several English Cumberlands, and flows through Derwentwater and Basenethwaite to the Solway Firth. The Derbyshire Derwent, a tributary of the Trent, passes Chatsworth, Matlock and



DERRICK

Derby. There is also a R. Derwent which rises in the Pennines and joins the Tyne above Newcastle, while a fourth is a tributary of the Yorkshire Ouse.

Derwentwater, one of the most beautiful of the Cumberland lakes, in the S. of the county, formed by the river Derwent; extends S. from Keswick; is over 3 m. long, and over 1 m. broad; is dotted with wooded islands, and is overlooked by Skiddaw; it abounds with perch.

Derwentwater, ^{James Radclyffe,} Earl of, a Jacobite leader; was third Earl and the last. Several warrants were issued for his apprehension in 1714. He joined the Jacobite rising in 1715, was taken prisoner at Preston, and beheaded on Tower Hill, London, after trial in Westminster Hall. (1689-1716).

Derzhavin, ^{Gavril Romanovich,} a Russian lyric poet, born at Kazan; rose from the ranks as a common soldier to the highest offices in the State under the Empress Catherine II. and her successors; in 1803 retired into private life, and gave himself up to poetry; the ode by which he is best known is his *Address to the City*, which was translated into English and many other European languages. (1743-1816).

Desaix (^{de Veygoux}), ^{Louis Charles Antoine,} a distinguished French general, born at the Château d'Arat, Auvergne, of a noble family; entered the army at 15; commanded a division of the Army of the Rhine in 1796, and after the retreat of Moreau defended Kehl against the Austrians for two months. He accompanied Bonaparte to the East, and in 1799 conquered Upper Egypt; contributed effectively to the success at Marengo, and fell dead at the moment of victory, shot by a musket-ball. (1768-1800).

Désaugiers, ^{Marc,} a celebrated French composer of songs and vaudevilles; "stands second to Béranger as a light song-writer," and is by some preferred to him. (1772-1827).

Désault, ^{Pierre Joseph,} a French surgeon, born in dept. of Haute-Saône; his works contributed largely to the progress of surgery. (1744-1795).

Desbarres, ^{Joseph Frederick Wallet,} hydrographer, aide-de-camp of General Wolfe at Quebec; born in England, fortified Quebec; surveyed the St. Lawrence; revised the maps of the American coast at the outbreak of the American War; died at Halifax, Nova Scotia, aged 102. (1722-1824).

Desborough, ^{Sir William Henry Gren-Pascoe Grenfell,} of Taplow, Buckinghamshire, was educated at Harrow and Oxford; a distinguished cricketer, athlete and swimmer (of Niagara twice). Liberal M.P. for Salisbury, 1880-1882; Liberal-Unionist for Hereford 1892-1893; Wycombe division, 1900-1905. Chairman of committees on police, and on fresh-water fish; and of Thames Conservancy Board. Ennobled, 1905; K.G. 1928. Father of Julian Grenfell, the poet. (1855-).

Descartes, ^{René,} the father of modern philosophy, born at La Haye, in Touraine; was educated at the Jesuit College of La Flèche, where he made rapid progress in all that his masters could teach him, but soon grew sceptical as to their methods of inquiry. He "resolved, on the completion of his studies, to bid adieu to all school and book learning, and henceforth to gain knowledge only from himself, and from the great book of the world, from nature and the observation of man." In 1618 he entered the army of the Prince of Orange, and after a service of five years quitted it to visit various centres of interest on the

Continent; made a considerable stay in Paris; finally abandoned his native land in 1629, and betook himself to seclusion in Holland in order to live there, unknown and undisturbed, wholly for philosophy and the prosecution of his scientific projects. Here, though not without vexatious opposition from the theologians, he lived twenty years, till in 1649, at the invitation of Christina of Sweden, he left for Stockholm, where, the severe climate proving too much for him, he was carried off by pneumonia next year. Descartes's philosophy starts with Doubt, and by one single step it arrives at Certainty; "If I doubt, it is plain I exist," and from this certainty, that is, the existence of the thinking subject, he deduces his whole system. It all comes from the formula *Cogito, ergo sum*, "I think, therefore I exist." Descartes's philosophy is all comprehended in two works, his *Discourse on Method*, and his *Meditations*. His mathematical contributions included the introduction of co-ordinates and the method of undetermined coefficients. He was the founder of analytic or algebraic geometry. (1596-1650).

Deschamps, ^{Eustache,} a French poet, born at Vertus, in Champagne; studied in Orleans University; travelled over Europe; had his estate pillaged by the English, whom, in consequence, he was never weary of abusing. His poems are numerous, and, except one, all short, consisting of ballads, as many as 1,175 of them, a form of composition which he is said to have invented. His works deal extensively in satire. (1346?-1406?).

Deschanel, ^{Paul Eugène Louis,} French statesman, born in Brussels, son of an exile of the Second Empire; studied law; secretary to Minister of Interior, 1878; deputy, Eure-et-Loire, 1885; President of Chamber, 1898-1902; and again, 1912-1920; of Republic 1920—but resigned same year because of ill-health. (1856-1922).

Desert, a special land form resulting

from low annual rainfall of less than 10 ins., or entire absence of rain; generally in tropical and sub-tropical regions (North Africa, Arabia, Central Australia, Central America), but in Central Asia extends into regions usually temperate. Rock deserts (e.g., in Colorado) are those in which the wind has swept away the soil, the rock masses being further eroded by the action of dew and split by the rapid heating and cooling. Sand deserts are generally in areas below sea-level. The sand dunes are formed by the wind, and vary in size from mounds to mountains. Vegetation in deserts is either absent or confined to plants capable of storing moisture (e.g., cacti). In some parts the dew-fall is sufficient to promote plant-life. The natural vegetation found at an oasis keeps its desert character but is far richer owing to the presence of water. Oases vary in extent, some having an area of 100 sq. m. or more.

Desertion, voluntarily forsaking a duty obligations; applies especially to desertion from the services (punishable by death or imprisonment), from the merchant navy (punishable by forfeiting pay), or of a man from his wife or children. A deserting man may be liable for maintenance or subjected to a judicial separation.

Desiccation, the removal of moisture from a substance. In chemistry sulphuric acid is commonly used as a desiccating agent owing to its property of absorbing moisture from the atmosphere.



DESERT
CACTUS

Gases may also be passed through calcium chloride, which absorbs the moisture.

Des Moines, the largest city in Iowa, U.S.A., and the capital, founded in 1846. It is situated in the heart of the cornlands and in the middle of a rich coalfield, and the chief trade is in corn and coal. Pop. 142,600.

Desmoulins, Camille, one of the most striking figures in the French Revolution, born at Guise, in Picardy; studied for the Bar in the same college with Robespierre, but never practised, owing to a stutter in his speech. He was early seized with the revolutionary fever and was one of the ablest advocates of the levelling principles of the Revolution; associated himself first with Mirabeau and then with Danton in carrying them out. He even supported Robespierre in the extreme course he took; but his heart was moved to relent when he thought of the misery the guillotine was working among the innocent families of its victims; with Danton he would fain have brought the Reign of Terror to a close. For this he was treated as a renegade, put under arrest at the instance of Robespierre, subjected to trial, sentenced to death, and led off to the place of execution. His young wife, for interfering in his behalf, was arraigned and condemned, and sent to the guillotine a fortnight after him. (1769-1794).

Des Périers, Bonaventura, a French teller, born in Burgundy; secretary of Margaret of Navarre; wrote *Cymbalum Mundi*, a satirical production, in which, as a disciple of Lucian, he holds up to ridicule the religious beliefs of his day; also *Nouvelles Récréations et Joyeux Devis*, a collection of some 129 short stories admirably told. He was one of the first prose-writers of the century, and is presumed to be the author of the *Heptameron*, ascribed to Margaret of Navarre. (c. 1500-1544).

Despotism, the absolute rule of one man without constitution. In practice a despot generally endeavours to obtain the people's goodwill, otherwise depending on force. Eastern monarchies in early times were despotisms. In the 6th and 7th centuries B.C. despotisms, benevolent or otherwise, were set up in various city-states of Greece and Sicily. Notable despotisms were those of Pisistratus at Athens, Phalaris at Agriguntum and Dionysius at Syracuse. The word is of Greek origin, meaning the master of the household and ruler of the slaves.

Despréaux. See Boileau.

Dessalines, Jean Jacques, Emperor of Hayti, born in Guineas, W. Africa, a negro imported into Haiti as a slave. On the emancipation of the slaves there he acquired great influence among the insurgents, and by his cruelties compelled the French to quit the island, upon which he was raised to the governorship. Soon he was able to declare himself emperor, but his tyranny provoked a revolt, in which he perished. (1758-1806).

Dessau, a N. German town, capital of the Elbe, some 70 m. SW. of Berlin; a manufacturing and trading town. Pop. 79,000.

Destroyer, a warship, 1,500-2,000 tons, capable of speeds up to

40 knots, and armed with guns up to 4-7 in. and torpedo tubes. Destroyers manoeuvre in flotillas, the flotilla leader being a heavier type of destroyer. They are used for the protection of merchant shipping,



DESTROYER

and in battle for the protection of the main fleet from torpedo attack. The British Navy possesses 20 flotilla leaders, besides 198 destroyers. A number of others are being built under the rearmament programme.

Destructors, furnaces for the destruction of waste material, especially refuse collected from the houses and streets of towns. Non-combustible refuse is discarded, metal objects being withdrawn by magnets. The first destructor in Great Britain was erected in 1876. There are several types in use to-day. The furnace is very often divided into separate cells, and the refuse is fed in through a hopper. In many towns destructors are attached to the electricity station and used for raising the steam necessary to drive the generators.

Detaille, Jean Baptiste Edouard, an eminent French painter of military subjects; born in Paris; studied under Meissonier; painted "The Conquerors," "The Passing Regiment" and "Saluting the Wounded." (1848-1912).

Detective, a person employed in the detection of crime and a member either of the official police force or of a private detective agency. In its official connection detective work is a highly specialised profession, calling for marked powers in observation, method and deduction. In England the detection of crime is the work of the Criminal Investigation Department, a section of the Metropolitan Police Force numbering over 900 men. Before the creation of the C.I.D. in 1878 the Bow Street "runners" acted as detectives all over the country. Private detectives are employed chiefly for investigation in commercial relations and in divorce cases, for the accumulation of evidence in legal proceedings, for the prevention of blackmail and for the prevention of theft (e.g., in large stores).

Determinism, in philosophy, the principle that phenomena are so connected that the state of affairs at any one moment is conditioned by preceding states and in turn conditions future states. It is to be distinguished, however, from fatalism. In psychology it asserts that the development of consciousness possesses continuity, that causeless acts of will do not exist, will being determined by motive.

Detmold, capital of the state of Lippe, Germany; 50 m. SW. of Hanover. There is a colossal bronze statue of Arminius (Hermann), 3 m. SW. of the town. Pop. 16,000.

Detroit, the largest city in Michigan, U.S.A., a great manufacturing and commercial centre, situated on a river of the same name, which connects Lake St. Clair with Lake Erie; is one of the oldest places in the States, having been founded by the French in 1701. It is a well-built city, with varied manufactures and a large trade, particularly in grain and other natural products. Pop. 1,589,000.

Dettingen, a village in Bavaria, where an army of English, Hanoverians and Austrians under George II., in 1743, defeated the French forces under the Duc de Noailles.

Deucalion, in Greek mythology, the son of Prometheus. When Zeus determined to destroy the human race by flood, Deucalion built an ark, in which he and his wife, Pyrrha, drifted for nine days and nights. On the subsidence of the flood they consulted the oracles at Delphi about repopling the land. They were told to throw the bones of their mother over their heads. For a time the meaning of the oracle was a puzzle, but the reader wit of the wife found it out; upon which they took stones and threw them over their heads. The stones be-

threw were changed into men, and those she threw were changed into women.

Deuteronomy (i.e., the Second Law), the fifth book of the Pentateuch, and so called as the re-statement and re-inforcement, as it were, by Moses of the Divine law proclaimed in the wilderness. The Mosaic authorship of this book has been called in question, though it is allowed to be instinct with the spirit of the religion instituted by Moses, and it is considered to have been conceived at a time when that religion with its ritual was established in Jerusalem.

De Valera, Eamon, Irish politician. Born in New York of an

Irish mother and Spanish father, he went to Ireland as a boy, took a degree there, and in 1917 became President of the Gaelic League. He took part in the Easter rising of 1916, was sentenced to death, had the sentence commuted to life imprisonment and was released under an amnesty in 1917. Returned to Westminster as M.P. for East Clare 1917-1919 and for East Mayo, 1922, but did not take his seat. Arrested again in 1918 on a charge of subversive activities, he escaped from Lincoln Gaol in 1919 and reached the United States. As leader of the Sinn Féin (q.v.), proclaimed himself President of the Irish Republic. He repudiated the Treaty of 1921 and led the Free State Government, was captured again, but released, and pursued an abstentionist policy from the Irish Dáil until 1927, when he became leader of the Fianna Fáil party. He was President of the Executive Council (i.e., Prime Minister) 1919-1922 and since 1932. He has played the leading part in the events which led to the establishment of a virtual Republic (Eire) in the S. of Ireland owing no obligations of loyalty to the English Crown (except in respect of the appointment of foreign representatives and the signing of international treaties), in the economic war of 1932-1938 on the land annuities issue, and in the events which brought an amicable solution of all issues. (1882-)



EAMON DE VALERA

Development Commission, a government department, set up under the Development and Road Improvement Funds Acts of 1909 and 1910, for the purpose of administering funds for the development of agriculture and rural industries, fisheries, land reclamation and harbour maintenance.

Deventer, a town in Holland, in the E. of Amsterdam; has carpet manufactures and is celebrated for its ginger-bread. It was the locality of the Brotherhood of Common Life, with which the life and work of Thomas à Kempis are associated. Pop. 38,700.

De Vere, Sir Aubrey, poet, born in Co. Limerick, Limerick, Ireland; author of *Julian the Apostle* and other dramatic and historical poetical dramas; a master of the sonnet. (1789-1848).

De Vere, Aubrey Thomas, Irish poet, Limerick, son of the preceding; educated at Trinity College, Dublin; wrote poetical dramas of *Alexander the Great* and *St. Thomas of Canterbury*; also published several volumes of poetry, his first poem being *The Waldenses*; and critical essays. (1814-1903).

Devi, in Hindu mythology, the wife of Shiva. She is known also as Durga, goddess of destruction; a giant figure possessing ten arms.

Devil, The, a being regarded in Scripture as having a personal existence, and, so far as this world is concerned, a universal spiritual presence, as everywhere thwarting the purposes of God and marred the destiny of man. Since the introduction of Christianity, which derives all evil as well as good from within, he has come to be regarded less as an external than an internal reality, and is identified with the ascendancy in the human heart of passions native to it, which when subject enslave it, but when supreme debase it. He is properly the spirit that deceives man, and decoys him to his eternal ruin.

Devil-fishes, or Sea Devils, the name of several fish of the Ray family, so called on account of the pair of rostral or cephalic fins borne on the head and projecting forward like horns. They are the largest of all the Rays, and are found chiefly in the Tropics, where they attain big sizes, specimens having been caught measuring over 20 ft. in width and weighing up to 5,000 lb. The name devil-fish is also sometimes applied to the octopus, which is in reality a mollusc, and not a fish at all.

Devil's Advocate, anyone who argues with which in reality he disagrees; strictly the ecclesiastical appointee, *advocatus diaboli*, instructed to put forward possible arguments against a proposed canonisation.

Devil's Bridge, (1) bridge of Switzerland, land, where the road through the St. Gotthard Pass crosses the Reuss torrent; (2) a double bridge over the Mynach, in Cardiganshire, Wales.

Devil's Coach Horse, a popular name for the *Ocyrops olens* or cocktail beetle, found in Britain. It has short wing-cases, is about 1 in. long, and black, and assumes a threatening attitude with abdomen arched above its back when disturbed.

Devil's Dyke, name for various British earthworks, natural and artificial. The best known is a natural fissure in the Sussex Downs, 4½ m. NW. of Brighton.

Devil's Island, a famous penal settlement in French Guiana.

Devil-worship, a homage paid by primitive tribes to the devil or spirit of evil in the belief that he can be bribed from doing them evil.

Devizes, a town in Wiltshire, England, formerly a centre of the cloth trade. There was a fine Norman castle. Brewing, agricultural-implementation making, malting, etc., are carried on. Pop. 6,000.

Devlin, Joseph, Irish Nationalist. He was born in Belfast, educated at Christian Brothers' School and became reporter on *Irish News*. Subsequently he removed to Dublin and visited America and British dominions. M.P., North Kilkenny, 1903; re-elected West Belfast, 1908; re-elected Falls division 1912-1922; Fermanagh and Tyrone, 1929-1934; sat in Northern Ireland Parliament for Co. Antrim and W. Belfast. (1878-1934).

Devolution, (legal) inheritance by succession; (political) delegation of work by parliament to committees; (historical) War of Devolution (1667-1668), unsuccessful attempt by Louis XIV. of France to conquer Spanish Netherlands on plea of their being inherited by his wife, Maria Theresa—by the old *droit de dévolution* daughter of first marriage inherited before son of second marriage.

Devonian, the name given to the Shurian and below the Carboniferous. It includes the rocks of marine origin found

in Devon and the Old Red Sandstone, which was laid down in lakes or inland seas. The earliest known fishes are found as fossils in rocks of this age.

Devonport, a town in Devonshire, England, adjoining Plymouth to the W., and the seat of a naval dockyard and of the military and naval government of the three towns; originally called Plymouth Dock. Established as a naval arsenal by William III. Pop. 81,678.

Devonshire, county of SW. England, adjoining Somerset and Dorset on the E. and Cornwall on the W. It has a coastline of 150 m. on the English and Bristol Channels. A hilly county, the second largest in England, it includes stretches of wild rugged moorland—Dartmoor in the S. and Exmoor in the N. The valleys are very fertile; apple orchards abound, and there are rich dairy-farms. Some minerals are worked, including tin, copper, lead and china clay; much cider is made. The chief rivers are the Tamar, Exe, Dart, Teign, Taw and Torridge. Exeter is the county town, and among other important centres are Plymouth, Dartmouth, Barnstaple, Bideford, Torquay and Ilfracombe. The mild climate, beautiful scenery and fine coastal resorts make it popular among holiday-makers. Among its many famous natives may be mentioned Drake, Raleigh, Marlborough, Reynolds, Coleridge and Kingsley. Area 2,604 sq. m. Pop. 733,000.

Devonshire, Duke of. See Cavendish.

Dew (and Dew Pond), moisture from the atmosphere condensed on the surfaces of cool bodies, especially at nightfall on the surface of the earth which is cooled by radiation; or moisture rising from the ground and condensed on grass and leaves which have cooled quicker than the ground itself. Wind, by keeping the atmosphere moving, prevents dew forming. Until the researches of Dr. W. C. Wells (*Essays on Dew*, 1814), it was believed that the dew fell from the sky. Ponds, without source or spring, found on chalk hills are called dew ponds. They are probably fed by rain-water rather than dew, and are the source of supply of water for cattle and sheep on the hills.

Dewar, Sir James, physicist, professor at Cambridge and at the Royal Institution. He invented the vacuum flask, and was the first to liquefy hydrogen. He carried out much research on low-temperature work, and was president of the British Association at Belfast in 1902; in collaboration with Sir F. Abel discovered cordite. Knighted 1904. (1842-1923).

Dewberry (*Rubus coccineus*), a plant of the order Rosaceae, closely related to and resembling the bramble. The fruit, however, is covered with a wax secretion like the bloom on grapes.

De Wet, Christian Rudolf, Boer soldier. He won battles in Natal in 1899, was made commander-in-chief of the Orange Free State army and showed brilliant ability in guerilla warfare. From 1907 to 1914 he was a member of the Orange Free State Government. In 1914 he was a leader of the rebellion fomented by Germany, captured later in the year, sentenced to imprisonment; released, 1915. (1854-1923).

Dewey, George, American admiral, was born at Montpelier, Vermont. Graduated at U.S. Naval Academy, 1858. Lieutenant, 1861, in Farragut's fleet; took important part against New Orleans and in other engagements. Captain, 1884; Commodore, 1890. In 1898 destroyed Spanish fleet at Manila, and was made Rear-Admiral. Admiral of the Navy, 1899. (1837-1917).

Dewsbury, a town in the W. Riding of Yorkshire, 8 m. SW. of Leeds; engaged in the manufacture of

woollens, blankets, carpets and yarns, and with dye works and iron foundries. Pop. 53,900.

Dextrin, a soluble matter into which the globules of interior substance of starch are converted by acids or diastase, so called because when viewed by polarised light it has the property of turning the plane of polarisation to the right. It is used as a gum.

Dextrose, a name given to glucose or sugar, grape sugar, on account of the fact that the plane of polarisation of polarised light is turned to the right on passing through it.

Dharwar, a town in the S. of the of considerable trade in a district noted for its cotton-growing. Pop. 34,750.

Dhole, species of wild dogs (*Cyon nensis* and *Cyon alpinus*), found packs in many parts of India. It is somewhat larger than the jackal, differs from the dogs (genus *Canis*) in having fewer teeth, is fierce and cannot often be tamed.

Dhow, or *Baggala*, an Arab vessel, used trading in the Arabian Sea and Indian Ocean. It is fast sailing, has one mast or two bearing lateen sails, and is of about 200 tons burden.

Diabase, a group of igneous rocks consisting of augite which contains oxide of iron, crystalline felspar and hornblende; also called trap-rock and, from its colour, greenstone. They are used in road-construction in the N. of England.

Diabetes, a disease characterised by an excessive discharge of urine, and accompanied with great thirst; there are two forms of this disease: *Diabetes mellitus* (sugar diabetes) is a disorder of the system whereby sugar (and consequently fat) is metabolised. Normally, the sugar content of the blood is regulated by the insulin hormone secreted by the pancreatic islets. This stimulates the muscles to burn up the sugar and the liver to store it in the form of glycogen. A diabetic cannot perform these two functions, and hence there is a rise in the sugar content of the blood to dangerous levels. Sugar is also lost in large quantities in the urine. The progress of the disease can be counteracted and the normal metabolism of sugar restored by hypodermic injections of insulin. *Diabetes insipidus* differs from sugar diabetes in that sugar is present in the urine, but the amount of urine passed increases, accompanied by an exaggerated thirst. It is thought to be due to a defective working of the pituitary gland. Injections of pituitrin sometimes act as a cure.

Diablerets, a mountain of the Bernese Alps, between the Cantons de Vaud and de Valais, 10,650 ft. high.

Diaghilev, Sergei Pavlovich, Russian operatic and ballet producer, born in Novgorod province; studied law and music; founded an art paper in St. Petersburg, 1898; in Paris produced *Les Godounov*, and the first Russian ballet, 1908; in 1911 brought his ballets to London—*Schéhérazade*, with music by Rimsky-Korsakov, being most notable. He produced over 40 ballets and operas. (1875-1929).

Diagnosis, the process of examination and reasoning whereby a doctor arrives at as many facts as possible in order to achieve correct identification of the disease or disorder from which the patient is suffering. The first step is generally to draw whatever deductions are possible from the patient's answers to questions on his



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state of feeling and less visible symptoms and on the past medical history of the patient and his family. Modern methods of diagnosis also include: (1) X-ray, (2) blood-tests, microscopical and chemical, (3) analysis of stomach-contents, (4) examination of sputum, (5) chemical tests of urine. There are also electrical methods for testing the nervous system.

Diagoras, a Greek philosopher, born in Melos, one of the Cyclades, 5th Century, B.C., surnamed the Atheist, on account of the scorn with which he treated the gods of the popular faith, from the rage of whose devotees he was obliged to seek safety by flight; died in Corinth.

Dialect, a group variation of a language. Linguistically considered, many languages distinct to-day are variations or dialects of a common speech. For instance, Russian, Bulgarian, Serbian and Czech are really dialects of a common Slavonic language. Popularly, however, dialects generally mean mutually intelligible variations of what is now one language. The dialects in most countries—notably, for instance, in Germany—can be traced back to local forms of speech which prevailed in the Middle Ages. The various translations of the Bible into the vernacular and the spread of a unifying culture led to a standardisation of speech; but in the 19th Century a romantic value was given to efforts to preserve dialect speech, and Lowland Scotch, Low German and Provençal were reintroduced into literature.

Dialectics, a branch of logic, a method of reasoning by dividing things into their component parts, the application of logic to discussion. In Plato the term refers to the Socratic method of discussion by dialogue and analysis into first principles. Aristotle distinguished the term from analysis, and defined it as a method of reasoning in support of a probable opinion. In the Middle Ages dialectics came to mean formal logic as opposed to rhetoric, a meaning derived from the Stoics.

Dialogue, a conversation between two or more persons, applied especially to a formal discussion, as in a drama or a philosophic discourse. The term was first put to the latter use by Plato in the various Dialogues of Socrates. Previous to this the term had been used only in miming plays. Lucian (born c. A.D. 120) used the term in Greek *Dialogues of the Dead*. In connection with this the two French writers of dialogue who borrowed the same title should be noted: the *Dialogues des Morts* by Fontenelle in 1683 and by Fénelon in 1712. The greatest English writer of non-dramatic dialogue is Landor (*Imaginary Conversations*, 1821–1825).

Dialogues of Plato, philosophical dialogues, in which Socrates figures as the principal interlocutor, although the doctrine expounded is rather Plato's than his master's; they discuss theology, psychology, ethics, aesthetics, politics, physics and related subjects.

Dialysis, the process of separation of substances in a solution, by means of a membrane which allows free passage to the latter but not to the former.

Diamantina, a district in Brazil, in Geres, rich in diamonds. The centre of the district is a town of the same name, formerly (until 1838) called Tejucó. Pop. 69,000.

Diameter, in geometry, the straight line which passes through the centre of a circle or other curvilinear figure and is terminated by the circumference; or through a solid body, terminated by its boundaries. The diameter divides the figure into two equal parts.

Diamond, one of the allotropic forms of carbon, of extreme hard-

ness, which has been crystallised in the earth by great heat. Most of the world's supply comes from South Africa and Brazil. Famous diamonds are: the Hope Blue, Koh-i-noor, Orloff, Star of the South, and Cullinan.



Diamond Necklace Affair,

an incident at the court of Louis XVI. of France. A necklace consisting of 500 diamonds and worth 280,000 was taken from a jeweller in Paris by Madame de Lamotte (mistress of Cardinal de Rohan) on the pretence that it was ordered by Marie Antoinette. Actually she disposed of the stones abroad. The swindle was first discovered when the jeweller presented his bill to the Queen, who denied all knowledge of the matter. This led to a trial which extended over nine months, gave rise to great scandal, and ended in the punishment of the swindler and her husband, the exile of de Rohan, and the disgrace of the unhappy, and it is believed innocent, Queen.

Diamond Sculls, a single sculling race, an event since 1844 at Henley Regatta open to all amateurs. The record of 8 min. 10 sec. set up in 1905 by F. S. Kelly was equalled by H. Buhtz (Berlin) in 1934.

Diana, originally a Roman deity, dispenser of light, identified at length with the Greek goddess Artemis, and from the first with the moon. She was a virgin goddess, and spent her time in the chase, attended by her maidens; her temple at Ephesus was one of the seven wonders of the world. See Artemis.

Diane de Poitiers, the mistress of Henry II. of France, for whom he built the magnificent Château d'Anet, in Eure-et-Loir. She had a great influence over him, and the cruel persecutions of the Huguenots in his reign were due to her instigation. (1499–1558).

Dianthus, a genus of perennial, tufted plants, order Caryophyllaceae, with smooth, narrow leaves and solitary, panicled or fasciated flowers, red, pink, white and yellow. Distribution over Europe, temperate Asia, N. and S. Africa and N. America. Pinks, Carnations and Sweet William are cultivated flowers of this genus.



DIANTHUS (CARNATION)

Diapason, in Greek music, the octave or interval which includes all tones of the diatonic scale. Also a concord in which all notes are an octave apart; hence harmony. Open diapason, stopped diapason, double diapason, are names given to certain stops in the organ.

Diaper, a linen or cotton textile fabric woven with geometric (usually diamond) patterns. Originally the name was given to richly embroidered materials of silk. In the Middle Ages similar patterns were used in the surface decoration of stone, as at Westminster Abbey.

Diaphoretics, medicines or treatment used to promote perspiration. They may take the form of Turkish baths, or drugs which act on the nerve-centres may be administered. Such treatment may be necessary to reduce fever, and is commonly used in the treatment of kidney diseases.

Diaphragm, or *Septum*, a partition of the thorax, separating it from the abdomen. Less than an inch in thickness, it is shaped like a dome, pointing upwards under the right fourth rib and the left fifth rib. On its upper surface lies the heart, and it is pierced by the inferior vena cava, by which venous blood is returned to the heart. During inspiration the diaphragm descends into the abdomen, increasing the pressure within it, and thus driving the blood upwards to the heart.

Diarbekir (*Diarbekir*), the largest town in the Kurdistan Highlands, on the Tigris, 220 m. N.E. of Aleppo, and on the highway between Bagdad and Istanbul. It has a large and busy bazaar. It is the capital of a Turkish vilayet of the same name. Pop. (vilayet) 215,000; (town) 98,000.

Diarmid, the name of three kings in Ireland who flourished between the 6th and 11th Centuries and are conspicuous in Erse legend.

Diarrhoea, frequent passage of liquid motions, a condition due to irritation of the bowels from various causes. Diarrhoea is a symptom of many serious disorders—e.g., cholera, dysentery and typhoid. It may, however, result from infection of the bowels from some poisonous substance in food, or merely from an ill-advised diet. In children, it is often a serious complaint—i.e., summer diarrhoea—or it may have an emotional cause. In adults also it is sometimes a concomitant of hysteria. Catarrhal diarrhoea from indigestion or from a chill is due to an abnormal discharge of mucus from the intestinal mucous membrane. Rest of the bowels and removal of the irritant are the methods of curing diarrhoea that is not symptomatic of other diseases. Water in quantity should be drunk, but little or no food eaten. Milk is generally not advisable. Castor oil may be given. Medical attention is required for prolonged diarrhoea.

Diary, a personal record of events of the day, comments upon these and individual thoughts and ideas written down at intervals (strictly day by day). In classical times a diary was simply a record of military conduct, changes in the weather, etc. In mediæval and modern times diaries have taken on a literary and historical significance. The most celebrated diaries in English literature are those of John Evelyn (1620-1706), first published in part in 1813, and of Samuel Pepys (1633-1703), written in cypher and first published in part in 1825 and of Frances (or Fanny) Burney, published in 1842-1846. All these diaries are valuable as pictures of the time.

Diastase, a nitrogenous substance developed during the germination of grain, and having the property of converting starch into dextrine and maltose or malt sugar, which undergoes further changes into alcohol; this is the essential process in the manufacture of beer.

Diatoms, microscopic plants having skeletons of silica covering a jelly-like mass; they live and die on the bottom of the seas in such numbers that thick strata of their remains are formed, as in the Miocene beds of the western states of America.

Diatonic, the term used to describe music in which only the notes, intervals and harmonies of the particular key, major or minor, are used.

Diavolo, Fra (*M. Brother Devil*), Michele Pezza, a Calabrian, originally a monk, who left his monastery and joined a set of bandits, who conducted insurrectionary movements in Italy; taken prisoner by the French, was shot at Naples; Aubert's opera, *Fra Diavolo*, has no connection with him except the name. (1771-1806).

Diaz, Bartolomeu, a Portuguese navigator, sent on a voyage of discovery by John II., in command of two ships; sailed down the W. coast of Africa and doubled the Cape of Good Hope 1488, which, from the storm that drove him past it, he called the Cape of Storms; returning to Lisbon he was superseded by Vasco da Gama, or rather subordinated to him; subsequently accompanied Cabral on his voyage to Brazil, and was lost in a storm in 1500.

Diaz, José de la Cruz Porfirio, Mexican politician. He was as a young man one of the leaders during 1867 of the revolt against the French, captured Mexico City 1860 and handed over the command to Juárez. He became President in 1877, remaining in office till 1911. (1830-1915).

Diaz del Castillo, Bernál, historian; Cortes to Mexico; took part in the conquest, and left a graphic, trustworthy account of it, called *A History of the Conquest of New Spain*; died in Mexico, 1593.

Diazo-compounds, organic compounds by the action of sodium nitrite on aniline and similar substances; discovered by Griess, a German chemist, at Burton-on-Trent in 1858. They are the starting-point in the manufacture of the azo-dyes.

Dibdin, Charles, musician, dramatist, and song-writer, born in Southampton; began life as an actor; invented a dramatic entertainment consisting of music, songs and recitations, in which he was the sole performer, and of which he was for most part the author; wrote some 30 dramatic pieces, and it is said 1,400 songs; his celebrity is wholly due to his sea-songs; was the author of *Tom Bowling*; left an account of his *Professional Life*. (1745-1814).

Dice, small cubes of ivory or bone marked on the sides with spots ranging from one to six. They are chiefly used for gambling, but also supply the element of chance in back-gammon and other games. Swindlers in the past have frequently used "loaded" dice—i.e., dice slightly weighted on one side so that certain numbers are bound to turn up. The word dice is plural for die.

Dicey, Albert Venn, jurist; born at Vinerian professor of English law, Oxford, 1832. Q.C., 1890. Wrote on the conflict of laws, and his *Introduction to the Study of the Law of the Constitution* (1885) is still the stock text book on this subject for British law students, being always taken in conjunction with Anson's *Law and Custom of the Constitution*. (1835-1922).

Dick, Sir William Reid, sculptor; born in Glasgow; educated Glasgow and London, has exhibited at Royal Academy since 1908. Prominent among his works are: Kitchener Memorial Chapel, St. Paul's Cathedral; bronze eagle, Air Force Memorial, Embankment; Lion, on Mexin Gate, Ypres. Knighted, 1935. (1879-).

Dickens, Charles John Huffham, celebrated English novelist, born at Landport, Portsmouth; son of a navy clerk. He was brought up amid hardships, sent to a solicitor's office as a clerk, learned shorthand, and became a reporter. In this position he learned much of what afterwards served him as an author. He wrote sketches for the *Monthly Magazine* under the name of "Box" in 1834, and the *Pictures of Charles Dickens Papers* in 1836-1837, which established his popularity. These were



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succeeded by *Officer Twist* in 1838, *Nicholas Nickleby* in 1839, *David Copperfield*, partly autobiographical in 1849, and others which are known wherever the English language is spoken. In 1850 he established the magazine *Household Words*, followed 9 years later by *All the Year Round*. Being a born actor, he latterly gave public readings from his works, which were immensely popular, visiting the United States in this capacity. The strain proved too much for him; he was seized with a fit at his residence, Gad's Hill, near Rochester, on June 8, 1870, and died the following morning. (1812-1870).

Dicksee, Sir Francis Bernard, painter, his father and at the Royal Academy, whither he sent pictures from 1876; became president of the Royal Academy in 1924; knighted, 1925. His works were popular and sentimental, the most famous being "Harmony" (Tate Gallery), "The Passing of Arthur," "Redemption of Tannhäuser," "Funeral of a Viking," "Daughters of Eve," "Love Story." (1853-1928).

Dicotyledons, one of two classes into which flowering plants are divided, distinguished by the characteristic of possessing two cotyledons or seedlobes. Leaves are generally net-veined, whereas the leaves of Monocotyledons are parallel-veined. Dicotyledons are subdivided into the polypetalous and apetalous families, and the gamopetalous families, in which the edges of the leaves are joined.

Dictaphone, an electrical machine for recording, by the same principle as a gramophone, on a revolving wax cylinder, words spoken into the attached mouthpiece. Any speed of dictation is possible. Each cylinder holds over 1,000 words. The cylinder is then transferred to the transcribing machine, which reproduces the words through a head-phone, when they can be typed out.

Dictator, a magistrate invested with republican Rome in times of exigency and danger. The constitution obliged him to resign his authority at the end of six months, till which time he was free to do whatever the interest of the commonwealth seemed to require. The most famous dictators were Cincinnatus, Camillus and Sulla, with Caesar, who was the last to be invested with this power. The office ceased with the fall of the republic, or rather was merged in the perpetual dictatorship of the emperor. English history records only one dictatorship—that of Cromwell. In still more modern times, Europe, since the close of the World War, has seen the rise of numerous dictators. These include, or have included, Dollfuss (Austria), Tsankoff (Bulgaria), Mahmoud (Egypt), Hitler (Germany), Pangalos (Greece), Bethlen (Hungary), Mussolini (Italy), King Alexander I. (Yugoslavia), Valdemaras (Lithuania), Reza Shah (Persia), Carnoua (Portugal), Brătianu (Rumania), Primo de Rivera (Spain), Kemal Atatürk (Turkey).

Dictionary, either a collection of words of one language with paraphrases of the meaning of each, or equivalents, in the same language, or a collection of words with the equivalent of each in another language. In England from 1440 to the end of the 17th Century the only collections of English words were contained in various Latin-English dictionaries. The first attempt at a comprehensive dictionary of English words was the *Universal Etymological English Dictionary* compiled by Nathan Bailey and published in 1721.

Dr. Johnson used this work in compiling his own celebrated *Dictionary*, published in 1755. He added many words omitted by Bailey and introduced illustrative quotations.

Johnson also had a supreme original talent for definition. Johnson's dictionary was revised by Rev. H. J. Todd in 1818; but after Johnson the next important lexicographer was Noah Webster, an American. His *Spelling Book* (1783) and his *Compendious Dictionary* (1806) were followed in 1828 by the comprehensive *American Dictionary of the English Language*. Later editions and revisions of this dictionary are still widely used. Another American dictionary which should be mentioned is that of Joseph Emerson Worcester, published 1830.

In England Walker's dictionary (1791), authoritative in pronunciation, was superseded by Dr. Charles Richardson's two-volume dictionary in 1837. Twenty years later the collection of material for an English dictionary was begun by the Philological Society, and this work bore fruit in the great *New English Dictionary*, of which Sir James Murray was one of the principal editors until his death in 1915. Publication was commenced in 1884, and the work was completed in 1928, in 10 volumes.

Dictys Cretensis (i.e., of Crete), the reputed author of a narrative of the Trojan war from the birth of Paris to the death of Ulysses, extant only in a Latin translation. The importance attached to this narrative and others ascribed to the same author is that they are the source of many of the Greek legends we find in medieval literature.

Didcot, village of Berkshire, England, 4½ m. S. of Abingdon; an important railway junction and an Ordnance depot. Pop. 1,600.

Diderot, Denis, a French philosopher, born at Langres, the son of a cutler, a zealous propagator of the philosophic ideas of the 18th Century, and the projector of the famous *Encyclopédie*, which he edited with D'Alembert. This did not enrich its founder, who was driven to offer his library for sale to get out of the pecuniary difficulties it involved him in. He would have been ruined had not Catherine of Russia bought it, left it with him, and paid him a salary as librarian. Diderot fought hard to obtain a hearing for his philosophical opinions. His first book was burnt by order of the Parlement de Paris, while for his second he was clapped in gaol. He was a brilliant conversationalist, and one of the greatest intellectual forces of his day. (1713-1784).

Dido, the daughter of Belus, King of Tyre, and the sister of Pygmalion, who, having succeeded to the throne on the death of his father, put Sicheus, her husband, to death for the sake of his wealth. Dido secretly took ship, sailed away from the city with the treasure, accompanied by a body of disaffected citizens, and founded Carthage, having picked up by the way 80 virgins from Cyprus to make wives for her male attendants. A neighbouring chief made suit for her hand, encouraged by her subjects, upon which, being bound by an oath of eternal fidelity to Sicheus, she erected a funeral pyre and stabbed herself in the presence of her subjects. Virgil regardless of accepted chronology made her second the funeral pyre out of grief for the departure of Aeneas, with whom she was passionately in love.

Didymium, a rare earth identified by Mosander in the earth didymia or didymium oxide; thought to be an element, but shown by Von Welsbach to be a mixture of neodidymium and praseodymium.

Die-hards, a popular name originally given to the 57th Regiment of Foot after the Battle of Albuera (1811). Later applied to the reactionary Conservative section within the Coalition Government under Mr. Lloyd George, which eventually brought about the break-up of the Coalition in 1919.

Dielectric, electrical term for the insulating material separating the plates of a condenser.

Diemen, Antony van, Governor of the Dutch possessions in India, born in Holland; was a zealous coloniser. At his instance Abel Tasman was sent to explore the South Seas, and discovered the island which he named Van Diemen's Land, now called Tasmania after the discoverer. (1593-1845).

Dieppe, a French seaport in the dept. of Seine-Inférieure, on the English Channel, at the mouth of the R. Arques, 93 m. N.W. of Paris; a watering- and bathing-place, with fisheries and a good foreign trade. It is the terminus of one of the cross-Channel steamer services to England, being 64 m. from Newhaven. It was seriously affected by the revocation of the Edict of Nantes and was bombed by the Dutch and English fleets in 1694. Pop. 25,000.

Diesel, Rudolf, German engineer, professor at Munich; inventor of the Diesel engine. (1858-1913).

Diesel Engine, an internal combustion engine using heavy oil as a fuel; the heat necessary to ignite oil is supplied by the compression of air in the cylinder.

Die-sinking, the process of engraving dies, suitable especially for stamping coins and medals. Steel is generally used for the die or matrix. It is first submitted to a softening process, then cut and afterwards hardened. The cutting for fine impressions is usually done by hand. It is a very ancient art as many early Greek coins testify.

Dies Irae (*Ill.* the Day of Wrath), a Latin hymn on the Last Judgment, so called from its first words, based on Zeph. i. 14-18. It is part of the Office for the Dead and Requiem Mass, and is ascribed to a monk, Thomas de Celano, who died in 1255. There are several translations of it in English, besides a paraphrastic rendering in the *Lay of the Last Minstrel* by Scott. It is also the subject of a number of musical compositions.

Diet, a term comprehending the various kinds of food customarily eaten, considered in relation to one another. To maintain life certain kinds of substances are essential to the diet. These are: (1) carbohydrates (starch and sugar); (2) fats (all edible oils and fats, animal and vegetable); (3) protein (the lean of all kinds of meat and fish; also found in cheese, milk, eggs and nuts); (4) mineral salts, various, found in most foodstuffs; (5) water (four to six pints per day); (6) vitamins: chemical substances of which six have been distinguished, distributed in various quantities in several foodstuffs.

The carbohydrates and fats are known as fuel foods—that is to say, they are "burnt" by the body for purposes of giving heat and energy. The calorific value of different foods (i.e., the amount of heat given by them) has been calculated. The proteins are body-building and replace the tissue that has been spent. The various mineral salts are essential to the blood (e.g., iron salts) and to the proper functioning of the different glands (e.g., iodine salts are necessary for the secretion of the thyroid). Lime salts are essential for the formation of bones and teeth. Water is necessary for flushing the body. Deficiency of any one vitamin in the diet generally reveals itself by some form of disorder. The late Sir Thomas Stanton's discovery of the cause of beriberi was essentially the same thing as the discovery of vitamins and their value.

Diet, a convention of the princes, dignitaries and delegates of the German Empire, for legislative or administrative

purposes. The most important historically were those held at Augsburg in 1518, at Worms in 1521, at Nuremberg in 1523, 1524, at Spire in 1526, 1529, at Augsburg in 1530, at Cologne in 1530, at Worms in 1536, at Frankfurt in 1539, at Ratisbon in 1541, at Spire in 1544, at Augsburg in 1547, 1548, 1550 and at Ratisbon in 1623.

Dieterich of Bern, a favourite hero who in the *Nibelungenlied* avenges the death of Siegfried, and in the *Heldenbuch* figures as a knight-errant of invulnerable prowess, from whose challenge even Siegfried shrinks, hiding himself behind Kriemhild's veil; has been identified with Theodorico the Great, King of the Ostrogoths.

Dieu et Mon Droit (God and my Right), the British royal motto, first used by Henry VI. Its origin was a parole used at the Battle of Gisors in 1198.

Diez, Friedrich Christian, a German philologist born at Giessen. After service as a volunteer against Napoleon, and a tutorship at Utrecht, went to Bonn, where, advised by Goethe, he commenced the study of the Romance languages. In 1830 became professor of them. He left two great works bearing on the grammar and etymology of these languages. (1794-1876).

Diffraction, the name given to the effect produced by the slight "bending" of a ray of light round an obstacle. In the early days of the wave-theory of light it was urged against it that if light were a wave-motion it should pass round obstacles, as sound does, and not leave a shadow. Careful experiment shows that light does "bend" round an obstacle to an extent consistent with its very small wave-length. The diffraction grating is a series of fine parallel lines ruled close together on glass by means of a diamond—perhaps as many as four or five thousand to the centimetre. When white light is shone through the grating at a suitable angle a spectrum is obtained, and for many purposes such a spectrum is preferable to that given by a prism.

Diffusion, term in chemistry applied to the mixture of two substances without chemical combination. Gases possess the property of diffusion more than liquids (e.g., diffusion of oxygen and nitrogen in the air), but some metals may be diffused under pressure at a high temperature.

Digby, Sir Everard, member of a Roman Catholic family; concerned in the Gunpowder Plot and executed. (1578-1606).

Digby, Sir Kenelm, a son of the preceding; was knighted by James I.; served under Charles I.; as a privateer, defeated a squadron of Venetians, and fought against the Algerines. He was imprisoned for a time as a Royalist; paid court afterwards to the Protector and was well received at the Restoration. He was one of the first members of the Royal Society, and a man of some learning; wrote treatises on the Nature of Bodies and Man's Soul. (1603-1665).

Digestion, the various chemical processes by which food in the human body is converted into a form in which it can be dissolved in the blood and assimilated by the body. The digestive juices are chemical substances, acid or alkaline, containing other important secretions, called enzymes, produced by the cells and adapted as separate reagents to different kinds of food. Digestion begins in the mouth (especially of starchy foods), is continued in the stomach (especially of protein) and is completed in the intestines.

Digitalis, a genus of tall herbs, biennial and perennial, order Scrophulariaceae, native to Europe, N. Africa and W. Asia. The British species *Digitalis*

purpurea, or foxglove, is remarkable for the poisonous drug (*digitalis*) obtained from it, used in medicine as a sedative for the heart.

Dijon, the ancient capital of Burgundy, and the principal town in the dept. of Côte d'Or, 195 m. S.E. of Paris, on the canal of Bourgogne; one of the finest towns in France, famous for its buildings, particularly its churches, and its situation. It is a centre of manufacture and trade, and a seat of learning; the birthplace of many illustrious men, including Charles the Bold, Duke of Burgundy, Bossuet and St. Bernard of Clairvaux. Pop. 98,000.

Dilapidations, legal term for the disrepair into which property may fall during temporary possession by a party other than the owner. Between landlord and tenant it is a matter for agreement under the lease. Where the tenant is under obligation and fails to effect repairs, the landlord has right of entry to repair. Ecclesiastical dilapidations are those accruing to the parsonage, vicarage, etc., and to the chance of the church; by common law they are a liability of the incumbent.

Dilemma, in logic a conditional syllogism having one premise which presents two alternatives, while other premisses show that, in either alternative, the consequents are the same; a form of argument which presents two alternatives, each having the same undesirable consequences.

Dilettanti Society, The, a society of noblemen and gentlemen founded in England in 1733. Their labours were devoted chiefly to the study of the relics of ancient Greek art, and resulted in the production of works on this and other subjects of aesthetic interest.

Diligence, a type of stage-coach used in England in the late 18th and in the 19th Centuries until ousted by steam trains. They were popular in France, and used also in America. It has a coupé in front for three passengers, and in the larger types a middle compartment and a rotonde behind, each carrying six.

Dilke, Charles Wentworth, English critic and journalist; served for 20 years in the Navy Pay-Office. He contributed to the *Westminster* and other reviews; was proprietor and editor of the *Athenaeum* and manager of the *Daily News*. He left literary papers, edited by his grandson. (1789-1864).

Dilke, Sir Charles Wentworth, English publicist and politician, grandson of the preceding, born at Chelsea; educated Trinity Hall, Cambridge, called to the Bar; travelled in America and the English colonies, and wrote a record of his travels in his *Greater Britain*. He entered Parliament as an extreme Liberal and held office under Gladstone. As a result of citation in a divorce case he decided to retire from public life, but returned again to Parliament in 1892, though he never again held office. (1843-1911).

Dill (*Peucedanum graveolens*), a perennial herb of the natural order Umbelliferae, best grown from cuttings. The leaves are used for flavouring soups and sauces. Dill-water prepared from the seeds is sometimes given to babies to prevent wind.

Dillmann, Christian Friedrich August, a great German Orientalist, born at Illingen, a village of Württemberg; studied under Ewald at Tübingen; became professor at Kiel, at Gießen, and finally at Berlin. As professor of Old Testa-



ment exegesis he made a special study of the Ethiopic languages, and is the great authority upon them; wrote a grammar and a lexicon of these, and works on theology. (1823-1894).

Dillon, John, an Irish patriot, born in Kerry, New York. He entered Parliament in 1880 as a Parnellite; was once suspended and four times imprisoned. He sat at first for Tipperary, and later for East Mayo; in 1891 threw in his lot with the M'Carthyites, and in 1918 succeeded John Redmond as leader of the Irish Parliamentary Party. (1851-1927).

Dime, a U.S. silver coin, worth the tenth part of a dollar, or about fivepence.

Dimension, in mathematics, has two common meanings—viz.,

(a) the power to which a number is raised, thus x is of one dimension x^2 is of two dimensions, x^3 is of three dimensions, etc.; and (b) a direction of measurement, thus a point has no dimensions, a line has one dimension, an area has two dimensions and a volume has three dimensions. In physics, the fundamental units of measurement are those of length, mass and time, and all other units may be represented as dimensions of these; thus velocity equals length divided by time, and the unit of velocity therefore possesses one dimension in length and D^{-1} in time, while acceleration, or rate of change of velocity, has one dimension in length and D^{-2} in time.

Dimorphism, the capacity in certain species of plants and animals of presenting two varying forms specifically the same—e.g., the fertile queen bee and the barren worker bee. In mineralogy, substances which crystallise under two different systems of crystallography—e.g., carbon as diamonds and graphite.

Dinan, an old town on the Rance, in the dept. of Côtes-du-Nord, France, 14 m. S. of St. Malo; most picturesquely situated on the top of a steep hill, amid romantic scenery, of archaeological interest. Pop. 10,000.

Dinant, an old town and holiday resort, Belgium; on the Meuse, 14 m. S. of Namur, noted for its gingerbread, and formerly for its copper wares, called Dinanderie. The town was almost completely destroyed by the Germans during the 1914 invasion, but was later rebuilt. The Germans entered in August, and, declaring that the civil population had fired on them, they burnt the town and shot 665 of the inhabitants. Pop. 7,000.

Dinar, the monetary unit of Yugoslavia, subdivided into 100 paras. It has been stabilised at a value equivalent to 26·5 milligrams of gold.

Dinard, popular seaside resort of Brittany, France, in the dept. of Ille-et-Vilaine. It is situated at the mouth of the Rance opposite St. Malo. Pop. 8,000.

Dinaric Alps, a range of the Eastern Alps between Dalmatia and Bosnia; runs S.E. and parallel with the Adriatic, connecting the Julian Alps with the Balkans.

Dindings, British territory of the Malay Peninsula formerly included in Penang, but retroceded to Perak, partly for convenience of customs collection and partly in recognition of the loyalty of the Sultan of Perak to the British Crown. It consists of a strip of land 22 m. long on the S.W. coast of Perak, and the island of Pangkor.

Dingaan's Day, Dec. 16, the anniversary of the day in 1838 when a Zulu chief named Dingaan was decisively defeated by the Boers.

Dingle, a fishing and market town of Co. Kerry, Ireland (Eire), on Dingle Harbour, an inlet of Dingle Bay. Pop. 3,000.

Dingley Tariff, a tariff which existed from 1897 to 1930, maintaining considerable

protection, and at the same time allowing for tariff agreements of mutual advantage between the U.S.A. and other countries. It was named after the Chairman of the Ways and Means Committee, and was replaced by the Tariff Act of 1930.

Dingo (*Canis dingo*), the Australian wild dog, usually of a yellow colour; fox-like in appearance, but more powerfully built; has been tamed by the aborigines for hunting purposes.

Dingwall, the county town of Ross and Cromarty, at the head of the Cromarty Firth. Pop. 2,554.

Dinkas, an African pastoral people occupying a flat country in the Anglo-Egyptian Sudan, traversed by the White Nile; of good stature, clean habits and semi-civilised manners.

Dinkelsbühl, a picturesque, medieval German town, on the Würnitz. Pop. 5,000.

Dinnington, a coal-mining village of the West Riding, 8 m. S.E. of Rotherham. Pop. 1,000.

Dinocrates, a Macedonian architect, who, in the time of Alexander the Great, rebuilt the Temple of Aphrodite destroyed by the torch of Erostratus. He was employed by Alexander in the building of Alexandria.

Dinosaurs, an order of extinct reptiles which dominated the land



DINOSAURIAN REPTILE

in the Mesozoic Period. It comprises two entirely distinct groups—viz., the Saurischia (those with "reptile-hips"), which includes carnivorous biped types and herbivorous quadrupeds, and the Ornithischia (those with "bird-hips") and somewhat resembling the ostriches), including bipeds and quadrupeds but all species being herbivorous. The Dinosaurs included the largest land animals that ever lived, amongst others the Brontosaurus and the Diplodocus of N. America.

Dinotherium, a gigantic animal now extinct, characterised by two large, downward-curved tusks set in the lower jaw. Remains have been found in the Miocene beds of Europe. The elephant is zoologically related to it.

Diocese, the sphere of a bishop's ecclesiastical jurisdiction. There are 43 in England and 6 in Wales. An Act of Parliament is necessary for the creation of new dioceses.

Diocletian, Roman Emperor from 284 to 305, born at Salona, in Dalmatia, of obscure parentage. He entered the Roman army, served with distinction, rose rapidly to the highest rank, and at Chalcedon, after the death of Numerianus, was invested by the troops with the imperial purple. In 286 he associated Maximianus with himself as joint-emperor, with the title of Augustus, and in 292 resigned the Empire of the West to Constantine Chlorus and Galerius, so that the Roman world was divided between two emperors in the E. and two in the W. In 303, at the instance of Galerius, he commenced and carried on a fierce persecution of the Christians; but in 305, weary of ruling, he abdicated and retired to Salona, where he spent his remaining eight years in rustic simplicity of life. (245-313).

Diodati, Giovanni, a Calvinist theologian; was born in Geneva, where his parents were refugees from Lyons. He distinguished himself in the course of the Reformation as a pastor, a preacher, professor

of Hebrew and a professor of Theology. He translated the Bible into Italian and into French. A nephew of his (Charles) was a schoolfellow and friend of Milton, who wrote an elegy on his untimely death. (1576-1649).

Diogenes the Cynic, born in Pontus, came to Athens, was attracted to Antisthenes and became a disciple. He dressed himself in the coarsest garb, lived on the plainest diet, slept in the porches of the temples, and finally took up his dwelling in a tub. He would not have anything to do with what did not contribute to the enhancement of life and despised every one who sought satisfaction in anything else. He is said to have gone through the highways and byways of the city at noon with a lantern in quest of an honest man. Visiting Corinth, he was accosted by Alexander the Great: "I am Alexander," said the king, and "I am Diogenes" was the prompt reply. "Can I do anything to serve you?" continued the king: "Yes, stand out of the sunlight," rejoined the cynic; upon which Alexander turned away saying, "If I were not Alexander, I would be Diogenes." While on a voyage to Aegina he fell into the hands of pirates and being sold as a slave, was taken to Corinth where he died. (412-323 B.C.).

Diomedes, legendary King of Argos, called Tydides, from his father; was, next to Achilles, the bravest of the Greeks at the Trojan war. He fought under the protection of Athene against both Hector and Aeneas, and even wounded both Aphrodite and Ares. He dared along with Ulysses to carry off the palladium from Troy; was first in the chariot race in honour of Patroclus, and overcame Ajax with the spear.

Dion of Syracuse, a pupil of Plato, and an austere man; was from his austerity obnoxious to his pleasure-loving nephew, Dionysius the Younger. He was banished, and went to Athens, where he learned that his estates had been confiscated and his wife given to another. He took up arms, drove his nephew from the throne, usurped his place and was assassinated in 353 B.C. (408-353 B.C.).

Dionysia, the festivals held in ancient Greece in honour of Dionysus or Bacchus, in some cases with great drunkenness and debauchery. At first they were celebrated with great simplicity, the worshippers clothing themselves according to the poetical fictions concerning Dionysus and imitating them also in their actions. They were introduced to Rome under the name Bacchanalia.

Dionysius of Halicarnassus, a Greek historian and rhetorician of the age of Augustus. He came to Italy in 20 B.C., and spent 27 years in Rome, where he died; devoted himself to the study of the Roman republic, its history and its people, and recorded the result in his *Archæologia*, written in Greek, which brings down the narrative to 264 B.C.; it consisted of 20 books, of which only nine have come down to us entire. He is the author of works in criticism of the orators, poets and historians of Greece.

Dionysius, the *Areopagite* (i.e., according to Acts xvii. 34, a convert of St. Paul's; became Bishop of Athens, and is said to have died a martyr in 95; was long regarded as the father of mysticism in the Christian Church, on the false assumption that he was the author of writings of a much later date imbued with a pantheistic idea of God and the universe.

Dionysius the Elder, tyrant of Syracuse from 436 to 367 B.C. At first a private citizen, he early took interest in public affairs, and

played a part in them. He entered the army, and rose to be head of the State, subdued the other cities of Sicily, and engaged in war against Carthage with varying success. Concluded a treaty of peace with them, and spent the rest of his reign, some 20 years, in maintaining and extending his territory. He was distinguished both as a poet and a philosopher. Tradition represents him as in perpetual terror of his life and taking every precaution to guard it from attack.

Dionysius the Younger, tyrant of Syracuse, son of the preceding, succeeded him in 367 B.C., at the age of thirty. He had never taken part in public affairs, but was given over to vicious indulgence, and proved incapable of amendment, though Dion (y.v.) tried hard to reform him. He was unpopular with the citizens, who, with the help of Dion, whom he had banished, drove him from the throne. Returning after 10 years, he was once more expelled by Timoleon of Skily, upon which he betook himself to Corinth.

Dionysus, in Greek mythology the god of the vine or wine; the son of Zeus and Semele, the "twice born," as plucked first from the womb of his dead mother and afterwards brought forth from the thigh of Zeus, which served to him as his "incubator." See *Bacchus*.

Diophantus, a Greek mathematician, born in Alexandria in the 3rd Century A.D.; left works in which algebraic methods are employed, and is therefore credited with being the inventor of algebra. His chief work was his *Arithmetica*.

Diopside, a green mineral found in the basic igneous rocks, a member of the pyroxene group. Its composition is silica, magnesia and lime.

Diopase, or Emerald Copper Ore, hydrated copper oxide, composed of silica, copper oxide and water; occurs in fine, green, six-sided crystals. Sometimes used as a gem.

Dioptr, the unit used for measuring the power of a lens; it is the reciprocal of the focal length of the lens expressed in metres.

Dioscorides, a Greek physician, born in Cilicia. He lived in the 1st Century and left a treatise on *Materia Medica*, a work of great research, and long the standard authority on the subject.

Dioscuri, in Greek and Roman mythology, sons of Zeus, a stalwart pair of youths of the Doric stock, the former great as a horse-breaker and the latter as a boxer. They were worshipped at Sparta as guardians of the State, and pre-eminently as patrons of gymnastics. They protected the hearth, led the army in war, and were the convoy of the traveller by land and the voyager by sea, which, as the constellation Gemini, they are still held to be.

Dip, the angle which needle makes with the horizontal, when it is suspended so that it can swing freely in a vertical plane at right angles to the magnetic meridian. At the magnetic poles the dip is ninety degrees and on the magnetic equator zero.

Diphtheria, contagious disease characterized by the formation of a false membrane on the back of the throat, and due to the presence of the Klebs-Loeffer bacillus, so called after the two German doctors who first discovered it in the late 19th Century. The

has been much less deadly than antitoxin treatment was introduced. Antitoxin is administered even in suspected cases, owing to the rapidity with which the membrane in the throat grows.

Diphthong, a union of two vowel sounds, pronounced as one. Examples in English are the combination of o and i as in *poise*, o and u as in *mouth*, a and i as in *aisle*. Pure vowel sounds are comparatively rare in English, most single vowels (as written) having the force of a diphthong—e.g., duty where the u has the value of the diphthong i (pronounced ee) + u.

Diplotodus, a large reptile of the Dinosaur family, about 50 or 60 ft. in length, remains of which have been found in America in strata of Jurassic age. It was an herbivorous quadruped.

Diplomacy, a method of establishing a continuous relationship between the governments of different countries. The Venetian Republic first maintained permanent representatives in other states in the 16th Century, and the system became prevalent in Europe in the 17th. Previous to that, interchange between governments had been by the despatch of special envoys. Diplomacy is now a profession, although ambassadors of the U.S.A. are sometimes chosen from non-professional classes. The diplomatic staff may consist of ambassador or envoy, naval and military attachés, commercial attaché, etc. The various staffs accredited to any one capital form the diplomatic corps.

Diplomatics, name given to the work of deciphering ancient diplomas and official documents and arranging the material collected in such a way as to be of value especially to the historian. Literary documents, public inscriptions, title-deeds, charters, decrees, codicils and letters all come within the scope of diplomatics.

Dipper, or *Water-ousel*, a genus of Cinclidae, aquatic birds of the family

Cinclidae, found in Northern Europe and America and also in the highlands of Central America and in the Andes. They feed on fresh-water mollusks and insects and dive and swim with ease, using wings as well as legs to propel themselves. The Common Dipper (*Cinclus aquaticus*) is familiar in Great Britain and is not unlike a large wren with a white breast.

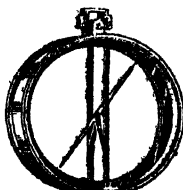
Dipsomania, a diseased craving for alcohol resulting in occasional bouts of heavy drinking. In the intervals between which the patient may have an actual distaste for alcohol. It is quite different from the chronic drinking which results in delirium tremens, and little is known about its nature, except its possible relation to some mild mental disorder.

Diptera, a large order of insects called flies, and characterized by the possession of only two wings, borne by the mesothorax. The mouthpieces are formed for sucking, and are sometimes adapted for piercing also. In the transformation from the larval stage metamorphosis is complete. In the order are included the common House-fly, Gnats or Mosquitoes, Crane-flies (Daddy-long-legs), Hover-flies, Bot-flies, Horse-flies and Fleas.

Directoire, a style of architecture, furniture, etc., prevalent in France during the period of the Directory, 1795-1799. In architecture it was a modification of the graceful classicism of the reign of



COMMON DIPPER



DIP CIRCLE

Louis XVI. and a preparation for the more grandiose Empire style of Napoleon's day.

Directory, the name given to the government of France, consisting of a legislative body of two chambers, the Council of the Ancients and the Council of Five Hundred, which succeeded the fall of the Convention, and ruled France from October 27, 1795, till its overthrow by Bonaparte on the 18th Brumaire (November 9, 1799). The Directors proper were five in number, and were elected by the latter council from a list presented by the former. The chief members were Barras and Carnot.

Dirigible, a type of balloon propelled by engine-driven propellers. It developed from the free balloon and is usually elongated in form and non-rigid—that is, the shape is maintained solely by the pressure of the gas within the envelope. Dirigibles of about 70,000 cubic feet capacity, known as "Blimps," were used in the Great War for scouting. They are now largely superseded by the rigid and semi-rigid airship. See Airship; Balloon.

Dirk, spelt *dork* in the 17th Century, a dagger with a 5- or 6-in. blade and a short carved handle, generally made of horn or wood; the weapon worn by Scottish Highlanders.

Dirt-track Racing, the sport of cycling round tracks made of loose earth; first introduced from Australia in 1927, it soon attracted large crowds of spectators in England.

Discharge, the cessation of military or naval service. Discharge usually takes place at the end of the period of service for which enlistment was made. Discharge may take place before the expiration of this period with the consent of the soldier, (e.g., to enable him to take up civil work), or without his consent for various reasons, such as (1) irregular enlistment; (2) unsuitability for service; (3) conviction for felony; (4) misconduct; (5) claim for wife desertion if married before enlistment.

Disco, a mountainous island off W. Greenland, with rich coal-mines, quarries and fisheries. Godhavn lies on the S. coast. Area 3,000 sq. m.

Discobolus, The, an antique statue representing the thrower of the discus, and executed by the Athenian sculptor Myron in the first half of the 5th Century B.C. A copy is in the British Museum.

Discord, The Goddess of (Discordia), a mischief-making divinity, daughter of Night (Nox) and sister of Mars, Nemesis, Parca and Death, who on the occasion of the wedding of Thetis with Peleus, threw into the hall where all the gods and goddesses were assembled a golden apple inscribed "To the most Beautiful," which act gave rise to dimensions that both disturbed the peace of Olympus and the impartial administration of justice on earth. See Paris.

Discount, an allowance deducted from a sum of money which represents the price of an article, a debt, etc. Trade discount is the allowance made from the usual retail price by a wholesaler to a retailer. The percentage varies according to the practice of different trades. Cash discount is a small percentage (1½ to 2 per cent.) allowed on an account paid within a stated time. Banker's discount is the amount deducted from the value of a Bill of Exchange

if "bought" by the bank prior to its maturity. The discount is reckoned at simple interest over the time still to run before the bill matures.

Discovery, in law a disclosure. One party in an action is able to compel the other to disclose on oath certain facts, documents, etc., which are material to the case of the party claiming discovery. To obtain discovery of all the documents in an opponent's possession, application must be made to a master in chambers and the applicant must first pay £5 into Court to the "Security for Costs Account." On the hearing of the application the master will order disclosure or "discovery" only so far as he deems necessary either for disposing of the action or for saving costs. No party need produce any document which relates solely to his own title to property, nor any documents which, if produced, would tend to criminate him.

Discus, a circular plate of stone or metal made for throwing to a distance. In ancient Greek times it was 8 to 12 in. in diameter and throwing was a principal gymnastic exercise, being included at the Olympic Games in the pentathlon or quintuple games. In the modern sport the discus weighs about 4½ lb. and is thrown from a 8 ft. 2½ in. circle. The modern style of throwing differs from the Greek.

Disendowment, the annulling of an endowment with especial reference to ecclesiastical endowment. When a Church is disestablished, disendowment usually takes place also—i.e., the State appropriates certain endowments and administers them for the public good. The Irish Church was disendowed in 1871 and the Russian Church in 1918. The disestablishment of the Church in Wales, however, in 1920 was not accompanied by disendowment.

Disestablishment, the act of a Church of state recognition, privileges and status. The question was a political one in England at the end of the 19th Century, and talk of it was revived when the House of Commons twice rejected the revised Prayer Book of 1927. The Church of Ireland was disestablished in 1871 and the Church of Wales in 1920.

Disfranchisement, the condition of those excluded from the suffrage, with no right to vote in the election of representatives to the government. In most countries some part of the community is disfranchised (e.g., minors). The extension of the suffrage varies, and in some countries women are still unenfranchised. The American Negro was enfranchised in the U.S.A. in 1870, while on the other hand the disfranchisement of the natives in Cape Province, S. Africa, was recently enacted in April 1936.

Disinfection, the process of protecting persons from germ infection or of rendering articles of clothing, bedding, rooms, drains, etc., free from contamination. Liquid disinfectants may be used for disinfecting wounds and for personal disinfection: iodine, perchloride of mercury, carbolic acid, chlorinated lime, formalin, zinc chloride (Burnett's solution), potassium permanganate (Condy's fluid), oxidised turpentine (Sanitas) and coal-tar derivatives (Lysol, Cyllin, Izal, etc.). Among gaseous disinfectants sulphur fumes and formalin vapour may be mentioned. Sunlight is certainly the best disinfectant and heat the most powerful germicide.

Dislocation, an injury to joints whereby the opposed joints are put out of connection and the surrounding muscles and ligaments are sprained. A compound dislocation is one where the bone is forced through the skin. The reduction of the



DISCOBOLUS

dislocated joint to its normal position requires specialised skill and should never be attempted by an unqualified person.

Disney, Walter "E.", creator of "Mickey Mouse" of the films, was born in Chicago. He has done farm work and served with the ambulance in France. He learned some drawing at Chicago, and went to California in 1923. Besides many short film cartoons introducing Mickey Mouse, Minnie, Pluto the dog, Donald the duck and other favourite animal characters, he has attempted full-feature length cartoons, the first being *Snow White and The Seven Dwarfs*, based on the well-known fairy tale of the brothers Grimm. (1901-).

Dispensation, exemption from requirements of the law. In England the Sovereign's power to dispense with the law was denied by the Bill of Rights, and survives only in such forms as the prerogative of pardon, which is exercised in a strictly formal and constitutional manner. Ecclesiastical dispensation is a permission granted by the head of the Church (Pope, Archbishop, etc.) to evade either compliance with canon law or the consequences of previous non-compliance; established in the Roman Catholic Church since the 5th Century.

Dispenser, a person able to make up medicines according to prescription. Any person practising as a dispenser must first have passed examinations under the auspices of the Pharmaceutical Society and must also be registered under the Pharmacy Acts. The practice of dispensing was not isolated as a profession distinct from that of the doctor until the 17th Century. The enlargement of modern pharmacopoeias requires the dispenser to possess wide knowledge and considerable skill.

Dispersion. When white light is refracted at the surface between two media, the red rays are deviated less than the blue, and the resultant image has a coloured border. This is corrected in optical instruments by using two lenses of different glass, one compensating for the dispersion of the other.

Disraeli, Benjamin. See *Beaconsfield*.

D'Israeli, Isaac, a man of letters, born at Enfield, Middlesex. He was the only son of a Spanish Jew settled in England, who left him a fortune, which enabled him to cultivate his taste for literature. He wrote several works, but is best known by his *Curiosities of Literature*, a work published in six vols., full of anecdotes, and two books on the quarrels and calamities of authors. He was never a strict Jew, and finally cut the connection, having his children baptised as Christians. He was the father of Benjamin Disraeli, the British statesman who became Lord Beaconsfield. (1766-1848).

Diss, a market town of Norfolk, England, on a hill above the Waveney, 19 m. SW. of Norwich, once a centre for making hempen cloth. John Skelton the poet, who died 1529, was rector here. Pop. 3,400.

Dissection, the cutting up or separation of the component parts of human or animal bodies, or plants; considered as a branch of anatomy or biology and botany. Among the first ever to dissect the human body was Herophilus, a Greek physician of Chalcedon who was credited with the discovery of the lacteals, the nerves, the glands and the pulse, and with giving their names to the various parts of the human body. In 1297 Pope Boniface VIII. forbade dissection of dead bodies, but in England in 1540 surgeons were permitted to dissect bodies of executed murderers. This privilege was taken away by law in 1832, provision being made for anatomists to dissect under certain regulations the bodies of those dying in workhouses.

Dissenters, name for Protestants in England who dissent from the doctrine or ritual of the Church of England; called also Nonconformists, a name taken by the Puritans in protest against the Act of Uniformity in 1662. Dissenters were subject to many legal disabilities, civil and religious, which were not relieved until 1828 by the Corporation and Test Repeal Act. In 1836 Dissenters were permitted to solemnise legally recognised marriages at their own places of worship, and in 1880 Dissenting ministers were allowed to conduct burials in their own burial-grounds. Dissenters are now under no civil disability.

Dissolution, a term used to denote the cessation of Parliament when it is dissolved either by the Government before a general election, or on the expiration of five years, the normal life. The term also refers to the termination of a partnership or business company, the act being notifiable in the *London Gazette* to safeguard the interests of creditors.

Distaff, a staff held under the left arm during the process of hand-spinning of cotton, etc., and to which the material to be spun was fixed. As the fibres were drawn from the material they were twisted with the right hand, the resulting thread being wound round a reel.

Distemper, a disease which affects generally between the third and sixth months of their age, consisting of an infectious microbic inflammation of the mucous membranes of the respiratory passages. Treatment consists in relieving the stomach and bowels by aperients, and in keeping the animal dry and warm, with a light diet of bread and milk.

Distemper, the most ancient method of painting, and in use before the adoption of oil-painting. The colours are "tempered" or mixed with and diluted by a medium to a proper consistence. Modern distemper is mixed with weak glue or size, and the colours are made up into a "body" with whiting or thin plaster of Paris.

Distillation, the process of converting a liquid into vapour and then condensing the vapour back to the liquid state again. In this way non-volatile impurities are left behind in the still and the liquid is consequently purified. If sea-water, for example, is distilled, the salt and other solid substances dissolved in it are left in the distilling vessel and the distillate—i.e., liquid which distils over—is pure water.

Liquids of different boiling points, if mixed together, may often be separated by fractional distillation. Thus ether boils at 35° C. and aniline at 182° C.; if a mixture of ether and aniline is distilled, the first fraction of the distillate consists almost entirely of ether and the last almost entirely of aniline, while the middle fraction consists of both. If it is sufficiently large, this middle fraction can be fractionally distilled again. For liquids that decompose when heated to their boiling points under ordinary pressure, distillation under reduced pressure ("in vacuo") is employed. Here the distillation apparatus is exhausted by attachment to a pump which will remove air from it, and when the pressure is sufficiently low, the liquid is distilled, boiling at a much lower temperature than its ordinary boiling point.

Substances of high molecular weight, which do not mix with water but are appreciably volatile at the boiling point of water, may be purified by distillation in a current of steam ("steam distillation"); the distillate consists mainly of water, but partly of the required substance, impurities being left in the distillation vessel.

Distinguished Conduct Medal

(D.C.M.), a medal awarded for distinguished conduct in war to warrant officers, non-commissioned officers and men in the Army. The ribbon has three vertical stripes, outside red, inside blue.

Distinguished Flying Cross

(D.F.C.), a medal designed for award to officers and warrant officers in the Royal Air Force for acts of gallantry when flying in action against an enemy. It was instituted in 1918. The ribbon is striped horizontally, purple and white.

Distinguished Service Cross

(D.S.C.), a medal awarded to officers of the Royal Navy below the rank of lieutenant-commander, and to warrant officers, for conspicuous service. It superseded the Conspicuous Service Cross in 1914. The ribbon has three vertical stripes, blue on the outside, white in the centre.

Distinguished Service Order

(D.S.O.), a decoration awarded for special services in action to commissioned officers of the Royal Navy, the Army and the Royal Air Force. The order dates from 1886. The members of the orders are companions and rank before the fourth class of the Royal Victorian Order. The ribbon is red with blue edges.



Distraint, or *Distress*, the seizure of goods or cattle for the purpose of procuring satisfaction for a wrong, such as the non-payment of rent, rates, taxes, duties or for damage done by straying cattle, in which case the cattle must be seized by the aggrieved person while they are actually trespassing. It is usually levied through a certified bailiff with a "distress warrant." The goods may be sold after 5 days. Certain personal goods or chattels, such as clothing, bedding and working implements, are absolutely privileged, and distress may not be levied on them. Others are conditionally privileged. Distraint must be made in the day-time and not on a Sunday. Goods distrained must be "impounded" for 5 or 15 days before sale.

Distributor, an important part of the equipment of a light-tension magneto (q.v.), consisting of a rotary switch by which the electrical energy is passed to the various spark plugs in a particular order.

Ditchling Beacon, high point (813 ft.) of the South Downs, 6 m. N. of Brighton. It is crowned by ancient earthworks. It was bought by Brighton Borough Council in 1918. Near is Ditchling village.

Dithyramb, a hymn in a lofty and vehement style, originally in honour of Dionysus (Bacchus), in celebration of his sorrows and joys, and accompanied with flute music.

Diuretics, medicines which stimulate the flow of urine, often administered when morbid products accumulate in the body and in cases of dropsy to assist in the removal of watery collections; alcohol, turpentine, cantharides and caffeine are effective, but turpentine and cantharides are not now used, as they irritate the kidneys.

Divan, a Persian word for a muster-roll, register of payments, etc., the last usually prominent as furniture in assembly rooms and fashionable in Europe after the 18th Century.

Divers, or Loons, a family of birds (the Colymbidae) very closely allied

to the Grebes, and having fully-webbed toes. They are essentially swimming and diving birds, but fly well, though they are awkward on land. Their winter plumage is of more sober colours than their summer breeding plumage.



GREAT NORTHERN DIVER

Species nesting in Great Britain are the Great Northern and the Red-throated. The Black-throated and the White-billed are winter visitors only.

Dives, the name given, originally in the parable of the Rich Man and Lazarus, (See Luke xvi.).

Dividend, a term in arithmetic signifying the quantity to be divided but especially in commerce the periodical payment of interest on loans, debentures or public funds, as well as the profits of joint-stock companies paid to the shareholders. It is also applied to the proportionate sum of the debts of a bankrupt paid after his assets are realised.

Divination, the art of foretelling the future or discovering hidden things by supernatural means. In one form or another it was extensively practised in ancient times—e.g., in ancient Rome, where the *haruspices* were consulted on important occasions. This was done by the examination of the entrails of a slaughtered victim. Soothsayers have also been employed, and even in modern times palm-reading, card-reading and divination by the reading of tea-leaves are used for the forecasting of the future.

Divine Comedy, The great poem consisting of three sections, the *Inferno*, *Purgatorio*, and *Paradiso*; "three kingdoms . . . Dante's World of Souls . . . all three making up the true Unseen World, as it figured in the Christianity of the Middle Ages"; the poem describes how, in a vision, Dante passes through hell, purgatory and heaven, led by Virgil, Beatrice and St. Bernard. See *Dante Alighieri*.

Divine Right, a claim on the part of kings, now all but extinct, though matter of keen debate at one time, that they derive their authority to rule direct from the Almighty, and are responsible to no inferior power, a right claimed especially on the part of and on behalf of the Bourbons in France and the Stuart dynasty in England, and the denial of which was regarded by them and their partisans as an outrage against the ordinance of Heaven.

Diving, an art practised since ancient times, and, before mechanical devices were adopted, the only means of obtaining sponges, pearls, coral, etc. Aristotle refers to instruments by means of which divers were able to draw air from above the water, and by this means to remain a long time below the surface. The invention of the diving bell was first used during the construction of Hexham Bridge. In 1819 Siebe invented the diving dress with air pumped into the helmet. It was improved in 1837, and is a waterproof covering of strong twill and indiarubber, with a helmet of copper. Modern diving suits, however, are of jointed cast steel and shodged light-weight metal for work at 240 ft., where water pressure renders the earlier suits ineffective. The joints of the arms and legs work on a ball-and-socket system.

Divining Rod, a forked branch, usually of hazel or rowan, used for the purpose of locating sub-

torrean water. Latterly artificial rods of iron, brass or copper have been used successfully by persons sensitive to the presence of water. In ancient times minerals were sought by its aid.

Divinity, the character of being divine or possessing God-like attributes; a God-head; also the science that deals with the nature of God, and a faculty in Universities, especially for the education, in such matters, of students preparing for priesthood. The study embraces the theological systems of heathen, as well as of Christian, nations. The term is used more commonly by Protestants than by Catholics, who prefer the term theology.

Division, in arithmetic a method of number is contained in another; in military terms a unit of the army, commanded by a general, and containing all branches of the service. An infantry Division usually consists of about 350 officers and 10,000 men. Three infantry divisions make up an army corps. A cavalry division is of two brigades. A parliamentary division occurs when the "ayes" and "noes" are nearly equal and the members "divide", whereupon they are counted in the lobbies of the House of Commons.

Divorce, dissolution of marriage by law, granted by the Probate Divorce and Admiralty Division of the High Court, under the Matrimonial Causes Acts, 1857-1937. Previously divorce was obtainable only by Act of Parliament, though the courts, following the ecclesiastical practice, could grant a decree of judicial separation, which of course did not leave the parties free to marry again. Divorced persons, however, may marry again as soon as the decree nisi has been made absolute, which is usually six months after the decree nisi, provided the King's Proctor has not successfully intervened on the ground of collusion or for other reasons. No petition for divorce may be presented during the first three years after marriage unless the judge allows it on the grounds of "exceptional hardship" suffered by petitioner or "exceptional depravity" of respondent (Act of 1937)—which two grounds are entirely within the court's discretion—and, in determining an application, the court must have regard to the interests of the children.

Grounds of Petition.—A petition may be presented either by the husband or wife for (a) adultery; (b) desertion without cause for at least three years; (c) cruelty; (d) incurable unsoundness of mind of respondent—but respondent must have been continuously under treatment and care for at least five years immediately preceding the petition. A wife may petition on the ground that her husband has, since marriage, been guilty of rape, sodomy or bestiality (save for these grounds, husband and wife are now on equal terms in applying for divorce). A petitioner who also has committed adultery must seek the court's discretion, otherwise the petition will fail. Petitioner may also sue the co-respondent for damages. There is no exact legal definition of "desertion"; but it implies the leaving the other spouse without consent (Ward v. Ward, 1858). Refusal to obey an order for restitution of conjugal rights is constructive desertion. Cruelty includes danger to life or limb, or to health, bodily or mental. Before the law was amended by the Act of 1937 (the Bill introduced by A. P. Herbert), the court was bound to satisfy itself that the petitioner had not "connived at or condoned" the adultery. Under the new Act petitioner must satisfy the court that "there has been no collusion, connivance or consent." Though the Act uses the word "collusion" for the first time in a statute, it does not state how the court should exercise its duty of inquiry. It

would seem, however, that if the court is not satisfied, it should, before dismissing the petition, either ask for witnesses to be called who might be able to assist, or call on the King's Proctor. But even if the respondent were called, he (or she) could not be compelled to answer any question tending to show that he had committed adultery, unless he chose to admit it or gave evidence in denial. There is no narrow definition of "collusion," but it exists where the originating of the petition is founded on an agreement between the parties or their agents.

A petition for **Judicial Separation** may be presented on any grounds on which a petition for divorce might have been presented or on the ground of failure to comply with a decree for restitution of conjugal rights or on any ground on which a decree *a mensa et thoro* (from board and bed) might have been pronounced. Where the court grants the decree, it is no longer obligatory for petitioner to cohabit with respondent. The grant of the decree does not bar presentation of a petition for divorce upon substantially the same facts.

Nullity.—A marriage is void *ab initio* where the parties cannot or have not contracted a valid marriage—e.g., a bigamous marriage, a marriage induced by fraud, a marriage within the prohibited degrees of affinity. Prior to the Act of 1937, non-consummation for physical or mental defect was the sole ground on which a regular marriage was voidable. New grounds of nullity are: (a) non-consummation owing to wilful refusal of respondent to do so; (b) that either party, at marriage, was of unsound mind or a mental defective; (c) that respondent has suffered venereal disease in a communicable form; (d) that respondent was at the time of marriage pregnant by some person other than petitioner. Generally speaking, however, grounds (b), (c) and (d) will not nullify the marriage unless petitioner was ignorant of the alleged facts at the time of marriage and, in any case, proceedings must be begun within a year; nor will the court grant a decree unless it is satisfied that marital intercourse with the consent of petitioner has not taken place since the discovery by petitioner of the existence of the grounds for a decree.

Usually six months must elapse between the decree nisi and the decree absolute, but in certain circumstances the court may reduce this period.

Alimony.—While a divorce suit is in progress, the husband is liable to provide his wife with alimony or maintenance. The amount is usually one-fifth of his income. After a divorce has been pronounced, the court fixes permanent alimony. This is often at such an amount as will make up the wife's income to one-third of the joint income, but the court has a wide discretion in the matter.

Dixmude, town in the province of W. Flanders, Belgium, on the R. Yser, 12 m. N. of Ypres. It was the scene of much fighting in the autumn of 1914, and was finally recaptured by the Belgians in Sept. 1918.

Dixon, William Hepworth, an English writer and journalist, born in Manchester; wrote *Lives of Howard*, Penn. Robert Blake and Lord Bacon, *New America*, *Spiritual Wives*, etc.; was editor of the *Athenaeum* from 1853-1889. (1821-1878).

Dnieper, a river of Russia, anciently called the Borysthenes, the third largest for volume of water in Europe, surpassed only by the Danube and the Volga; rises in the province of Smolensk, and flowing in a generally southerly direction, falls into the Black Sea below Kherson after a course of 1,330 m.; it traverses some of the finest provinces of the country, is navigable for nearly its entire length, and serves for the transport of corn from the interior.

Dniepropetrovsk, city of the Ukrainian Socialist Soviet Republic, formerly Ekaterinoslav; on the Dnieper, a mining town producing coal, manganese and iron. Pop. 379,000.

Dniester, a river which takes its rise in Poland, in the Carpathians, and for a large part of its course forms the boundary between Rumania and the Ukraine; flows generally in a S.E. direction past Bender, and after a rapid course of 650 m. falls into the Black Sea at Alkerman.

Döbereiner's Lamp, a light jet of hydrogen passing over spongy platinum; named after Johann Döbereiner, a German chemist. (1780-1849).

Dobruja (*Dobruja*, or *Dobrogea*), the part of Rumania between the Danube and the Black Sea, a barren, unwholesome district; rears herds of cattle. It fell to Mackensen's Austro-German armies in 1916, but was returned to Rumania in 1919. Area 8,980 sq. m. Pop. 893,000.

Dobson, Henry Austin, poet and prose writer, born at Plymouth, held appointment in a department of the Civil Service; wrote *Vignettes in Rhyme*, *Proverbs in Prose*, *Old World Idylls*, in verse, and *Lives of Fielding, Hogarth, Steele and Goldsmith* in prose; contributed extensively to the magazines. (1840-1921).

Dobson, William, portrait-painter, born as king's serjeant-painter to Charles I.; painted the king and members of his family and court; he was supreme in his art prior to Sir Joshua Reynolds. He was imprisoned for debt and died in poverty. (1610-1646).

Dock, the common name of several tap-rooted species of *Rumex*, a genus of plants which includes sorrel. The Common Dock (*R. obtusifolius*) and the Great Water Dock (*R. hydrolapathum*), besides other species, grow in Britain as weeds. The broad leaves are beneficial in allaying nettle-sting irritation.



Dock, a structure built by engineers to enclose a vessel for loading facilities or for the purposes of repair work. These are the wet dock, the dry dock and the floating dock. A wet dock adjoins the sea or river, and is a basin partly or wholly surrounded by quays. The entrance and departure of vessels depend upon the tide, and locks are fitted to adjust the difference in water-level. Wet docks are necessary where the tidal variation exceeds 12 ft. Important docks at Liverpool are the Canada, the Langton and the Alexandra, whose system covers over 44 acres. The Royal Victoria and Royal Albert Docks and the King George V. Dock of London extend over 1,102 acres. Other important London docks are the Surrey Commercial, London and St. Katharine, West India and Millwall, and the East India Dock.

Where the shores are low-lying, tidal docks are constructed, as well as at places where the tide is slight, such as the Atlantic coast of N. America, and in the Mediterranean dry docks can be pumped dry and completely enclosed, and are built of concrete, brick or masonry. Keel blocks are fitted to the bottom upon which the vessel for repair, etc., is placed. They are also called graving docks. Another form is the floating dock, which can be towed to the place where it is needed. A special floating dock was built for the *Queen Mary* in 1936. Floating docks are supported by pontoons, and are constructed usually of iron and steel.

Dockyard, a place where naval ships efficient, equipped with stores, ammunition and personnel, etc. They are controlled by the Admiralty, represented by an Admiral-superintendent. He directs the labour, supervises the other officers and controls the accounts. The principal dockyards in England are at Portsmouth, Devonport, Chatham, Sheerness and Pembroke. Dockyard administration is responsible to the Controller of the Navy, assisted by the Directors of Dockyards, Stores and Naval Construction.

Doctor, meaning a teacher, is a title or degree granted by a university upon qualification. It ranks next above master in science. Since the 14th Century a title in medicine, and applied to one who is qualified to practise surgery or medicine according to the requirements of the British Medical Association. Honorary doctorates are conferred upon distinguished persons by Universities, especially Doctor of Civil Law, D.C.L., Doctor of Divinity, D.D., and Doctor of Laws, LL.D.

Doctors' Commons, a college of the civil law in London, where they used to eat in common, and where eventually a number of the courts of law were held. Originally it was a society of ecclesiastical lawyers, practising civil and canon law. It was incorporated under royal charter in 1768 and dissolved in 1857.

Doctrinaires, mere theorists, particularly on social and political questions; applied originally to a political party that arose in France in 1815, headed by Royer-Collard and represented by Guizot. It stood for a constitutional government that should avoid acknowledging the divine right of kingship on the one hand and the divine right of democracy on the other.

Dodabetta, the highest peak (8,760 ft.) in Madras, in the Nilgiri Hills.

Dodd, Francis, British artist, son of a Wesleyan Methodist minister. He was one of the official artists of the Great War, and painted a series of portraits of the Generals. Elected R.A., 1918. (1874-).

Dodd, Dr. William, an English divine, born at Bourne, Lincolnshire; was one of the royal chaplains; attracted fashionable audiences as a preacher in London, but lived extravagantly, and fell hopelessly into debt, and into disgrace for the nefarious devices he adopted to get out of it; forged a bond for £4,200 on the Earl of Chesterfield, who had been a pupil of his; was arrested, tried, convicted and sentenced to death, a sentence which was carried out notwithstanding the great exertions made to procure a pardon; wrote a *Commentary on the Bible*, and compiled *The Beauties of Shakespeare*. (1729-1777).

Doddridge, Philip, a Nonconformist divine, born in London; was minister at Kibworth, Market Harborough, and Northampton successively, and much esteemed both as a man and a teacher; suffered from pulmonary complaint; went to Lisbon for a change, and died there; was the author of *The Family Expositor*, but is best known by his *Rise and Progress of Religion in the Soul*. (1702-1751).

Dodecanese, a group of 13 (originally only 12 were counted in the group) Italian islands in the Aegean Sea, the coast of Asia Minor. They were led by Italy in 1912, recognition of hering given by Great Britain under the of London in 1915. The islands are Patmos, Lipsos, Kalymnos, Leros, Nisyros, Karoli (Calchi), Symi, Astypalea, Rhos (Scarpanto), Cosos and Rhodes. approx. 80,000.

Dodgson, Charles Lutwidge, English author and lecturer in mathematics, with the *nom de plume* of Lewis Carroll, born at Daresbury, Cheshire, son of a clergyman; a shy and quaintly precocious child; went to school at Richmond and then to Rugby; distinguished himself at Oxford in mathematics; he was ordained deacon, but never took priest's orders; author of *Alice's Adventures in Wonderland*, with its sequel *Through the Looking-Glass*, besides other works, mathematical, poetic and humorous. His fanciful books have kept their popularity undiminished, a popularity which was to some extent helped at first by the woodcuts of Charles Tenniel. The MS. of *Alice in Wonderland* was sold in America recently for over £30,000. (1832-1898).

Dodman, The, lofty headland of S. St. Austell, Cornwall, England, 8 m. S. of St. Austell, the property of the National Trust.

Dodo, an ungainly, flightless bird, larger than a turkey, with short scaly legs, a big head and bill, short wings and tail, and a greyish down plumage, now extinct, though it is known to have existed in Mauritius some 200 years ago.



DODO

Dodona, an ancient Zeus, in Epirus, close by a grove of oak trees, from the agitation of the branches of which the mind of the god was construed, the interpreters being at length three old women. It was more or less a local oracle, and was ere long superseded by the more widely known oracle of Delphi (q.v.).

Dodsley, Robert, an English poet, dramatist and publisher; wrote a drama called *The Toyshop*, which, through Pope's influence, was acted in Drury Lane with such success as to enable the author to commence business as a bookseller in Pall Mall; projected and published the *Miscellany*, and continued to write plays, the most popular *Cleone*; is best known in connection with his *Collection of Old Plays*; he was a patron of Johnson, and much esteemed by him. (1703-1764).

Doeg, a herdsman of Saul (1 Sam. xxi. 7); a name applied by Dryden to Elkanah Settle in *Abraham and Achitophel*.

Dog, a domestic quadruped of the *Canis* genus which includes the wolf, jackal, fox, etc. Its origin is said to have been from the wolf. It is digitigrade—i.e., walks on toes, the fore-feet having five and the hind four. The legs are slender, the head is small and pointed or square according to the breed. Its teeth consist in each jaw of six incisors, two canines, eight premolars and five molars, though in some species this number varies. The tail varies in length, some kinds being tailless. The period of gestation is 63 days. A dog's average length of life is 10 to 14 years.

By nature carnivorous, the dog has keen intelligence and an acute sense of smell, but the chow-chow is a vegetarian, and in cold latitudes the food is fish. The pariah of India is a scavenger and is a carrion-feeder. There is no complete classification of dogs, since in recent times experimental breeding is producing new types, but broadly they can be divided into those with elongated heads—e.g., the Irish wolfhound, greyhound, etc.; those with moderately elongated heads, such as the St. Bernard, Newfoundland, sheep-dog, spaniel, setter, etc., and those with more or less shortened muzzles like the terrier, bull-dog and numerous toy-dogs.

The Kennel Club enumerates 62 different

species and about 190 varieties which they cover, and they are called either sporting or non-sporting. Wild dogs other than those already mentioned are the hyæna or Cape hunting dog of Africa, which runs in packs, and the long-eared Cape fox, noted for its large ears; those of America which embrace the crab-eating dog of the Orinoco, the bush dog of Brazil and the nocturnal *Canis Azaræ* of the Andes. In Asia there is the pariah, an off-eater, the dhole and buanah of India, nocturnal hunters and very ferocious; the racoon dog of N. China and Japan and in Australia the dingo, the solitary specimen of dog in that continent.

Dogs are subject to certain diseases, such as distemper (q.v.), rabies (q.v.) and eczema, from over-feeding or unsuitable diet. The keeping of dogs in Great Britain is subject to certain legal regulations. No person may keep a dog over 6 months old unless he holds a licence to be obtained (price 7s. 6d.) annually from a post office. Exemption may be obtained in the case of dogs used to lead blind persons and those employed on sheep and cattle farms. A court has power to order a dog to be destroyed if it is dangerous to others.

Dog-days, 20 days before and 20 days after the rising of the Dog Star, Sirius, at present from July 3 to August 11.

Doge, the name of the chief magistrate of Venice and Genoa, elected at first annually and then for life in Venice, with, in course of time, powers more and more limited, and at length becoming little more than a figure-head; the office ceased with the fall of the republic in 1797, and in Genoa in 1804.

Dog-fish, the name of several species of fish of the shark order. They

are grouped together in the Squalidae family. Some are oviparous (i.e., the young are born from eggs); some are

LARGE SPOTTED
DOG-FISH

viviparous (young brought forth alive from the mother). They are voracious and hunt in packs. Several are found round the coasts of Great Britain, the Piked Dog-fish in particular, it being one of the commonest of the shark order. Other species found round the British coasts are the tope or toper, the smooth hound, and the large and small spotted dog-fish. The flesh of the spotted species and of the piked is extensively used (under other names) in fried-fish shops.

Dogger Bank, a sandbank in the North Sea; a great fishing-field extending between Jutland in Denmark and Yorkshire in England, though distant from both shores; 170 m. long, over 60 m. broad, and from 8 to 10 fathoms deep. It was the scene of a naval engagement in Jan. 1915, in which the *Blücher* was sunk.

Doggett's Coat and Badge,

a prize competed for annually by the watermen of the Thames, inaugurated in 1715 by Thomas Doggett, a Drury Lane actor of George I.'s reign.

Dogma, originally a term for the statement of a proved truth or a decree such as those issued by a Greek assembly. Nowadays a theological term designating the Christian doctrine, but in this country the word often refers to an assertion without authority, hence dogmatism. The German universities have a professorship of dogma in theology.

Dog Rose, a popular name for the wild, scentless rose (*Rosa canina*) of the order Rosaceae, familiar in English hedgerows both in flower (white and red flowers) and in fruit (hips). It flowers in June. See also ↑

Dogs, Isle of, a low-lying projection of a square mile in extent from the left bank of the Thames, opposite Greenwich, and 3½ m. E. of St. Paul's.

Dog's Tail Grass, a genus of two species are found in Britain, the *Cynosurus cristatus* being a most valuable pasture grass with close herbage and yielding the best hay. Its roots penetrate deeply and it resists drought.

Dog Star, the popular name for Sirius, the brightest star and one of the nearest to the earth, in the constellation of Canis Major.

Dog Watch, a term used at sea for a turn of duty from 4 to 6 p.m. and 6 to 8 p.m.

Dogwood, the general term for the *Cornus* genus of the Cornaceae. The Common Dogwood (*Cornus sanguinea*) is familiar in England, bearing dark red branches, egg-shaped, pointed leaves and small, dark-purple berries. The wood, which is hard, is useful. A Scotch species, *Cornus suecica*, has a tonic value. Others yield red dye.

Dolabella, Publius Cornelius, son-in-law of Cicero, a profligate man, joined Caesar, and seized the consulship on his death; joined Caesar's murderers after his death; was declared from his profligacy a public enemy; driven to bay by a force sent against him, ordered one of his soldiers to kill him. (70-43 B.C.).

Dolcoath, rich copper-mine of Cornwall, wall, England, at Camberne. It has been worked since 1800.

Doldrums, a zone of the tropics where calms lasting for some weeks prevail, broken at times by squalls and baffling winds.

Dôle, a town of France in the dept. of Jura, on the Doubs and the Rhône and Rhine Canal, 28 m. S.E. of Dijon, with ironworks, and a trade in wine, grain, etc. Pop. 18,000.

Dole, a charitable grant of money or food. The word came to be applied loosely both to outdoor relief paid by the guardians and the weekly benefit paid under the Unemployment Insurance Act.

Dolet, Étienne, a learned French humanist, born in Orleans, became, by the study of the classics, one of the lights of the Renaissance, and one of its most zealous propagandists; suffered persecution after persecution at the hands of the Church, and was burned in the Place Maubert, Paris, a martyr to his philosophic zeal and opinions. (1509-1546).

Dolgelly, county town of Merionethshire, Wales, with woollen manufactures; Cadair Idris, 2,929 ft., is in the vicinity. Pop. 2,260.

Doll, a child's toy resembling the human figure. They were known in ancient times in Greece, Rome and Egypt. In Africa negro tribes ascribed magic powers to them, and they became idols, charms against evil spirits, etc. The wooden doll originated in Flanders, and from it the elaborate doll of to-day has developed, with its movable limbs, opening eyes and "real" hair. Sawdust and, later, unglazed pottery called bisque, rubber and papier-mâché became general as material in doll-making. Modern dolls tend to be bizarre in design, and French models are elaborately gowned and sophisticated in appearance.

Dollar, the unit of the money system of the U.S.A., U.S.A., Canada and Liberia and the Straits Settlements, the most important being that of U.S.A., where it was adopted in 1794. The gold dollar, which is the unit, is now worth a value of 15½ grains of gold 0.0676 fine, this being the equivalent of a price of 35

dollars per fine ounce for gold. The silver dollar weighs 412½ gms. and contains 371.25 grains of fine silver. The dollar in use in the Straits Settlements has a value of 2s. 4d. The Canadian dollar at par of the exchange is valued at 4.86½ dollars to the £ sterling. The word is also a slang term for the English five-shilling piece.

Dollar, town of Clackmannanshire, Scotland, 6 m. N.E. of Alloa. It has a large Academy, the Dollar Institution, opened about 1819. Pop. 1,500.

Dollart Zee, a gulf in Holland into which the Ems flows, 3 m. long by 7 broad, and formed by inundation of the North Sea.

Döllinger, Johann Joseph Ignaz von, a Catholic theologian, born in Bamberg, Bavaria, professor of Church History in the University of Munich; head of the Old Catholic party in Germany; was at first a zealous Ultramontanist, but changed his opinions and became quite as zealous in opposing first, the temporal sovereignty, and then the infallibility of the Pope, and was excommunicated from the Church; he was a polemic, and as such wrote extensively on theological and ecclesiastical topics; lived to a great age, and was much honoured to the last. (1790-1890).

Dollond, John, a mathematical instrument-maker, born in Spitalfields, London, of Huguenot descent; began life as a silk-weaver; made good use of his leisure hours in studies bearing mainly on physics; went into partnership with his son, who was an optician and optical instrument maker; made a study of the telescope, suggested improvements which commended themselves to the Royal Society, and in particular how, by means of a combination of lenses, to get rid of the coloured fringe in the image. (1766-1761).

Dolmen, rude structures of prehistoric date in France, equivalent to the cromlech (q.v.), consisting of upright unheaved stones supporting one or more heavy slabs; long regarded as altars of sacrifice, but now believed to be sepulchral monuments; found in great numbers in Brittany especially.

Dolomite, a double carbonate of lime and magnesia, common in some limestones such as the magnesian limestones of Permian age of Yorkshire and Durham, and the rocks of the Dolomites of the Eastern Alps.

Dolomite Alps, a limestone mountain range forming the S. of the Eastern Alps, in the Tyrol, Italy, famous for the fantastic shapes they assume; named after Dokmaier, a French mineralogist, who studied the geology of them.

Dolphin, a group of sea mammals of the order Cetacea, and closely

related to the whales. The family Delphinidae embraces the narwhal, the beluga, the porpoises and the dolphins. The true dolphins belong to the genus *Delphinus*, the Common Dolphin being *Delphinus delphis*. It is 6 to 8 ft. long, dark brown above and white below. They swim in shoals, feed on fish and are occasionally caught in herring and mackerel nets.



COMMON DOLPHIN

Dombrowski, Jan Henryk, a Polish general, served in the Polish campaigns against Russia in 1792-1794; organised a Polish legion which did good service in the wars of Napoleon; covered the retreat of the French at the Beresina in 1812. In 1815 he was appointed general of cavalry and senator of the kingdom of Poland newly formed. (1756-1818).

Dome, a term in architecture referring to the outside of a circular or polygonal roof, a prominent characteristic of Renaissance architecture, and common also in Eastern mosques. Famous examples are St. Sophia, Constantinople (Istanbul), the Taj Mahal at Agra, India, the Pantheon and St. Peter's of Rome, St. Mark's of Venice, the Pantheon of Paris and the Capitol of Washington, U.S.A. London domes include that of St. Paul's Cathedral and the Albert Hall.

Domenichino, Domenico Zampieri, a celebrated Italian painter, born at Bologna; studied under Calvaert and Caracci; was of the Bolognese school, and reckoned one of the first of them; his principal works are his "Communion of St. Jerome," now in the Vatican, and the "Martyrdom of St. Agnes," at Bologna, the former being regarded as his masterpiece; he was the victim of persecution at the hands of rivals; died at Naples, not without suspicion of having been poisoned. (1581-1641).

Domesday Book, the record (since printed in 2 vols.) of the survey of all the lands of England made between 1085 and 1086 at the instance of William the Conqueror for purposes of taxation. The survey included the whole of England, except the four northern counties and part of Lancashire, and a few towns including London and Winchester, and was made by commissioners appointed by the king and sent to the different districts of the country, where they held courts and registered everything on evidence.

Domestication (of Animals), the gradual progression of animals from the wild state to that where they are employed by man as beasts of burden, in the chase, as companions or pets, etc., or for any other service to man. Such progression involves control, either by training or enclosure, to prevent a return to the wild state, protection, since domestication reduces their resistance to natural risks, feeding, where they are confined either to houses, stables, etc., or yards, and selective breeding in order to increase some suitable characteristic either to produce food, perform work or develop instincts useful to man.

Domestic Science, the science of home management and hygiene, in recent years a prominent subject in education schemes of girls' schools and some universities for women students. It treats of the study of food values and preparation of food, nutrition and physiology, personal hygiene, ventilation, sanitation, laundering, needlework, home nursing and the management of household expenditure and income. Degree and diploma courses are taken at London, Bristol, Reading and Sheffield Universities. Other educational institutions include the National Training College of Domestic Subjects, Buckingham Palace Road, London, and similar centres at Aberdeen, Bath, Belfast, Bristol, Cardiff, Edinburgh, Glasgow, Gloucester, Leeds, Leicester, Manchester and Newcastle-upon-Tyne.

Domestic Servant, a person employed in and about a residence, such as a cook, housemaid, gardener, butler, etc., but excluding a tutor or governess. Since the World War, when there was a demand for women's labour in industry, there has been a decline in their numbers, owing to a disinclination for this class of employment. In law, dismissed generally requires a month's notice, though such offences as wilful disobedience, gross misconduct, dishonesty and incompetence entitle a mistress to exercise instant dismissal. The domestic servant is covered by the Workmen's Compensation Act, and must be

insured against sickness under the National Health Insurance Act.

Domicile, a person's home and principal residence and the centre of his affairs, and may be distinguished as (1) domicile of origin, which depends on the domicile of a person's parents at his birth; (2) that of choice, which is of voluntary acquirement. An illegitimate child takes the domicile of the mother. A child's domicile changes with that of the parent during minority. A woman on marriage takes her husband's domicile. Domicile is important in deciding in certain cases where an action may be brought, and in the law of settlement and removal of paupers.

Dominance, term used in biology to when an offspring receives the genes of two contrasting characters from its two parents, in many cases one of the characters (the dominant) will develop to the exclusion of the other, instead of combining. The repressed character (the recessive) may reappear in the next generation; for example, a cross between pure-bred horned and hornless cattle produces offspring which are all hornless, but if these were mated some horned animals might be found among their descendants. See Mendelism.

Dominica, or Dominique, the largest Leeward Is., in the W. Indies, belonging to Britain. The island is of great beauty and heavily forested in parts. It was discovered by Columbus on Sunday (*Dies Dominica*), Nov. 3, 1493, whence its name. The chief products are limes, coconuts, coconuts, copra, fruit, etc., and the chief export coconuts. There is a small settlement of Caribs on the island. From 1898 to 1925 it was governed by a Nominated Council, but then reverted to an elective system of government. Area 305 sq. m. Pop. 47,000. Cap. Roseau.

Dominical, or Sunday Letter, is used for calendar purposes. Each year is given one of the letters A to G corresponding to the date of the first Sunday in the year: if Jan. 1 falls on a Sunday, A; on a Saturday, B; on a Friday, C, etc. A leap year will have two letters, one for the first two months and a second for the remainder of the year.

Dominican Republic (*Republica Dominicana*), a republic forming the E. part of the island of Haiti, and consisting of two-thirds of it. It was discovered by Columbus in 1492, and for centuries was a centre of Spanish power until the Declaration of Independence in 1821 and the Constitution adopted in 1844 after invading Haitians had been expelled. The country is mountainous and fertile. A large part is forested with pine, the remainder devoted to agriculture, the principal product being sugar. Other exports include coconuts, coffee and tobacco. Gold and copper are the chief minerals. After occupation by American marines, 1916-1924, a new constitution was adopted. Boundary disputes with Haiti were resolved in 1936. Area, 19,300 sq. m. Pop. 1,500,000. Cap. Ciudad Trujillo (former Santo Domingo).

Dominicans, a religious order of preachers, founded at Toulouse in 1215 by St. Dominic, to aid in the conversion of the heretic Albigenses to the faith, and finally established as the order whose especial charge it was to guard the orthodoxy of the Church. The order was known by the name of Black Friars in England, from their dress; and Jacobins in France, from the street of Paris in which they had their headquarters.

Dominic de Guzman, St., saint of the Catholic Church, born in Old Castile, distinguished for his zeal in the conversion of the

heretic; essayed the task by simple preaching of the Word; sanctioned persecution when persecution was of no avail; countenanced the crusade of Simon de Montfort against the Albigenses for their obstinate unbelief. He was the founder of the Dominican Order (known in England from their habit as Black Friars) under the rule of St. Augustine, the order receiving approval from the Pope Honorius III. in 1218 and Dominic himself becoming Master of the Sacred Palace. Festival Aug. 4.

Dominions Office, the government department dealing with the U.K. government's relations with the self-governing Dominions, instituted in 1925, till when its work had been done since 1864 by the Colonial Office. It deals also with the business relating to the S. African territories of Basutoland, Bechuanaland and Swaziland and to the Imperial Conference.

Dominion Status, the political status of a co-equal member of the British Commonwealth of Nations. The overseas Dominions of the British Empire enjoy to-day a much higher degree of independence than when Canada was granted self-government in 1867, or when the South Africa Act was passed in 1909 conferring self-government on the Union, and indeed all the self-governing Dominions now enjoy complete autonomy, and are held together by nothing more than their common allegiance to the Crown. This gradual approach by effluxion of time towards independence was recognised in the Balfourian formula adopted in the Inter-Imperial Relations Report of the Imperial Conference of 1926, which report states that equality of status is the root principle governing inter-Imperial relations so far as concerned Great Britain and the Dominions, which are described in the report as "autonomous communities within the British Empire, equal in status, in no way subordinate one to another in any respect of their domestic or external affairs, though united by a common allegiance to the Crown and freely associated as members of the British Commonwealth of Nations."

An added significance was given to this necessarily loosely-worded formula by the passing of the Statute of Westminster of 1931, the purpose of which was to give extra-territorial operation to the legislation of the British Oversea Dominions. The common allegiance to the Crown is exemplified in the appointment of a Governor-General, the right of appeal to the Judicial Committees of the Privy Council and the status of all subjects of the Dominions as British subjects. Ireland (Eire) has by Act of the Dáil abolished the right of appeal to the Privy Council in the case of its own citizens, and has modified its relation to England to the extent of eliminating the Crown from the internal part of its Constitution.

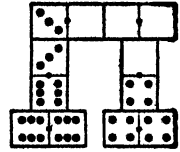
Dominis, Marco Antonio de, a vacillating ecclesiastic, born in Dalmatia; was educated by the Jesuits; taught mathematics in Padua; wrote a treatise in which an explanation was for the first time given of the phenomenon of the rainbow; became Archbishop of Spalato; falling under suspicion he passed over to England, professed Protestantism, and was made Dean of Windsor; seconded to the Papacy, returned to the Church of Rome, and left the country; his sincerity being distrusted, he was cast into prison by the Inquisition, where he died, his body being afterwards disinterred and burned. (1546-1624).

Domino, a term popularly used to denote a mask, but formerly a cloak with wide sleeves and half mask used by persons attending masquerades in Italy, especially Venice; also the name of a hooded cloak worn by monks in cold weather.

Dominoes,

an Italian game invented in the 18th Century; a game of chance and skill played with 28 rectangular pieces of wood, ivory, etc., called dominoes.

The face is marked with dots in numbers ranging from 1 to 6, one domino being blank, and the remainder being 6:1; 6:2 etc.; and 5:1; 5:2; and so forth. The first player "leads" his highest piece, and the second player must play or "pose" one which has a number similar to either of the two on the leader's piece.



DOMINOES

Domitian (Titus Flavius Domitianus), Roman emperor, son of Vespasian, brother of Titus, whom he succeeded in 81, the last of the twelve Cæsars; exceeded the expectations of every one in the beginning of his reign, as he had given proof of a licentious and sanguinary character beforehand, but soon his conduct changed, and fulfilled the worst fears of his subjects; his vanity was wounded by the non-success of his arms, and his vengeful spirit showed itself in a wholesale murder of the citizens; many conspiracies were formed against his life, and he was at length murdered by an assassin, who had been hired by his courtiers and abetted by his wife Domitia. (51-96).

Domrémy-la-Pucelle,

a small village on the Meuse, in the dept. of Vosges, France; the birthplace of Joan of Arc.

Don, a Russian river, the ancient Tanais; flows southward from its source in the province of Tula, and after a course of 1,153 m. falls into the Sea of Azov; also the name of a river in Aberdeenshire, and another in Yorkshire, tributary of the Ouse.

Don, Kaye Ernest, racing motorist, was in rubber industry till 1915, in Army Service Corps and Flying Corps during War; took up motor-racing in 1920, motor-boat racing in 1931. Established 1932 the motor-boat record, nearly 120 m.p.h., subsequently beaten by Gar Wood. (1894-).

Donaghadee, a seaport of Northern Ireland, in Co. Down, on the Irish Channel, the nearest port to Britain. Pop. 2,500.

Donatello

(Donato di Betto Bardi), a great Italian sculptor, born at Florence, where he was apprenticed to a goldsmith; tried his hand at carving in leisure hours; went to Rome and studied the monuments of ancient art; returned to Florence and executed an "Annunciation," still preserved in a chapel in Santa Croce. This was followed by marble statues of St. Peter, St. Mark and St. George, before one of which, that of St. Mark, Michelangelo exclaimed, "Why do you not speak to me!" He executed tombs and figures, or groups in bronze as well as marble. (1386-1466).

Donatists,

a sect in N. Africa, founded by Donatus, Bishop of Carthage, in the 4th Century, that separated from the rest of the Church and formed itself into an exclusive community, with bishops and congregations of its own, on the ground that no one was entitled to be a member of Christ's body, or an overseer of Christ's flock, who was not of divine election, this stand being taken in the face of an attempt, backed by the Emperor Constantine, to thrust a bishop on the Church at Carthage, consecrated by an authority that had betrayed and sold the Church to the world. Donatus, a rival bishop, gave his name to the party. The members of it were subject to cruel persecutions in which they gloried, and were annihilated by the Saracens in the 7th century.

Doncaster, a manufacturing town and important coal centre in the W. Riding of Yorkshire, well built, in a pleasant country, on the Don, 33 m. S. of York; famous for its races, the St. Leger in particular, called after Colonel St. Leger, who instituted them in 1776. Pop. 63,300.

Donegal (Tírconall), a county in the NW. of Ireland (Eire), in the province of Ulster, the most mountainous in the country; is mossy and boggy, and is indented along the coast with bays, and fringed with islands. Area 1,866 sq. m. Pop. 142,000.

Donegal, market town, Co. Donegal, Ireland (Eire), at the head of Donegal Bay. It has remains of a castle and a monastery. Pop. 1,100.

Donetz, a tributary of the Don in S. Russia, the basin of which forms one large coalfield, reckoned to be one of the largest of any in the world.

Dongola, New, a town in the Anglo-Egyptian Sudan, on the left bank of the Nile, above the third cataract, over 700 m. from Cairo; was founded by the Mamelukes about 1812 after the destruction of the Old Town. It is the capital and chief trading town of the province, Dongola.

Donizetti, Gaetano, a celebrated Italian composer, born at Bergamo, Lombardy, and studied at Bologna; devoted himself to dramatic music; produced over 60 operas, among the number *Lucia di Lammermoor*, *The Daughter of the Regiment*, *Lucresia Borgia*, and *La Favorita*, all well known, and all possessing a melodious quality of the first order. (1797-1848).

Don Juan, the member of a distinguished, guileful family of Seville, who seduces the daughter of a noble, and when confronted by her father stabs him to death in a duel. He afterwards prepares a feast and invites the stone statue of his victim to partake of it. The stone statue turns up at the feast, compels Don Juan to follow him, and delivers him over to the abyss of hell, for the depths of which he had qualified himself by his depravity. A legendary character used by writers of various countries; e.g., *Don Juan Tenorio* by Forrell, and the chief character of Byron's celebrated poem; Shaw in *Man and Superman*, Mozart in his opera *Don Giovanni* and Corneille and Molière all use the character.

Donne, John, English metaphysical poet, born in London; a man of good degree; brought up in the Catholic faith; after weighing the claims of the Roman Catholic and Anglican communions, joined the latter; married a young lady of sixteen without consent of her father, which involved him in trouble for a time; was induced to take holy orders by King James; was made his chaplain, and finally became Dean of St. Paul's; wrote sermons, some 200 letters and essays, as well as poems, the latter, amid many defects, revealing a soul instinct with true poetic fire. (1573-1631).



JOHN DONNE

Donnybrook, a village now a suburb of Dublin, Ireland (Eire), long celebrated for its fairs and the fights of which it was the scene on such occasions. The fair was discontinued in 1855.

Donoghue, Stephen, an English jockey, one of the foremost of his time, born at Warrington; rode the Derby winner in 1916, 1917, 1921, 1922, 1923 and 1925. He is the only jockey who has ever won the Derby in three successive years. He

retired from racing 1937 and took up training. Has written a novel, *The Luck of the Gentle Grafter*. (1884-).

Don Quixote, the title of a world-famous book, written by Miguel Cervantes in satire of the romances of chivalry with which his countrymen were so fascinated: the chief character of the story gives title to it, a worthy gentleman of La Mancha, whose head is so turned by reading tales of knight-errantry, that he fancies he is a knight-errant himself, sallies forth in quest of adventures, and encounters them in the most commonplace incidents, among his most ridiculous extravagancies being his tilting at the windmills, and the overweening regard he has for his Dulcinea del Toboso. Part I. of the book was written in 1605; part II. in 1615.

Doom, a word derived from the Anglo-Saxon *dom*, meaning judgment, and originally applied to a legal pronouncement from a judge, especially the sentence upon a prisoner. The term is widely used to-day to indicate a tragic destiny and the final judgment of mankind at the Day of Judgment, or Doom's Day. (See *Doomsday Book*.) In early times one's Doom was foretold by soothsayers.

Doon, a loch and river in Scotland, rendered famous by the muse of Burns. After a course of 30 m. the river joins the Firth of Clyde 2 m. S. of Ayr.

Doone Family, a half-mythical robber gang inhabiting the Doone Valley near Lynmouth, N. Devon. Said to have been the household of a Sir Ensor Stuart, of Doone in Perthshire, driven thence by the Earl of Moray c. 1616. Blackmore's romance *Lorna Doone* gives him a date 70 years later.

Doorn Castle, a Dutch mansion, the residence of ex-Kaiser William II., of Germany after his exile.

Doppler Effect, the apparent change in frequency when there is a relative movement between the source of a wave motion, such as light or sound, and the observer. For example, the whistle of an approaching express train appears to be of higher pitch than when it is stationary, and of lower when it is moving away. A star which is moving away from the earth has the lines in its spectrum displaced towards the red end, one which is approaching towards the violet end, an effect which is utilised for measuring the velocity of a star in the line of sight.

D.O.R.A. See *Defence of the Realm Act*.

Dorchester, the county town of Dorset, England, on the Frome; was a Roman town, and contains the ruins of a Roman amphitheatre. Thomas Hardy was born and lived near Dorchester. Pop. 10,030.

Dordogne, a river in the S. of France, which, after a course of 300 m. falls into the estuary of Garonne; also a dept. through which it flows. The dept. is fertile, well-wooded and has abundant chestnut trees and vineyards. Area 3,550 sq. m. Pop. 383,000. Cap. Périgueux.

Doré, Gustave, a French painter and designer, born in Strasbourg; evinced great power and fertility of invention, having it is alleged, produced more than 50,000 designs; had a wonderful faculty for seizing likenesses, and would draw from memory groups of faces he had seen only once. Among the books he illustrated are the *Contes Drolatiques* of Balzac, the works of Rabelais and Montaigne, Dante's *Inferno*, also his *Purgatorio* and *Paradiso*, *Don Quixote*, Tennyson's *Idylls*, Milton's works, and Coleridge's *Ancient Mariner*. Among his paintings were "Christ Leaving the Praetorium," and "Christ's

Entry into Jerusalem. He left behind him works of sculpture as well as drawings and pictures. (1833-1883).

Doria, Andrea, a Genoese naval commander, born at Oneglia, of noble descent, though his parents were poor; a man of patriotic instincts; adopted the profession of arms at the age of 19; became commander of the fleet in 1513; attacked with signal success the Turkish corsairs that infested the Mediterranean; served under Francis I. to free his country from a faction that threatened his independence, and, by his help, succeeded in expelling it; next, in fear of the French supremacy, served under Charles V., and entering Genoa was hailed as its liberator, and received the title of "Father and Defender of his Country." The rest of his long life was one incessant struggle with his rival Barbarossa, the chief of the corsairs, which ended in his defeat. (1486-1560).

Dorians, one of the four divisions of the Hellenic race, the other three being the Achæans, the Æolians and the Ionians. At an early period they overran the whole Peloponnesus. They were a hardy people, of staid habits and earnest character.

Doric, the oldest, strongest and simplest of the four Grecian orders of architecture, characterised by massive fluted columns without ornament.

Doris, in Greek legend, daughter of Oceanus and Tethys, the wife of Nereus, and mother of the Nereids.

Doris, a small mountainous Central Greece, S. of Thessaly, and embracing the head-waters of the Cephissus. It was the traditional place of origin of the Dorians, and received its name from Dorus, the son of Deucalion or, according to others, of Helen, who made a settlement there and gave name also to the Dorians.

Dorking, a market-town in the North Downs in the heart of Surrey, England, 28 m. SW. of London; gives name to a breed of fowls. Pop. 10,100.

Dormer Window, a small window a sloping roof, and a characteristic feature of later Gothic house architecture.

Dormouse (*Muscardinus avellanarius*), a small, soft-furred, bushy-tailed rodent, squirrel-like in habit, but nocturnal, native of England, and found also in N. Europe. It belongs to the family Gliridae, all of which are similar in habits, and known as dormice, though no other species is found in England.

Dornoch, the county town of Sutherlandshire, landshire, Scotland, on the Dornoch Firth, a small place, but a royal burgh; has a good golf-course.

Dorpat. See Tartu.

D'Orsay, Count, a handsome man of fashion, born in Paris; entered the French army; forsook it for the society of Lord and Lady Blessington; married Lady Blessington's daughter by a former marriage; came to England with her ladyship on her husband's death; their joint establishment in London soon became a rendezvous for all the literary people and artists about town; was the "Phœbus Apollo of Dandyism"; bankrupt in 1849; having shown kindness to Louis Napoleon when in London, the Prince did not forget him; having some pretensions to art as a painter and sculptor, he was appointed Director of Fine Arts in Paris by the Prince after the coup d'état, but he did not survive the position. (1801-1853).

Dorset, maritime county in the S. of England, with a deeply indented coast; it consists of a plain between two eastward- and westward-reaching bays of downs; is mainly a pastoral county; rears sheep and cattle, and produces butter and cheese. Area 973 sq. m. Pop. 239,000. County town, Dorchester.

Dorset, Earl of. See Sackville, Thomas.

Dort, or Dordrecht, a town on an island in the Maas, in the province of S. Holland, 12 m. SE. of Rotterdam; admirably situated for trade, connected as it is with the Rhine as well, on which rafts of wood are sent floating down to it; is famous for a Synod held here in 1618-1619, at which the tenets of Arminius were condemned, and the doctrines of Calvin approved and endorsed as those of the Reformed Church. Pop. 60,000.

Dortmund, a town in Westphalia, Germany, a great mineral and railway centre, with large iron and steel forges, and a number of breweries. It was formerly a free Hanseatic town. Pop. 540,000.

Dory, or John Dory, a genus (*Zeus*) of fishes related to the halibut and found in temperate sea-water. It has a high food value. The body is compressed and, in some species covered with bony, spiny shields. It has a very protrusible mouth and a long fin ending in long, trailing spikes. The *Zeus faber* is found round English coasts.



JOHN DORY
(*Zeus faber*)

Dostoevski, Feodor Mikhailovitch, Russian novelist and author of *Crime and Punishment*, one of the greatest realistic novels ever written. Always poor, he was an epileptic, and served four years in a Siberian prison for attending Socialist gatherings, later going abroad. Other important works of his were *Poor Folk*, *Memoirs of a House of the Dead*, *The Idiot* and *The Brothers Karamazov*. (1822-1881).

Dotterel (*Endromis morinellus*), a bird of the most beautiful, with white and black marking, found in N. Europe and Asia, and formerly numerous in Great Britain.

Douai, a town on the Scarpe, in the dept. of Nord, France, 20 m. S. of Lille and one of the chief military towns of the country, with a large arsenal; has a college founded in 1568 for the education of Catholic priests intended for England, and is the place where a version of the Bible in English for the use of Catholics was issued. Pop. 41,000.

Douaumont, village and fort of France, in the dept. of Meuse, 3 m. NE. of Verdun, which changed hands several times during the Battle of Verdun, in 1916.

Double Bass, the largest and lowest instruments played with a bow; its invention is assigned to Gaspar di Salo, in the 16th Century. Has usually four strings and is closely related to the old viol.

Doublet, a man's close-fitting body-garment, worn in 14th-17th Centuries. It covered the body to a little below the waist, and was introduced into England from France.

Doublet, a former Spanish coin, originally double the value of the pistole; but later of the value of a guinea sterling.

Doubs, a tributary of the Saône, which it joins below Dole; gives name to the dept. of



DOUBLET



DORIC COLUMN

France which it traverses. The dept. is on the Franco-Swiss frontier, is crossed by the Jura Mts., but is fertile in the valley of the Doubs. Area 2,050 sq. m. Pop. 303,000. Cap. Besançon.

Doughty, Charles Montagu, traveller and author, born at Theberton Hall, Suffolk. Educated first for navy; then at King's College, London, and at Cambridge. A solitary wanderer; wrote *Travels in Arabia Deserta*, and much poetry of an austere kind—especially *The Dawn in Britain*. (1843-1926).

Douglas, the name of an old Scottish family, believed to be of Celtic origin, that played a conspicuous part at one time in the internal and external struggles of the country; they figure in Scottish history in two branches, the elder called the Black and the later the Red Douglasses or the Angus branch, now represented by the houses of Hamilton and Home. The eldest of the Douglasses, William, was a kinsman of the House of Murray, and appears to have lived about the end of the 12th Century. One of the most illustrious of the family was the Good Sir James, distinguished specially as the "Black" Douglas, the pride of knighthood and the associate of Bruce, who carried the Bruce's heart in a casket to bury it in Palestine, but died fighting in Spain, 1330.

Douglas, the largest town and capital as well as chief port of the Isle of Man, 70 m. from Liverpool; much frequented as a bathing-place. Pop. 19,000. Also the name of a village of Lanarkshire, Scotland, formerly a place of importance. It has a ruined castle (*Scott's Castle Dangerous*). Pop. 1,500.

Douglas, Gawin or Gavin, a Scottish poet and Bishop of Dunkeld, third son of Archibald, Earl of Angus, surnamed "Bell-the-Cat." Political troubles obliged him to leave the country and take refuge at the Court of Henry VIII., where he was held in high regard; died here of the plague, and was buried by his own wish in the Savoy. Besides Ovid's *Art of Love*, now lost, he translated (1512-1513) the *Aeneid* of Virgil into English verse, to each book of which he prefixed a prologue, in certain of which there are descriptions that evince a poet's love of nature combined with his love as a Scotsman for the scenery of his native land. Besides this translation, which is his chief work, he wrote two allegorical poems, entitled the *Palace of Honour*, addressed to James IV., and *King Hart*. (c. 1474-1522).

Douglas, Stephen Arnold, an American statesman and orator born in Brandon, Vermont; a lawyer by profession, and a judge of the Supreme Court; a member of Congress and the Senate; was a Democrat and the hero of the slave-holding States in the political struggles prior to the American Civil War; stood for the Presidency when Lincoln was elected; was a leader in the Western States. (1813-1881).

Douglas Fir (*Pseudotsuga Douglasii*), a large tree of the Conifer family, indigenous to the American Pacific Coast, where it grows to a height of 250 ft. Produces a light-red, strong timber which is used for heavy constructional work, poles, masts, etc. Also called Douglas Pine, Douglas Spruce and Oregon Pine. A remarkably fine specimen stands as a mast in the Royal Botanic Gardens, Kew, 244 ft. high.

Douglass, Frederick, American orator, born a slave in Maryland, his surname originally having been Bailey; worked as a slave in a Baltimore shipbuilder's yard; escaped at the age of 21 to New York; attended an anti-slavery meeting, where he spoke so eloquently that he was appointed by the Anti-Slavery Society to lecture on its behalf, which he did with success and much

appreciation in England as well as America; appointed U.S.A. minister to Haiti, 1889; published an *Autobiography*, which gives a thrilling account of his life. (1817-1895).

Doulens, town of France, in the dept. of Somme. A conference was held here, 1918, which put Foch in command of the Allied forces. Pop. 6,800.

Doulton, Sir Henry, the reviver of art pottery, born in Lambeth; knighted in the Jubilee year for his eminence in that department. (1820-1897).

Doulton Ware, china and earthenware pottery named after Sir Henry Doulton (1820-1897) son of John Doulton, the founder of the Lambeth pottery works. The son's fortunes were made with the manufacture, begun in 1867, of glazed enamel-ware jugs and vases; later came faience ware in coloured glazes, architectural terra cotta and glazed frescoes for mural decoration. Doulton ware is decorated either by the Sgraffito method—i.e., scratching and filling-in with colour—or the *pâte sur pâte* method, which involves the application of thin layers of coloured glazes. Doulton ware is now made also in Burslem, Paisley and elsewhere.

Doumer, Paul, President of the French Republic, 1931-1932, born at Aurillac (Cantal), Governor-General of Indo-China, 1897-1902, several times radical Minister of Finance, senator from 1912. He was assassinated by a Russian. (1857-1932).

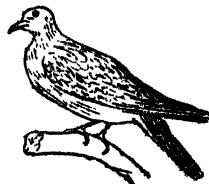
Doumergue, Gaston, French statesman, born at Aigues-Vives, a barrister by training. He held various ministerial appointments, especially under Clémenceau and Briand. He was Premier, 1913-1914, President of the Senate, 1923-1924, and President of the Republic, 1924-1931. (1863-1937).

Doune, a village of Perthshire, Scotland, on the Teith. It has ruins of a castle held by a kinsman of Rob Roy for Prince Charlie in 1745.

Douro, a river, and the largest, of the Spanish Peninsula, which rises in the Sierra de la Demanda in Old Castile, forms for 40 m. the northern boundary of Portugal, and after a course of nearly 500 m. falls into the Atlantic at Oporto.

Dove, in Christian art the symbol of the Holy Ghost, or of a pure, or a purified soul, and with an olive branch, the symbol of peace and the gospel of peace.

Dove, a name commonly to the smaller birds of the genera *Turtur* and *Columba* of the Columbidae family (pigeons). No very clear distinction is kept between the appellations dove and pigeon. Thus *Columba livia* is often called rock-pigeon. *Columba palumbus* is ring-dove and *Turtur* the turtle dove.



TURTLE DOVE

Dove, a beautiful river of Derbyshire, England, tributary of the Trent. It is a rich trout-stream.

Dover, a seaport on the E. coast of Kent, the coast of France, 80 m. S.E. of London, and with a mail service to Calais and Ostend; is strongly fortified, and the chief station in the S.E. military district of England; was the chief of the Cinque Ports. Pop. 41,000. There are several towns of the same name in the U.S.A., one being the capital of Delaware.

Dovercourt, seaside resort of Essex, England, at the mouth of the Stour, near Harwich.

Dover Patrol, The, an arm of the fleet set up during the World War to maintain communications in the Channel and hunt the German submarines passing through. Its monitors made frequent attacks on the Belgian coast, its most famous exploit being the attack on Zeebrugge (q.v.).

Dover, *Serail* of, divides France from England and connects the English Channel with the North Sea; at the narrowest is 20 m. across; forms a busy sea highway; is called by the French *Pas de Calais*.

Dovey (or *Dyff*), a river of N. Wales, rising in Merionethshire and emptying into Cardigan Bay at Aberdovey. Length 30 m.

Dovrefield, a range of mountains in Norway, stretching N.E. and extending between 62° and 63° N. lat., average height 3,000 ft. The highest peak is Snöhätta 7,570 ft.

Dow, or Douw, Gerard, a distinguished Dutch genre-painter, born at Leyden, a pupil of Rembrandt. His works, which are very numerous, are the fruit of a devoted study of nature, and are remarkable for their delicacy and perfection of finish. Examples are found in all the great galleries or Europe. (1613-1675).

Dowager, in law, a widow endowed or possessed of a jointure (q.v.); also a title given to a widow to distinguish her from the wife of her husband's heir bearing the same name, and, in this sense, applied particularly to the widows of princes and persons of rank.

Dowden, Edward, literary critic, professor of English Literature in Dublin University, born in Cork; distinguished specially as a Shakespearean; author of *Shakespeare: a Study of his Mind and Art*, *Introduction to Shakespeare*, and *Shakespearean Sonnets with Notes*; wrote *Studies in Literature and a Life of Shelley*. (1843-1913).

Dowlais, shire, Wales, now incorporated in Merthyr Tydfil.

Down, a county of Northern Ireland, adjoining Antrim, Armagh and Louth. Its coastline on the Irish Sea has many large inlets—Carlingford Lough, Dundrum Bay, Belfast Lough and the almost land-locked Strangford Lough. The surface is hilly, mountainous to the S. (Mourne Mts.), and the ground fertile. Agriculture, stock-rearing, dairy-farming, linen-making, bleaching and fishing are the chief industries. The Bann, Lagan and Quoile are the chief rivers. Downpatrick is the county town. Area 95 sq. m. Pop. 209,000.

Downham Market, a market town of Norfolk, England, on the Ouse. Brewing, malting and flour-milling are the chief industries. Pop. 2,500.

Downing Street, a street in Westminster, London, between St. James's Park and Whitehall. In it are the official residences of the Prime Minister (No. 10) and of the Chancellor of the Exchequer (No. 11), the Dominions, Cabinet and Foreign offices, part of the Home Office, and the offices of the Judicial Committee of the Privy Council. Named after Sir George Downing (d. 1684), a politician of the Cromwellian period who represented Edinburgh and Carlisle in the House of Commons.

Downpatrick, Down, Northern Ireland, on Strangford Lough, an ancient town and seat of a bishop. St. Patrick is reputed to be buried here. Pop. 3,200.

Downs, The, a safe place of anchorage for ships, 8 m. long by 6 m. broad, between Goodwin Sands and the coast of Kent; the scene of several sea-fights between the Dutch and British.

Downs, The North and South, two divergent ranges of broad hills and plateaux of cretaceous age with a valley between, called the Weald. They extend eastward from Hampshire to the sea-coast, the North terminating in Dover cliffs, Kent, and the South in Beachy Head, Sussex. The South Downs are famous for the breed of sheep that pastures on them.

Doxology, the name of two hymns in praise of God. The Greater Doxology, beginning "Gloria in Excelsis," is sung at the beginning of the Roman Catholic Mass and at the end of the Anglican Communion. The Lesser Doxology, commencing, "Glory be to the Father and to the Son," is sung chiefly at the end of Psalms and canticles.

Doyle, Sir Arthur Conan, novelist, nephew of Richard Doyle, born in Edinburgh; studied and practised medicine, but gave it up after a time for literature, in which he had already achieved no small success. Several of his productions soon attracted universal attention, especially his *White Company*, *The Refugees* and the *Sherlock Holmes* series; wrote a short play *A Story of Waterloo*, produced with success by Sir Henry Irving; later gave increasing attention to spiritualism. (1859-1930).

Doyle, John, an eminent caricaturist, of Irish origin, under the initials H. B. (1797-1868).

Doyle, Richard, eminent caricaturist, born in London, son of the preceding; contributed to *Punch*, of which he designed the cover, but left the staff in 1850 owing to the criticisms in the journal adverse to the Catholic Church; devoted himself after that chiefly to book illustration and water-colour painting. (1824-1883).

D'Oyly Carte, Richard, English producer of Gilbert and Sullivan operas and builder of the Savoy Theatre, London, where he produced them. (1844-1901).

Drachenfels (Dragon's Rock), one of the Siebengebirge, 8 m. SE. of Bonn, 1,056 ft. above the Rhine, and crowned by a castle with a commanding view; the legendary abode of the dragon killed by Siegfried in the *Lay of the Nibelungen*.

Drachma, ancient and modern Greek coin, equivalent to the franc. In ancient Greece it was a silver coin, equal to one-hundredth part of a mina. The modern drachma contains 100 lepta.

Draco, a celebrated Athenian lawgiver, who first gave stability to the State by committing the laws to writing, and establishing the Ephetae, or court of appeal, 621 B.C. He punished every transgressor of his laws with death, so that his code became unbearable, and was superseded ere long by a milder, instituted by Solon, who affixed the penalty of death to murder alone. He is said to have justified the severity of his code by maintaining that the smallest crime deserved death, and he knew no severer punishment for greater; is said to have been smothered to death in the theatre by the hats and cloaks showered on him as a popular mark of honour. He was Archon of Athens.

Draco, or Flying Dragon, a genus of lizards found in India and Malaya, which have membranous "wings" supported on long extensions of the ribs beyond the body. They are arboreal, and skim from tree to tree by means of these "wings." They are brilliantly coloured, and are capable of changing their colours.

Draft, a written order drawn by one person on another; a writing directing the payment of money on account of the drawer. The term is also used of the first rough form in which legal documents are sometimes drawn for discussion; also of a body of troops sent to join a unit elsewhere.

Dragon, a fabulous monster, being a form of deadly evil, which only preternatural heroic strength and courage can subdue, and on the subduing and slaying of which depends the achievement of some conquest of vital moment to the human race or some members of it; is represented in medieval art as a large, lizard-like animal, with the claws of a lion, the wings of an eagle, and the tail of a serpent, with open jaws ready and eager to devour, which some knight high-mounted thrusts at to pierce to death with a spear. In the Greek mythology it is represented with eyes ever on the watch, in symbol of the evil that waylays us to kill, as in guarding the "Apples of the Hesperides" and the "Golden Plecter," because these are prizes that fall only to those who are as watchful of him as he is of them. It is consecrated to Minerva to signify that true wisdom, as sensible as the ever-wakeful dragon, never goes to sleep, but is equally ever on the watch.

Dragonet (**Dragon Fish**), the common name of a number of species of fish of the genus *Callionymus*, inhabiting tropical and temperate waters and interesting for their small, naked bodies and curious courting habits. Two species are found round British coasts—viz., the Gemmeous Dragonet or Yellow Skulpin (*C. lyra*), of brilliant, gem-like colours and with large wing-like fins, and with a head striped with blue on a yellowish ground, and the Sordid or Dusky Dragonet (*C. dracunculus*).

Dragon-fly, the popular name of the Odonata sub-order of insects. They have a large, broad head, very freely attached to the thorax, convex, prominent eyes which meet on the top of the head, and two pairs of closely reticulated wings, of brilliant colouring—blue, yellow, etc. There are hundreds of species.



Aeschna grandis, the Great Dragon Fly, is DRAGON-FLY (*Aeschna grandis*) AND LARVA species. They undergo an incomplete metamorphosis, the eggs being deposited in water and the larva living there, but there being no quiescent state before the adult insect breaks from the shell of the larva. They are carnivorous.

Dragonnades, the name given to the instance of Louis XIV. to force the Huguenots of France back into the bosom of the Catholic Church by employment of dragoons.

Dragon's Blood, the red-coloured resin of various plants, chiefly the *Calamus draco*, an East Indian palm, and the *Dracena draco*, or dragon's-blood tree of the Canaries. It is used as a lacquer-varnish, and for tooth paste.

Dragon's Teeth, the teeth of the Cadmus slew, and which when sown by him sprang up as a host of armed men, who killed each other excepting the five who became the ancestors of the Thebans, hence the phrase to "sow dragon's teeth," meaning to breed and foster strife.

Dragon Tree. See Dragon's Blood.

Dragoon, a horse soldier. The dragoon was so named from the "dragon" or short musket borne by Brissac's French cavalry in the 15th Century. The first dragoons in England resembled the mounted infantry used in Egyptian campaigns. The term was used later for medium cavalry. The Scots Greys (1881) is the oldest Dragoon regiment in the British Army.

Dragoon Guards, heavy cavalry of the British Army.

Before the Great War there were 7 regiments of Dragoon Guards; all, except the 7th (Princess Royal's), were raised in 1885 during the Monmouth Rebellion. Several of these lost their identity through amalgamations in 1921; and under the new scheme of Army organisation announced in 1936 the 1st (King's) Dragoon Guards and the 2nd (Queen's Bays) Dragoon Guards, which had survived, are, like most other cavalry regiments, being converted into mechanical units.

Drainage (in geology), the direction and arrangement of the system of rivers and streams draining any given area. In civil engineering the "drainage area" is the area drained by a particular stream, river or sewer, and the term may also be applied to an area drained by a complete sewerage system. In relation to land reclamation, drainage is accomplished by means of dykes, as exemplified in Holland; also marshy areas or water-logged soil may be drained by water-mills or by means of turbines. Catchment Boards have been appointed under the Land Drainage Act of 1930, to promote schemes of land drainage in the United Kingdom.

Drake, Sir Francis, a great English sea-man of the reign of Queen

Elizabeth, born near Tavistock, in Devon; served at sea under his relative, Sir John Hawkins, and distinguished himself with signal success by his valour and daring against the pride of Spain, towards which, as the great Catholic persecuting power, he had been taught to cherish an invincible hatred. He received a privateering commission in 1520 from the Queen; swooped down on Spanish ports across seas, and despoiled them; in 1577 sailed for America with five ships, passed through the Straits of Magellan, the first Englishman to do so; plundered the W. coast as far as Peru; lost all his ships save his own, the *Golden Hind*, and one other, which, becoming separated, returned home; crossed the Pacific, and came home by way of the Cape—the first to sail round the world—with spoil to the value of £300,000. He received a knighthood on his return and the *Golden Hind* was preserved as a token of his daring. In 1587 he destroyed 33 Spanish ships in Cadiz harbour—an exploit which he called "singeing the King of Spain's beard." He was vice-admiral in the fleet that drove back the Armada from our shores. He died at sea whilst engaged on a less successful expedition. (1540–1596).



SIR FRANCIS DRAKE

Drakensberg Mountains (or Jamba Mountains), a range of mountains in S. Africa between Natal and Basutoland and the Orange Free State. The highest peak is Mont-aux-Sources, 10,763 ft. high. Majuba Hill, 7,000 ft., is at the Eastern end of the range.

Drama, a composition in prose or verse, representing human events, fictional or based on history or legend, and consisting of speeches and conversation, put into the mouths of "characters" and intended to be spoken by those impersonating the characters, who at the same time carry out all appropriate and necessary action. European drama began with the introduction of an actor in the Greek choral festivals in honour of Dionysus. This innovation is accredited to Theophrastus in 336 B.C. On this foundation

Greek tragedy grew into a dramatic representation of the myths and legends of ancient Greece. Examples have come down to us in the great dramas of Aeschylus, Sophocles and Euripides. Greek comedy also began with the Dionysian festival, and was mainly rude and boisterous, with allusions to current topics. The later or New Comedy developed with Aristophanes into a satirical comedy of manners and character.

Roman drama imitated the Greek. Plautus and Terence were the best writers of comedy, but with Seneca tragedy became more suitable for declamation than for acting. Through him classical drama influenced European drama at the Renaissance. The classical theory of the dramatic unities (q.v.)—unity of time, place and action—was not, however, so much respected by English and Spanish dramatists of the 16th and 17th Centuries as by the French. From the time of Corneille's *Le Cid*, however, the rule of the unities no longer had the force of law. Corneille had no regard for the unity of place and his application of the rule of time led him into extravagant improbabilities.

Long before this, however, medieval drama came into existence in Europe, independent of classical tradition, but owing its origin, like the Greek, to religious ceremony. Plays based on Bible stories—"Mysteries" or Miracle Plays—were acted by the members of the trade guilds of medieval towns. In England cycles of these plays were associated especially with the towns of York, Chester, Coventry and Wakefield during the 14th and 15th Centuries.

In France miracle plays existed much earlier. They were succeeded by the Morality plays, in which the Bible characters were replaced by personifications of abstractions, virtues and vices, etc. They were allegorical, and *Everyman* is the best known of English "moralities."

In the 15th Century the few farcical and non-sacred elements of the mysteries and moralities were developed into a type of play called the Interlude, allied to the French *soiree* or farce of this period. Out of this native drama, combined with the influence of the Renaissance, came the Elizabethan drama—the works of such men as Marlowe, Chapman, Beaumont, Fletcher and Webster being excelled only by Shakespeare. At the same time a more rigid comedy of humours was being written by Ben Jonson, Massinger and others. It was this comedy, combined with the influence of French drama, especially of Molière, that produced the English Restoration Comedy of Wycherley, Etherege and Congreve, followed by the later "comedy of manners" (Goldsmith and Sheridan, etc.), which dominated the theatre for over a century.

The great German tragedians, Goethe and Schiller, and the French romantics, Victor Hugo, De Musset, etc., did not profoundly affect English drama, but when the power of Ibsen was felt in Europe, English drama especially became a closer criticism of contemporary life and more psychological in tendency. There are to-day signs of a departure from the sociological towards the historical and poetic, or at least more spectacular drama.

Dramatic Unities, three rules of dramatic construction prescribed by Aristotle, observed by the French dramatists, but ignored by Shakespeare, that (1) a play should represent what takes place within eight hours, (2) there must be no change of locality, and (3) there must be no minor plot.

Drammen, a Norwegian seaport on a strait which falls into Christiania Bay, 23 m. SW. of Oslo (Christiania); trade chiefly in timber. Pop. 24,000.

Drapier, a pseudonym adopted by Swift in his letters to the people of Ireland against Wood's pence, a protest which led to the cancelling of the patent.

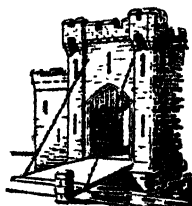
Draughts, a game played on a chess-board with twelve black and twelve white pieces or men on opposite sides. The pieces are placed on each alternate square, and the winner is the side which captures all the pieces of the opposing side. The pieces move forward diagonally, one square at a time, except when capturing a piece, which is done by jumping over any piece the square behind which is unoccupied. Omission to capture a piece when the opportunity offers, involves either "huffing"—i.e., loss of the piece with which the capture ought to have been made, or compulsory revocation. A piece which reaches the last row of squares on the board is crowned a king and can thereafter move either backwards or forwards. The game seems to have been first mentioned in the middle 16th century, and was also called "jeu des dames."

Drave (German *Drau*), a river from the Eastern Alps which flows eastward, and after a course of some 450 m. falls into the Danube. It rises in Carinthia (Austria), flows through the N. of Yugoslavia and for part of its course forms the boundary between Yugoslavia and Hungary. The valley of the Drave was the route taken centuries ago by the invading Huns and Slavs.

Dravidians, races of people who occupied India before the arrival of the Aryans, and being driven S. by them came to settle chiefly in the S. of the Deccan. They are divided into numerous tribes, each with a language of its own, but of a common type or group, some of them literary and some of them not, the chief being the Tamil.

Drawbridge,

originally an adjunct of a castle consisting of a bridge, hinged at one end, which could be let down to give access to the castle, but drawn up to prevent assault. They were usually used to cross the moat.



DRAWBRIDGE

Drayton, Michael, an English poet, born in Warwickshire, one of the three chief patriotic poets, Warner and Daniel being the other two, who arose in England after her humiliation of the pride of Spain, although he was no less distinguished as a love poet. His great work is his *Polyolbion*, in glorification of England, consisting of 30 books and 100,000 lines. It gives in Alexandrines "the tracts, mountains, forests, and other parts of this renowned isle of Britain, with intermixture of the most remarkable stories, antiquities, wonders, pleasures, and commodities of the same digested in a poem." This was preceded by other works, and succeeded by a poem entitled *The Ballad of Agincourt*, pronounced one of the most spirited martial lyrics in the language. (1563-1631).

Dreadnought, the name of a British battleship of nearly 18,000 tons, and about 500 ft. in length, launched in 1906 at Plymouth. It gave its name to a class of modern battleship, and was in fact a synonym for an armored or battleship carrying ten 12-in. guns, and a number of 12-pounder quick-firing anti-torpedo-boat guns, and propelled by steam turbine. See also *Battleship*.

Dream, an image produced on the mind during the semi-consciousness of sleep. It

has always been disputed whether the mind sleeps or whether a train of ideas is always passing through it at all times. The latter hypothesis involves the assumption that we are continually dreaming when asleep, though only that part of a dream which we experience when half awake survives in our consciousness. It seems more probable that sound sleep is dreamless and that dreams are merely induced by some disturbance such as indigestion or some external cause such as a sudden noise. The interpretation of dreams is the basis of the psychological teaching of Freud, Wundt and other Continental psychoanalysts, who regard dreams as a valuable factor in mental therapeutics.

Dredging, the operation of raising silt, mud, sand and gravel from the bed of a stream or other water to deepen the channel, or to obtain material for ballast, or for filling low grounds. Dredgers are either (a) digging, or (b) suction. Digging dredgers include bucket-ladder chain dredgers, dipper dredgers, and grab dredgers. The stream-dredging machine commonly used in harbours has a succession of buckets on an endless chain around a drum, and the buckets discharge at the stern of the vessel dripping the silt or mud into a lighter. Such machines were first used over a century ago. The dipper dredger has a single bucket at the end of a long arm, and is used chiefly in N. America. The grab is merely a modification of the bucket type, but works largely by the force of gravity. Suction dredgers work either by a continuous tube and centrifugal pump, or with the addition of rotary cutter blades to dislodge the material.

Dred Scott Case, a famous case Supreme Court on the status of slaves, tried in 1857, the slave in the suit being Dred Scott, a Missouri slave, who sued for his emancipation on the ground that his master had broken the status of slavery by removing him to a non-slave state. The Court decided against him on the ground, *inter alia*, that property in a slave was permanent. The decision is regarded as one of the causes of the American Civil War.

Dreiser, **Theodore**, American realistic novelist; wrote *Sister Carrie*, a tale of a fallen woman, in 1900, and followed it with numerous works of which the best known are *The Financier*, *The Titan*, and *An American Tragedy*. (1871-)

Drenthe (or *Drente*), a province of Holland lying between Hanover and the other Netherlands provinces. Groningen, Friesland and Overysel. The soil is poor, low and marshy, and the population sparse. Area 1,030 sq. m. Pop. 238,000.

Dresden, the capital of Saxony, on the Elbe, 111 m. S.E. of Berlin, a fine city, with a museum rich in all kinds of works of art, and called in consequence the "Florence of Germany." Here the Allies were defeated by Napoleon in 1813, this being his last great victory secured at a loss to himself of 10,000 men and to the Austrians, Russians and Prussians of 38,000.

Dreyfus Affair. On Dec. 22, 1894, Alfred Dreyfus, an Alsatian Jew, captain of French Artillery, was by court-martial found guilty of revealing to a foreign Power secrets of national defence, and sentenced to degradation and perpetual imprisonment. He constantly maintained his innocence and in time the belief that he had been unjustly condemned became prevalent, and a revision of the trial being at length ordered, principally through the exertions of Colonel Picquart and Zola, the well-known author, Dreyfus was brought back from Devil's Island, where he had been kept a close prisoner and ill-treated. A fresh trial at Rennes began on Aug. 6, 1899 and

lasted till Sept. 9; the proceedings—marked by scandalous "scenes," and by an attempt to assassinate one of prisoner's counsel—disclosed an alarmingly corrupt condition of affairs in some lines of French public life under the Republic of the time, and terminated in a majority verdict of "guilty." Dreyfus, however, was set at liberty on Sept. 20, the sentence of ten years' imprisonment being remitted. In 1906 he was entirely exonerated and restored to rank as a major in the army. He was promoted Lieutenant-General in 1918, having re-entered the army during the War. The Legion of Honour was conferred on him in 1919. (1860-1935).

Driffeld, **Great**, a market town of the E. Riding, an agricultural centre for the Wolds, with manufactures of oil-cake. Pop. 6,000.

Drift, in geology, a general term for a series of loams, gravels and clays, containing irregularly deposited and variously sized boulders, these boulders being scratched and polished by ice action. It is best exemplified in the Eastern Counties of England and its formation is attributed to glacial action.

Drifter, a fishing-boat, generally about 100 ft. long, with a drift-net—i.e., a fishing-net of about 100 yds. in length for herring, or half that length for mackerel, and corked at the upper edge, which is allowed to drift across the flow of the tide just below the surface of the water (cf. the "trawlers" which trawl the sea-bottom). This method of fishing is particularly used for herring, as herring swim in shoals in mid-stream, whereas bottom-lying fish, such as plaice, can only be caught by trawling. The term is used in particular of a boat with drift-net employed in mine-sweeping.

Drill, the method of training members of the fighting services to military or naval warfare, or instruction in military evolutions. The various movements in military exercises are set out in official physical training manuals of the War Office. A favourite method of drill on the Continent and in schools in England is "Swedish Drill," or "free movements." No apparatus is used; and there are special exercises for the arms, legs, neck, abdominal muscles and so on. As its name implies, this form of drill began in Sweden.

Drill (tool), a machine tool for boring a hole in metal or stone. A metal-drill works with a rotative action, the tool having at least two cutting edges; a stone drill may also have a reciprocating action, the tool being alternately lifted and dropped.

Drina, river of Yugoslavia which, rising after a course of 160 m., joins the Save.

Drinkwater, **John**, British poet and 12 years as an insurance clerk, and founded what became the Birmingham Repertory Theatre. His first volume of verse was published in 1906, and in 1918 came his first play, *Abraham Lincoln*, followed by *Mary Stuart*, *Oliver Cromwell* and *Robert B. Lee*. (1882-1937).

Driver, **Samuel Riles**, Regius Professor of Hebrew, Oxford University, and Canon of Christ Church, was born at Southampton; wrote commentaries on several books of the Old Testament and an introduction to its literature. He was on the Old Testament Revision Committee, 1876-1884. (1846-1914).

Driving, the art or act of guiding a carriage or other vehicle drawn by horses; or the art of regulating and managing a steam engine or mechanically propelled vehicle of any kind. There is, of course, no relationship between driving horses and driving mechanically propelled

vehicles. Driving a tandem or a four-in-hand is an art which requires not only much practice but the possession of the quality known as "good hands," a quality which involves the ability to use reins without irritating the horse's mouth. Driving a motor-car in Great Britain involves taking out a licence (ss.) and passing severe tests under the Roads Act. Bus-drivers and taxi-drivers also undergo searching tests before being licensed to drive their vehicles. In Great Britain drivers keep the left-hand side of the road.

Drogheda, a seaport in Co. Louth, Ireland (Eire), near the mouth of the Boyne, 32 m. N. of Dublin, with manufactures and a considerable export trade; was stormed by Cromwell in 1649 after a stout resistance, and the garrison put to the sword; surrendered to William III. after the Battle of the Boyne in 1690. Pop. 12,000.

Droitwich, market town and spa of Worcestershire, England. Its brine springs or wyes, are valuable for rheumatic disorders. Pop. 4,500.

Drôme, a mountainous inland dept. of SE. France, bordering on the W. on the Rhône. Chief industry is agriculture, wheat, olives, fruit and wines, being produced. Area 2,532 sq. m. Pop. 267,000. Cap. Valence.

Dromedary, the Arabian camel; differs from the Bactrian camel in having a single hump, the latter two, on its back. The name is often applied indiscriminately to all one-humped camels, but, strictly, denotes only the swift riding species.

Dromore, a cathedral town in Co. Down, Northern Ireland, 17 m. SW. of Belfast, of which Jeremy Taylor was bishop.

Dronfield, town of Derbyshire, England, 6 m. S. of Sheffield. It has collieries and iron and steel goods are made. Pop. 4,500.

Dropwort, the common name for the plant *Spiraea* (or *Ulmaria*) *Filipendula* of the order Rosaceae, occurring in dry pastures in England. It bears small white flowers not unlike those of the meadow-sweet. Water-dropwort is the common name for a poisonous species of plant of the genus *Enanthe* of the Umbelliferae order.

Drouet, Jean Baptiste, French Revolutionary, a notable and violent Jacobin, and member of the Council of the Five Hundred; had been a dragoon soldier; was postmaster at St. Menesbould when Louis XVI., attempting flight, passed through the place, and by whisper of surmise had the progress of Louis and his party arrested at Varennes, June 21, 1791. (1763-1824).

Drouet, Jean Baptiste, Comte d'Erion, Rhems; distinguished in the war of the Republic and the Empire. On Napoleon's return from Elba seized on the citadel of Lille, and held it for the emperor; commanded the first corps d'armée at Waterloo; left France at the Restoration; returned after the July Revolution; became governor of Algiers, and marshal. (1765-1844).

Drought, want or absence of rain over a prolonged period. According to Symonds's *British Rain-fall*, a drought begins, in England, after a fortnight "without measurable rain." London has periodically

experienced droughts in recent summers, with the result that the Metropolitan Water Board has used temporary expedients to seek out existing supplies; but probably the remedy lies in a more modern reservoir system for a metropolis which has long outgrown its present system.

Drowning, the act of suffocating in water, or the state of being drowned. Death from drowning shows itself in cessation of the heart's action and of respiration, half-closed eyelids, dilated pupils and frothy mucus on the lips and nostrils. The two objects to be aimed at where there is hope of resuscitation are, first to restore breathing, and secondly to induce warmth and circulation. See *Artificial Respiration*.

Droylsden, urban district of Lancashire, shire, England, 4 m. E. of Manchester, with dye, chemical, cotton and print works. Pop. 13,000.

Droz, Antoine Gustav, a highly popular Paris, and brilliant novelist, born in Paris, grandson of Jean Pierre Droz, a medal engraver, (1746-1833); author of *Monseigneur, Madame, et Bébé*; *Entre Nous* and *Le Cahier bleu de Mlle. Cibot*. (1832-1895).

Drug, any substance, mineral, vegetable in physics, or animal, used as an ingredient in the preparation and composition of medicines. Under the Sale of Food and Drugs Acts a drug is defined as "a medicine for internal or external use"; but what actually constitutes a drug, other than specified narcotics and poisons, are matters of fact to be determined by evidence before a magistrate on a summons.

Druggist, one who deals in drugs in the way of business; the business is now generally combined with that of the apothecary, who compounds and prepares drugs; such persons must have passed the examinations presented by the Pharmaceutical Society and be registered as pharmaceutical chemists. Any drug which contains a poison must be so labelled, and particulars of sale entered in a register kept for that specific purpose.

Druids, a sacred order of learned men under a chief called the Arch-druid, among the ancient Celtic nations, particularly of Gaul and Britain, who, from their knowledge of the arts and sciences of the day, were the ministers of religion and justice, as well as the teachers of youth to the whole community, and exercised an absolute control over the unlearned people whom they governed. They worshipped in oak groves, and the oak tree and the mistletoe were sacred to them. The heavenly bodies appear to have been also objects of their worship, and they presumably believed in the immortality and transmigration of the soul; but they committed nothing to writing, and for our knowledge of them we have to depend on legend and the reports of others.

Drum, a musical instrument formed by stretching parchment over the heads of a wooden cylinder or over a bowl-shaped metallic vessel.

The chief varieties are the common or side-drum played with two sticks and carried at the drummer's side; kettle drum, a metal hemisphere with parchment stretched across the mouth with screws for tuning; and the bass drum, played with two sticks with padded heads. The tom-tom is a primitive form of drum, and is still much used in W. Africa.

Drumclog Moss, a flat wilderness of broken bog and quagmire in Lanarkshire, Scotland, where



DROMEDARY



SIDE-DRUM

the Covenanters defeated Claverhouse's dragons in 1679.

Drummond, Henry, popular scientist and Christian teacher, born at Stirling; was educated at Edinburgh; studied for the Free Church; lectured on natural science in Glasgow and appointed professor at the Free Church College; became famous by the publication of *Natural Law in the Spiritual World*, a book which took with the Christian public at once, and had an enormous sale, being succeeded by *Tropical Africa*, a charmingly written book of travel, and by a series of booklets, commencing with *The Greatest Thing in the World*. Intended to expound and commend the first principles of the Christian faith. His last work, except one published posthumously, entitled the *Ideal Life*, was the *Ascent of Man*, in which he posits an altruistic element in the process of evolution, and makes the goal of it a higher and higher life. (1851-1897).

Drummond, Captain Thomas, civil engineer, born in Edinburgh; inventor of the Drummond Light; was employed in the trigonometrical survey of Great Britain and Ireland; became Under-Secretary for Ireland, and was held in high favour by the Irish. (1797-1840).

Drummond, William, of Hawthornden, a Scottish poet, called the "Petrarch of Scotland," born in Hawthornden; studied civil law at Bourges, but poetry had more attractions for him than law, and on the death of his father he returned to his paternal estate, and devoted himself to the study of it and the indulgence of his poetic tastes. His work was done in the reign of James I., but is the result of the Elizabethan influence extending to Scotland; his sonnets and madrigals have some of the grace of Sidney, and he occasionally rose to noble verse, as in his sonnet on John the Baptist. He was a devoted Royalist. His first poem was *Tears* on the death of James I.'s eldest son Henry, and the fate of Charles I. is said to have cut short his days. (1585-1649).

Drummond Light, an intensely pure white light produced by the play of an oxyhydrogen flame upon a ball of lime, so called from the inventor, Captain Thomas Drummond.

Drunkenness, or inebriety, the term the habit of being under the influence of drink. The general term includes all stages from mental excitement to dipsomania (q.v.) and chronic alcoholism, resulting in the brain-fever of drunkards, or delirium tremens and grave nervous disorders, cirrhosis of the liver, distension of the legs and abdomen, etc. In law drunkenness does not necessarily affect a man's civil capacity nor does it exculpate from crime, though it may in certain cases be taken into account in considering intention.

Drury Lane, a celebrated London theatre founded in 1683, in what was then a fashionable quarter of the city; has since that time been twice burnt down and three times rebuilt; was the scene of Garrick's triumphs, and of those of many of his illustrious successors, as Kemble, Kean and Macready, though it is now given up chiefly to spectacular musical plays.

Druses, a peculiar people, numbering some 80,000, inhabiting the S. of Lebanon and Antilebanon, with the Maronites on the N., whose origin is very uncertain, only it is evident, though they speak the Arab language, they belong to the Arran race. Their religion, a mixture of Christian, Jewish and Mohammedan beliefs, is grounded on faith in unity and the incarnation of God. Their form of government is half hierarchical and half feudalistic. In early times they were under emirs of their own, but in consequence of U.E.

the sanguinary, deadly and mutually exterminating strife between them and the Christian Maronites in 1860, they were put under a Christian governor appointed by the Porte. This brought their political importance to an end. Some emigrated, but some remained, keeping themselves apart as a community. In 1935 they revolted against the French, who held the Mandate over Syria, but the Syrian Nationalist revolt which followed was suppressed with the utmost rigour after the Druses themselves had inflicted some severe reverses on the French.

Drusilla, Livia, wife of the Emperor Augustus; at first wife of Tiberius Claudius Nero, her elder son by whom, Tiberius, succeeded Augustus. Divorced at command of Augustus when, to marry her, he divorced his wife Sebonia. Suspected of death of Augustus's grandsons. Dominated Tiberius. (c. 55 B.C.-29 A.D.).

Drusus, Marcus Livius, a tribune of the people at Rome in 122 B.C., but a supporter of the aristocracy; after passing a veto on a popular measure proposed by Gracchus his democratic colleague, proposed the same measure himself in order to show and prove to the people that the patriots were their best friends. The success of this policy gained him the name of "patron of the Senate."

Drusus, Marcus Livius, Roman tribune, 91 B.C., son of the preceding, and an aristocrat; pursued the same course as his father, but was baffled in the execution of his purpose, which was to broaden the constitution, and admit the Italians to citizenship, in consequence of which he formed a conspiracy, and was assassinated, an event which led to the Social War (q.v.).

Drusus, Nero Claudius, surnamed of Tiberius, "Germanicus," younger brother of Tiberius, and son-in-law of Mark Antony; distinguished himself in four successive campaigns against the tribes of Germany, but stopped short at the Elbe. He was thrown from his horse, and died 30 days later. His brother, the Emperor Tiberius, hastened across the Alps and brought home his body. (38-9 A.C.).

Dryads, or Hamadryads, in Greek mythology, ology, nymphs of forest trees, which were conceived of as born with the tree they were attached to and dying with it. They had their abode in wooded mountains away from men, held their revels among themselves, but broke them off at the approach of a human footstep.

Dryburgh, an abbey, now a ruin, founded by David I., on the Tweed, in Derwickshire, Scotland, 4 m. S.E. of Melrose; burial-place of Sir Walter Scott.

Dry-cleaning, or cleansing of textile fabrics without the use of water. The substances employed include petrol, alcohol, acetone and various tetrachlorides, all of which have the property of rendering grease or fat soluble and thereby making its removal easy. Other dirt which may still remain is removed by vacuum extractors.

Dryden, John, a celebrated English shire, of a good family of Puritan principles; educated at Westminster School and Trinity College, Cambridge. His first poetic production of any merit was a set of "heroic stanzas" on the death of Cromwell. At the Restoration he changed sides and wrote a poem which he called *Annus Restitutus* in praise of the event, which was long followed by his *Annus Mirabilis*, in commemoration of the



JOHN DRYDEN

year 1666, which revealed at once the poet and the royalist, and gained him the appointment of poet-laureate. Prior to this and afterwards he produced a succession of plays for the stage, which won him great popularity, after which he turned his mind to political affairs and assumed the rôle of political satirist by production of his *Abraham and Achitophel*, intended to expose the schemes of Shaftesbury, represented as Achitophel, and Monmouth, as Abraham, to oust the Duke of York from the succession to the throne. On the accession of James II. he became a Roman Catholic, and wrote *The Hind and the Panther*, in defence of the Church of Rome. At the Revolution he was deprived of his posts, but it was after that event he executed his translation of Virgil, and produced his celebrated odes and *Fables*. (1631-1700).

Dry-farming, a special method of agriculture, raising crops in regions where rainfall is scanty. It involves essentially doing everything to conserve what moisture the soil does contain, and this is effected by tilling in the summer in alternate years, by the extirpation of all moisture-absorbing weeds and substances and by covering the soil with wet straw and leaves so as to counteract evaporation. Wheat is the chief crop of areas cultivated by dry-farming. It is practised chiefly in the U.S.A., Canada and W. Australia.

Dry Rot, decay in wood due to certain kinds of fungus which, in some conditions of heat and damp, attack the woodwork in dwelling-houses or the timber of ships, eating into the wood in all directions and reducing it to powder. It may occur through using insufficiently dried timber for building.

Duala, seaport and railway centre of W. Africa, in the French Cameroons, on the Cameroons R. It was taken from the Germans in 1914. Pop. 30,000.

Dualism, or **Manichæism**, the doctrine that there are two opposite and independently existing principles which go to constitute every concrete thing throughout the universe, such as a principle of good and a principle of evil, light and darkness, life and death, spirit and matter, ideal and real, yea and nay, God and Devil, Christ and Antichrist, Ormuzd and Ahriman.

Du Barry, XV., Countess, mistress of Louis XV., born at Vaucouleurs, daughter of a dressmaker; came to Paris, professing millinery; had fascinating attractions, was introduced to the King and installed as favourite; exercised great influence. After Louis's death she lived in retirement until the Revolution, when she fled to England, but on returning thence was arrested, brought before the tribunal, condemned for wasting the finances of the State, and guillotined. (1746-1793).

Dublin, capital of Eire (Ireland), in Co. Dublin, Leinster, on Dublin Bay. It stands at the mouth of the Liffey, which divides it into two, and is crossed by 12 bridges. There is a good harbour, recently improved, and railway and canal connexion with the rest of Ireland. Dublin has a famous university (Trinity College), two Protestant Cathedrals, founded in the 11th and 12th Centuries, a Catholic Cathedral and a Castle, formerly the residence of the Lord-Lieutenant. In Phoenix Park it has famous public pleasure grounds. One of the finest streets is O'Connell Street (formerly Sackville Street), which suffered severely from bombardment and fire in the risings of 1816 and 1922. The G.P.O., the Customs House and the Four Courts (law courts) were destroyed, but have been rebuilt. The city is marred by slums, but in 1936 the City Corporation had schemes of improvement under consideration. The chief industries are the making of poplin, whisky and porter (Guinness). Pop. 487,000.

Dubois, Guillaume, Cardinal and Prime Minister of France; notorious for his ambition and his debauchery; appointed tutor to the Duke of Orleans; encouraged him in vice, and secured his attachment and patronage in promotion, so that in the end he rose to the highest honours, and influence, in both Church and State; notwithstanding his debauchery he was an able man and an able minister. (1656-1723).

Dubrovnik, seaport and city in Yugoslavia, on the Adriatic; an Austrian town before the World War, under the name Ragusa; in the 16th Century an important centre of South Slavonic literature and art; pop. c. 13,000.

Du Cange, Charles du Fresnoy, one of scholars, born at Amiens, and educated among the Jesuits; wrote on language, law, archaeology and history; devoted himself much to the study of the Middle Ages; contributed to the rediscovery of old French literature, and wrote a history of the Latin empire; his greatest works are his *Glossaries of Medieval Latin and Greek*. (1610-1688).

Ducat, a coin, generally in gold, that was current in Germany after 1559 and in other European countries. It was worth about ten shillings.

Du Chaillu, Paul Belloni, an African traveller chiefly in the equatorial region of W. Africa, which resulted in an extension of our knowledge of its geography, ethnology and zoology, and particularly of the character and habits of the ape tribes, especially the gorilla. (1835-1903).

Duck, the popular name given to various birds of the family Anatidae, and especially to those of the two sub-families Anatinae and Filigulinae, the former being called, by some, River ducks, or True ducks, and the latter Sea ducks. The Anatinae have a broad, lengthened bill, nostrils basal, very short legs, and hinder toe slightly lobed, and are migratory. They build nests near freshwater lakes, and among reeds and sedges. The Filigulinae are distinct in having the hinder toe very broad. Among the numerous species of Sea Ducks are the Eider.

Duck-billed Platypus, a name for the

Ornithorhynchus or Platypus, an aquatic, furred mammal, native of Australia. It has powerful fore-feet for burrowing, and a bill like a duck.



♂ DUCK-BILLED PLATYPUS

The young are hatched from eggs.

Ducking-stool, a stool or chair in which an otherwise offending woman in England was securely fastened and set before her own door to be pelted at, or borne in a tumbrel through the town to be jeered at, or placed at the end of a see-saw and ducked in a pool. Dishonest brewers and bakers were also so punished. They disappeared from use at the beginning of the 19th Century.

Duckweed, the common name of four species of flowering plants of the genus *Lemna*, order Lemnaceae, common in Britain and found floating on water, especially stagnant water. The plant consists of a flattened green leaf or stem from which a long root hangs downwards in the water.

Ductility, the property of substances, especially of metals, which renders them capable of being extended by hammering or drawing without breaking.

Ductless Glands, the endocrine glands in the human body, comprising the thyroid.

parathyroids, pancreatic islets, adrenals, sex glands, pituitary, spleen and thymus. They produce various internal secretions, called hormones, which enter the blood. Metabolism and the functioning of other glands largely depend on them.

Dudley, the largest town in Worcester-shire, England, 8½ m. NW. of Birmingham, in the heart of the "Black Country," with coal-mines, ironworks and hardware manufactures. Pop. 60,000.

Duel, a pre-arranged fight with weapons between two persons to settle a personal grievance between them. It is not to be confused with single combat between champions (e.g., Achilles and Hector). The origin of duelling is probably to be found in the trial by ordeal prevalent among Germanic peoples in the Middle Ages. Out of this developed the judicial combat between accused and accuser. The further development of the judicial combat into the private duel first took place in Italy, and in the 15th Century spread to France. Duelling was practically extinct by 1900, but in four centuries many thousands of duels were fought. In England duelling was abolished by Act of Parliament in 1818, and is now illegal. In some other countries it has also been suppressed. In Germany the student duels of the 17th Century, revived in the 19th, are especially noteworthy.

Duet, a musical composition for two persons, singers or instrumentalists. Also a composition intended to be performed so.

Dufferin and Ava, first Marquis of, statesman and diplomatist; held office under Lord John Russell and Mr. Gladstone; was in succession Governor-General of Canada, ambassador first at St. Petersburg, then at Constantinople and Viceroy of India; secured the annexation of Burma; later he was ambassador at Rome and Paris; created an earl in 1871 and Marquis in 1888 (1826-1902).

Duffy, Sir Charles Gavan, an Irish patriot, born in Co. Monaghan; trained for the Bar; took to journalism in the interest of his country's emancipation; was one of the founders of the *Nation* newspaper; was twice over tried for sedition, but acquitted; emigrated at length to Australia, where he soon plunged into Colonial politics, and in his political capacity rendered distinguished services to the Australian colonies, especially in obtaining important concessions from the mother-country; wrote *The Ballad Poetry of Ireland*, and an interesting record of his early experiences in *Young Ireland*. (1816-1903).

Dugdale, Sir William, antiquary, born in Warwickshire; was made Chester herald; accompanied Charles I., throughout the Civil War; at the Restoration was appointed Norroy King-at-Arms; and later Garter King-at-Arms. His chief work was the *Monasticon Anglicanum*, which he executed conjointly with Roger Duckworth; wrote also on the antiquities of Warwickshire and heraldry; left 27 folio MSS. now in the Bodleian Library. (1605-1686).

Dugong, or *Halicore*, a genus of aquatic mammals of the order Sirenia.

They have two tusks-like incisors and a whale-like tail with a nearly straight hind edge. They are found on the coasts of the



DUGONG

Indian Ocean from the Red Sea to Australia, and are said to be the origin of the mermaid legends. There are three species—viz., the Red-Sea Dugong (*Halicore tabernaclui*), the Australian (*H. australis*) and the Indian (*H. dugong*).

Du Guesclin, Bertrand, constable of du Nord; one of the most illustrious of French war-captains, and distinguished as one of the chief instruments in expelling the English from Auvergne, Orlenne and Poitou; was taken prisoner at the Battle of Auray in 1364, but ransomed for 100,000 francs, and again by the Black Prince, but soon liberated. He was esteemed for his valour by foe and friend alike, and was buried at St. Denis in the tomb of the kings of France. (c. 1320-1380).

Duhamel, Georges, French novelist. By his mark in literature with *Vie des Martyrs*, published in 1916, and *Civilisation* in 1917, calm, dispassionate revelations of modern war. His later novels include *Confession de Minuit* and the *Salavin* trilogy, his greatest contribution to literature. (1884-).

Duiker, or *Duikerkbok*, a genus of small antelopes of S. Africa, some of them being very little larger than a rabbit. They live in thick forest. The name is given in particular to the *Cephalophus grimmia*, and refers to the way it threads its way through wooded country.

Duilius, Gaius, a Roman consul, distinguished for having on the coast of Sicily gained the first naval victory recorded in the annals of Rome, 260 B.C., mainly by the use of grappling-irons and boarding-bridges which he invented.

Duisberg-Hamborn, town and river-port of Germany, on the Rhine, near the Ruhr coal-field, with iron, chemical, textile and machine-making industries. It was occupied by the French, 1921-1925. Pop. 440,419.

Duke, a title of nobility, being the highest in the English peerage. Four members of the Royal family to-day hold the title of Duke—viz., the Dukes of Gloucester, Kent, Connaught and Strathearn, and Windsor. The word is derived from the Latin *Dux*, meaning a leader, and in particular a military leader. The title originated in the Roman Empire. The first grant of a duchy in England was of Cornwall (q.v.) to the Black Prince in 1337 and was made for the support of the King's eldest son. The Duchy and County Palatine of Lancaster was created in 1377, but the estates have vested in the Crown since 1399.

Dukeries, The, a district near Workshop in Nottinghamshire, England, where are situated Clumber Park and Welbeck Abbey, residences of the Dukes of Newcastle and Portland, as well as Workshop Manor and Thoresby House.

Dukhobors, or *Doukhobors*, a religious community in Russia of Quaker principles, and of a creed that dealed the doctrine of the Trinity and the divinity of Christ. They became a cause of trouble to the empire by their fanaticism, and were removed to a high plateau in Transcaucasia, where they live by cattle-rearing. There are communities of this sect in Western Canada, where their peculiar views frequently bring them into conflict with the authorities.

Dukinfield, municipal borough of E. of Manchester, Cheshire, England, 6 m. E. of Manchester. Coal-mining, iron-working, calico-printing, cotton-making, etc., are carried on. Pop. 19,000.

Dulac, Edmund, artist, born at Toulouse; naturalised British, 1912. Mainly an illustrator, especially of *Arabian Nights*, Omar's *Rubaiyat* and Poe's poems. Exhibited at Leicester Galleries, London, since 1907. (1882-).

Dulcimer, a medieval stringed instrument, prototype of the pianoforte, derived from the East through the Crusades; consisted of triangular wooden frame with strings on tuning-pins stretched

over a sound-chest. It was played by striking with hammers.

Dulong, Pierre Louis, a French chemist, born at Rouen; discoverer, by accidental explosion, of the chloride of nitrogen. He was also distinguished as a physicist, investigating in particular the theory of heat. (1785-1838).

Dulse (*Rhodomenia palmata*), a widely distributed, reddish-brown seaweed, eaten dried and uncooked by peasants on Scottish and W. Irish coasts.

Duluth, a port on Lake Superior in Minnesota, U.S.A.; has a fine harbour and is a great centre of commerce. Pop. 101,000.

Dulwich, a southern Surrey suburb of London, with a flourishing college, opened in 1619, and a picture-gallery attached, rich especially in Dutch paintings. The College now comprises two schools, Dulwich College and Alleyn's School.

Duma, the name of the House of Representatives in the former Russian Empire, first granted in 1905 by the Czar Nicholas II. and functioning until the revolution of 1917. In that period there were four Dumas, the first two having a short existence only.

Dumas, Alexandre, The Elder, a celebrated French author, born at Villers-Cotterets, son of General Dumas, a Cossack; lost his father at four, and led for a time a miscellaneous life, till, driven by poverty, he came to Paris to seek his fortune. Here he soon made his mark, and became the most popular dramatist and romancer of his time. His romances are numerous, and he reached the climax of his fame by the production of *The Count of Monte Cristo* in 1844, and the *Three Musketeers* the year after. He was unhappy in his marriage, and squandered his fortune in reckless extravagance. Before the end it was all spent, and he died at Dieppe, broken in health and impaired in intellect, ministered to by his son and daughter. He was the author of a large number of immensely popular works, in the production of which he had some help. (1802-1870).

Dumas, Alexandre, The Younger, or *fils*, dramatist and novelist, born in Paris, natural son of the preceding. He made his debut as a novelist with *La Dame aux Camélias* in 1848, which was succeeded by a number of other novels. He eventually gave himself up to the production of dramas of a slightly didactic nature, including *Les Idées de Madame Aubray*, *La Femme de Claude* and *Diane de Lys*, on which his reputation chiefly stands. (1824-1895).

Dumas, Jean Baptiste André, a distinguished French chemist, born at Alais. At the Revolution of 1848 he became a member of the National Assembly; was created a senator under the Empire, but retired into private life after Sedan. He was distinguished for his studies in chemistry, both theoretical and practical, and ranks among the foremost in the science. He invented a method of obtaining vapour densities at high temperature and applied it to mercury, iodine, phosphorus and sulphur. He also discovered chloroacetic acid. (1800-1884).

Du Maurier, George Louis, born in London as a designer of wood engravings; did illustrations for *Once a Week*, the *Cornhill Magazine*, etc., and finally joined the staff of Punch, to which he contributed numerous clever sketches. He published a novel, *Peter Rabbit*, in 1891, which was succeeded in 1894 by *Trilby*, which had a phenomenal success in both England and America. (1834-1896).

Du Maurier, George, actor, son of George Du Maurier; went on stage, 1894, at the Garrick, in *An Old Jew*, acted with

Forbes Robertson and Tree; with Frank Curzon, managed Wyndham's Theatre, 1910-1925; appeared in many of Barrie's plays; "created" Mr. Darling and Captain Hook in *Peter Pan*. Knighted 1922. (1872-1934).

Dumbarton, the county town of Dumbartonshire, Scotland, and a royal burgh, at the mouth of the Leven, on the Clyde, 15 m. from Glasgow; shipbuilding the chief industry. It was the capital of the kingdom of Strathclyde. Adjoining is a castle of historic interest, 350 ft. high, kept up as a military fortress. Pop. 21,500.

Dumbartonshire, a county of Scotland, originally part of Lennox. It is traversed by the Leven, borders on Loch Lomond on the E. and on the Clyde in the S., is mountainous in parts, elsewhere fertile and is engaged in agriculture, shipbuilding, etc. Area 346 sq. m. Pop. 147,700.

Dum-Dum, a town in Bengal, India, 6 m. N.E. of Calcutta; a military post with a small-arms factory whence came the dum-dum bullet. It was here in 1857 that the sepoys first mutinied.

Dumfries, an agricultural market town of Dumfriesshire and a seaport, stands on the left bank of the Nith, with Maxwelltown as suburb on the right; manufactures tweeds and hosiery, and trades in cattle. Here Robert Burns spent the last five years of his life, and his remains lie buried. Pop. 19,000.

Dumfriesshire, a S.W. Border county of Scotland; an agricultural district, which slopes from a northern pastoral region to the Solway Firth, and is traversed by the fertile valleys of Nithsdale, Annandale and Eskdale. The rearing of sheep, cattle, pigs and horses, is the chief pursuit, and sheep, cattle, grain, wool and skins are exported. Area 1,000 sq. m. Pop. 81,000.

Dumping, economic term expressing commodity at a price lower than in the domestic market. A practice since the 18th Century, it became prominent in the 19th. In the last 40 years large cartels of several major manufacturing countries pursued a policy of securing the export trade at dumping prices to kill competition. Laws imposing additional duties on dumped goods have been passed; first in Canada, 1904, in South Africa, 1914; and in 1921 in U.S.A., Great Britain, Australia and New Zealand.

Dunbar, an ancient seaport and town of East Lothian (Haddingtonshire), Scotland, on the coast of the Forth, 29 m. E. of Edinburgh; is a fishing station, and manufactures agricultural implements and paper; was, with its castle, which has stood many a siege, a place of importance in early Scottish history. Near it Cromwell beat the Scots under Leslie on Sept. 3, 1550. Pop. 3,800.

Dunbar, William, a Scottish poet, entered the Franciscan order and became an itinerant preaching friar, in which capacity he wandered over the length and breadth of the land, enjoying good cheer by the way; was some time in the service of James IV., and wrote a poem, his most famous piece, entitled *The Thistle and the Rose*, on the occasion of the King's marriage with the Princess Margaret Tudor, daughter of Henry VII. His poems were of three classes—allegorical, moral and comic, the most remarkable being *The Dance*, in which he describes the procession of the seven deadly sins in the infernal regions. Scott said he "was a poet unrivalled by any that Scotland has produced." (c. 1460-c. 1520).

Dunblane, a town in Perthshire, Scotland, 8 m. N. of Stirling, with a beautiful cathedral, which dates back as far as 1240. Pop. 4,900.

Duncan, Adam, Viscount, a British admiral, born at Dundee; entered the navy in 1746; steadily rose in rank till, in 1795, he became admiral of the Blue and commander of the North Sea fleet; kept watch over the Dutch squadron for two years, till, at the end of that term, it put to sea. He came up with it off Camperdown, and totally defeated it, Oct. 11, 1797. (1731-1804).



VISCOUNT DUNCAN

Duncan, leaders, American reviver of Greek dancing, was born in San Francisco; danced in New York, 1895; established schools at Berlin, 1904; Paris, 1914; Moscow, 1921. Married Sergei Essenin about 1922, whom she afterwards divorced. She lost both her children by drowning and was herself killed in a motor accident at Nice. (1878-1927).

Duncansby Head, promontory 210 ft. high at the NE. extremity of Scotland, in Caithness. John of Groat's House is 2 m. W.

Dunciad, books, the "fiercest" as well as the best of his satires, in which, with merciless severity, he applies the lash to his critics, and in which at first Theobald, but later by substitution Colley Cibber, figures as the King of Dunces.

Dundalk, capital of Co. Louth, Ireland (Eire), some 50 m. N. of Dublin; a place of considerable trade and manufactures; is an ancient city. Edward Bruce, the last king of all Ireland, was crowned and resided here. It has been besieged and taken by storm more than once. Pop. 14,000.

Dundas (of Arncliffe), the name of a Scottish family, many of the members of which have distinguished themselves at the Bar and on the Bench.

Dundas, Henry, Viscount Melville, a junior member of the above family; trained for the Bar; entered Parliament and rose to be Lord Advocate for Scotland. Opposed at first to Pitt, he became at last his ablest coadjutor in Parliament, and did important services in connection with the military and naval defences of the country. (1742-1811).

Dundee, a city and seaport of Angus (Forfar), Scotland, the third largest city in the country. It stands on the Firth of Tay, 10 m. from its mouth, at the N. end of the Tay Bridge. Marmalade is made, shipbuilding is carried on, and there are marine-engine works and sawmills, but the chief product is sailcloth and other coarse linen fabrics, Dundee being an important centre of the linen and jute trade. It is also the chief British port for whale and seal fishing. It is a royal burgh. Pop. 176,000.

Dundee, John Graham of Claverhouse, Viscount. See Claverhouse.

Dundonald, Thomas Cochrane, Earl of, entered the navy at the age of 17; became captain of the *Speedy*; captured in ten months 33 vessels; was captured by a French squadron, but had his sword returned to him; distinguished himself afterwards in a succession of daring feats. Selected to burn the French fleet lying at anchor in the Basque Roads, he was successful by means of fireships in destroying several vessels, but complained he was not supported by Lord Gambier, the admiral, a complaint which was fatal to his promotion in the service. Disgraced otherwise, he went abroad and served in foreign navies, and materially

contributed to the establishment of the Republic of Chile and the Empire of Brazil. In 1830 he was restored by his party, the Whigs, to his naval rank, as a man who had been the victim of the opposite party. He afterwards vindicated himself in his *Autobiography of a Seaman*. (1775-1860).

Dunedin, the capital of Otago, in New Zealand, situated well south on the E. side of the South Isle, at the head of a spacious bay, and the largest commercial city in the dominion; founded by Scottish emigrants in 1848. Pop. 83,000.

Dunes, Battle of the (June 3, 1658), in which the French and English under Turenne defeated the Spanish under Condé and captured Dunkirk. English Royalists under the Duke of York (afterwards James II.) fought for Spain.

Dunfermline, an ancient burgh in Scotland, a place of interest as a residence of the early Kings of Scotland, and as the birth-place of David II., James I. and Charles I., and of Andrew Carnegie, and for its abbey, where are buried many of Scotland's kings and queens. It stands in the middle of a coalfield, and is the seat of extensive linen manufactures. Pop. 35,000.

Dungannon, a market town of Co. Tyrone, Northern Ireland, the ancient home of the O'Neills, Kings of Ulster. Pop. 3,700.

Dungarvan, a seaport and fishing town of Co. Waterford, Ireland (Eire), on the Bay of Dungarvan. Pop. 5,200.

Dungeness, a low headland of S. Kent, England, with a lighthouse and Lloyd's signalling station.

Dungeon (French "donjon," meaning a keep), in modern usage any small, vaulted room used as a prison, but originally the tower (or "keep") of a castle where the prison was.

Dunkeld, a town in Perthshire, Scotland, 15 m. NW. of Perth, with a fine 14th-Century cathedral of which the choir still serves as the parish church. The R. Tay, on which the town stands, is here crossed by a seven-arched bridge designed by Telford. Pop. 1,000.

Dunkery Beacon, hill of Somerset, England, 1,100 ft. high, the highest point on Exmoor. It is owned by the National Trust.

Dunkirk, port of France, in the dept. of Nord, on the Straits of Dover. It has an extensive trade, many manufactures, notably of iron goods and jute and hemp, and oil refineries. During the World War it was an important British aircraft base. Pop. 35,000.

Dunlop, John Boyd, re-inventor of the pneumatic tyre (first patented by one Thompson in 1846), was born at Dregburn, Ayrshire; removed to Belfast, 1867; there devised the Dunlop tyre, 1887. He sold out to Harvey Du Cros in 1889, removed to Dublin in 1892 and kept a drapery at Ball's Bridge, where he died. (1840-1921).

Dunmow, market town (Great Dunmow), mow, Pop. 3,500 and village (Little Dunmow) of Essex, England. An ancient custom of Little Dunmow, now held at Ilford, awards a side of bacon, the Dunmow Fitch, to a couple who neither quarrel nor repent of their marriage for a year and a day after its celebration.

Dunne, Finley Peter, American humorist, creator of "Mr. Dooley," was born in Chicago; reporter on newspapers there, he wrote in the *Journal* the first sketches introducing that publican-philosopher. The first series was issued as *Mr. Dooley in Paris* and in *War*, 1896. There were about half-a-dozen more. (1867-1940).

Dunnet Head, a rocky peninsula in Caithness, the most northerly point in Scotland.

Dunnottar Castle, an old castle of the Keiths now in ruins, on the flat summit of a precipitous rock, 1½ m. S. of Stonehaven, Kincardineshire, Scotland, and connected with the mainland by a neck of land called the "Fiddle Head"; famous in Scottish history as a State prison, and as the place of safekeeping at a troubled period of the Scottish regalia, now in Edinburgh Castle.

Dunois, Jean, a French patriot, called the Bastard of Orleans, born in Paris, natural son of Louis of Orleans, brother of Charles VI.; one of the national heroes of France; along with Joan of Arc, compelled the English to raise the siege of Orleans, and contributed powerfully, by his sword, to expel the English from France after the death of that heroine. (1402-1458).

Dunoon, popular seaside resort of Argyllshire, Scotland, on the Firth of Clyde, 8 m. W. of Greenock. Pop. 12,000.

Dunraven, Earl of, Irish politician and soldier. He acted as war correspondent at the siege of Paris in 1870. On the establishment of the Irish Free State he became a senator. As a yachtsman he twice attempted to win the America Cup. (1841-1926).

Dunrobin Castle, mansion of Sutherlandshire, Scotland, on the Dornoch Firth, seat of the Duke of Sutherland. Part of it dates from 13th Century.

Duns, County and market town of Berwickshire, Scotland, 13 m. W. of Berwick-on-Tweed. Near is a hill, Duns Law, site of a Covenanters' camp in 1699, and original site of the town. Pop. 2,000.

Dunsany, Edward John Moreton Drax, Irish playwright, but born in London and educated at Eton and Sandhurst; fought in the Boer War and the World War. His first play, *The Glittering Gate*, produced at the Abbey Theatre, Dublin, in 1909. His best play was probably *The Gods of the Mountain*, 1911. Wrote also novels, one of the best of which is *The Wise Woman*. (1878-).

Dunsink, hill and village of Co. Dublin, Ireland (Eire), the site of a College observatory.

Scotus, Johannes, one of the most celebrated of the scholastics of the 14th Century, whether he was native of England, Scotland or Ireland is uncertain; entered the Franciscan order, and from his acuteness got the name of "Doctor Subtilis"; lectured at Oxford to crowds of auditors, and also at Paris; was the contemporary of Thomas Aquinas, and the head of an opposing school of Scotists, as against Thomists, as they were called; whereas Aquinas "proclaimed the Understanding as principle, he proclaimed the Will, from whose spontaneous exercise he derived all morality; with this separation of theory from practice and thought from thing (which accompanied it) philosophy became divided from the theology, reason from faith; reason took a position above faith, above authority (in modern philosophy), and the religious consciousness broke with the traditional dogma (at the Reformation)." (c. 1285-1308).

Dunstable, a market town of Bedfordshire, England, 5 m. E. of Luton, said to have been a Roman station. Here Henry VIII.'s marriage with Catharine of Aragon was annulled. Pop. 9,640.

Dunstaffnage, ruined castle of Argyllshire, Scotland, on Loch Milne, 3 m. N.E. of Oban, traditional seat of the ancient Kings. Here the "Stone of Destiny" was kept before its removal to Borne.

Dunstan, St., an English ecclesiastic, born at Glastonbury; a man of high birth and connection as well as varied accomplishments; began a religious life as a monk living in a cell by himself; became Abbot of Glastonbury, in which capacity he adopted the rôle of statesman, and rose to great authority during the reign of Edgar, becoming Archbishop of Canterbury, ruling the nation with vigour and success, but with the death of Edgar his power declined, and he retired to Canterbury, where he died of grief and vexation; he is the patron saint of goldsmiths. (c. 909-988).

Dunster, a picturesque market town of Somerset, England, 2½ m. NW. of Taunton, with an ancient castle, and a curious wooden Yarn Market.

Dunsterville, Major-General Lionel Kipling's "Stalky"; born at Lausanne; served in Waziristan and on North-West Frontier, 1894-1898; China, 1900; and in World War led the Dunster Force to Baku, 1918. Has written *Stalky's Reminiscences* and *Stalky Settles Down*. (1865-).

Dunwich, village of Suffolk, England, 4½ m. SW. of Southwold, the remains of a once-important town and harbour which disappeared owing to sea encroachment.

Duodecimals, a system of notation in arithmetic employing denominations of 12 as against the denominations of 10 in the decimal system. It is chiefly used by surveyors, enabling them to calculate the number of feet or inches in either a superficial or a three-dimensional area by twelfths. In the table for square measure 12 sq. in. is reckoned as 1 superficial prime, and 1 sq. ft. as 12 superficial primes. In cubic measure 12 cu. in. is 1 solid second, 144 cu. in. is 1 solid prime, and 1 cu. ft. is 12 solid primes.

Dupleix, Joseph, a French merchant, head of a factory at Chandernagore, who rose to be governor of the French settlements in India (1742), in the management of which he displayed conspicuous ability, defending them against the English and receiving the dignity of marquis. Jealousy at home and Clive's victories, however, led to his recall, and he was left to end his days in neglect and poverty, though he pleaded hard with the cabinet at Versailles to have regard for his sacrifices for his country. (1697-1763).

Duquesne, Abraham, Marquis, an illustrious naval officer of France, born at Dieppe; distinguished himself in many a sea engagement, and did much to enhance the naval glory of the country. Among other achievements plucked the laurels from the brow of his great rival, De Ruyter, by, in 1676, defeating the combined fleets of Spain and Holland under his command. Louis XIV. offered him a marshal's baton if he would abjure Calvinism, but he declined. He was the only one of the Huguenots excepted from proscription in the Revocation of the Edict of Nantes, but his last days were saddened by the banishment of his children. (1610-1688).

Duralumin, an alloy of aluminium (94 per cent.), containing also copper, magnesium, manganese and silicon. Invented in 1906 by Wilm, it is widely used, and after a heating process it obtains considerable strength.

Durance, a tributary of the Rhône in France, which, after a rapid course of 818 m., falls into that river by its left bank 3 m. below Avignon.

Durango, a large, mountainous, inland State of Mexico, crossed by the Sierra Madre on its W. side. The rainfall is slight, cotton, wheat and other crops are grown, but mining is the chief industry, the State being one of the richest mineral regions of Mexico. Silver has been worked since the

arrival of the Spanish, but iron, gold, copper, etc., also exist, iron in great quantities. Area 42,270 sq. m. Pop. 404,000. The capital, the centre of the commercial and mining activity, is a city of the same name.

Durazzo (Durrës), seaport of Albania, a place of importance under the Romans, and later held by Venetians and by Turks. Olive oil and grain are exported. Pop. 3,700.

Durban, the port of Natal, S. Africa, largest town in the Province, with a land-locked harbour. It is the centre of the Natal sugar industry and of almost the whole overseas trade of the Province. It is the seat also of a whaling industry and the terminus of the Imperial Airways biweekly service to South Africa. Pop. 259,000, of whom 94,800 are Europeans.

Durbar, a ceremonious State reception in India.

Dürer, Albrecht, the great early German painter and engraver, born at Nürnberg, son of a goldsmith, a good man, who brought him up to his own profession, but he preferred painting, for which he early exhibited a special aptitude, and his father bound him apprentice for three years to the chief artist in the place, at the expiry of which he travelled in Germany and other parts. In 1506 he visited Venice, where he met Bellini, and painted several pictures; proceeded thence to Bologna, and was introduced to Raphael. His fame spread widely, and on his return he was appointed court-painter by the Emperor Maximilian, an office he held under Charles V. He was of the Reformed faith, and a friend of Melancthon as well as an admirer of Luther, on whose incarceration in Wartburg he uttered a long lament. He was a prince of painters, his drawing and colouring perfect, and the inventor of etching, in which he was matchless. He carved in wood, ivory, stone and metal, was an author as well as an artist, and wrote, among other works, an epoch-making treatise on proportion in the human figure; "it could not be better done" was his quiet, confident reply as a sure workman to a critic on one occasion. (1471-1528).

D'Urfey, Tom, a facetious poet; author of comedies and songs; a great favourite of Charles II. and his court. Of comedies he wrote some 30, which are all now discarded for their licentiousness, and a curious book of sonnets, entitled *Pills to Purge Melancholy*; came to poverty in the end of his days. (1653-1723).

Durga. See *Devi*.

Durham, an ancient city on the Wear, county town of Durham, with a noble cathedral and a castle, once the residence of the bishop; now a university seat. It is the heart of a county of the same name, rich in coalfields, and with numerous manufacturing towns. Area (county) 1,014 sq. m. Pop. (county) 1,486,000; (city) 18,000.

Durham, John George Lambton, first Earl of, distinguished English statesman, born in Durham Co.; a zealous Liberal and reformer, and a member of the Reform Government under Earl Grey, which he contributed much to inaugurate; was ambassador in St. Petersburg, and was sent out as governor-general and High Commissioner to Canada in 1838 to inquire into, and adjust, Provincial difficulties, but he remained at the head of affairs there only five months, resigning owing to criticism in England of his lenient treatment of the ring leaders of the rebellion in Lower Canada. His famous Report, issued in 1839, led to the union of Upper and Lower Canada and the institution of a Common Legislative Assembly responsible to the Executive Council. (1792-1840).

Durian, or *Durio*, fruit of the Malayana tree, *Durio stethinus*. It is enclosed in a prickly husk, the size of a coconut, but the fruit itself has a fine flavour, although an unpleasant smell.

Durra, *Scorpus vulgare*, a species of millet, cultivated for food in Asia and Egypt. It yields the glucoside, durrin.

Dursley, a market town of Gloucestershire, shire, England, 15 m. SW. of Gloucester, manufacturing agricultural tools, incubators, separators, etc. Pop. 3,000.

Duse, Eleonora, Italian actress, born near Venice, daughter of an actor; acted in Italy, S. America, Russia, U.S.A., London, Scandinavia and Paris, where she rivalled Bernhardt. Played a wide range of parts, including Shakespeare and Ibsen. Died in Pittsburgh. (1859-1924).

Dussek, Jan Ladislav, pianist and composer; born at Caslav, Bohemia, son of an organist. Wandered through Europe and came to London 1890, where he had great success; but bankrupted through part-ownership of a music-shop, fled to Hamburg, 1800. Was in various nobles' service and finished in Talleyrand's. Died at St. Germain-en-Laye. He wrote many melodious compositions for the pianoforte. (1761-1812).

Düsseldorf, a well-built town of Rhinish Prussia, on the right bank of the Rhine. It is a place of manufactures and has a fine picture-gallery with a famous school of art associated. The chief industries are iron and steel, cotton-spinning and weaving, paper-making, dyes, silks, etc. Pop. 498,000.

Dust, finely powdered earth, or other substance, such as coal, flour, etc. Specific mineral, vegetable or animal dusts are the cause of a number of occupational disorders, affecting the lungs in various ways. Cosmic dust consists of particles of matter floating on the outer layer of the atmosphere. The atmosphere itself is laden with dust. In large towns it has been calculated that dust particles are present in the air to the extent of one to a hundred thousand in every c.c. of air.

Dutch Auction, an auction in which the article to be sold is first put up at the maximum price. If there is no offer, the price is then lowered by stages until a bid is made.

Dutch East Indies (Netherlands Indies), the exclusive name of the Dutch possessions. They include Java and Madura, Celebes, the Moluccas, Billiton, Batavia, Timor Archipelago, part of Borneo, New Guinea, etc. They are volcanic and fertile, and mainly covered with dense forest and rich in minerals, including tin, petroleum and precious stones. The natural resources are immense, but as yet little exploited except on Java. Exports include all kinds of tropical products, including spices, rice, sugar, coffee, tea, rubber, tobacco, etc. Capital Batavia on Java. Area 735,000 sq. m. Pop. 60,000,000. They were conquered by the Dutch East India Co. (founded 1602), and ruled by the company until its dissolution in 1798, when they came under the rule of Holland. See under the separate islands for a description of each.

Dutch Metal, or Dutch Gold Leaf, an alloy of varying proportions of copper and zinc, but usually somewhere in the region of 80 per cent. copper and 20 per cent. zinc. It is malleable and used as a substitute for gold leaf, though it tarnishes rapidly.

Duumvirs (Duumviri), the name of two magistrates who exercised in ancient Rome the public functions of keeping the Sibylline books containing the destinies of Rome. They were first appointed by Tarquin and replaced later by the Decemvirs.

Duveen, Sir Joseph Joel, Anglo-Dutch birth. He gave several works to national collections and built the Turner wing of the Tate Gallery. (1843-1908). His son Joseph Duveen, also a generous patron of art and donor of galleries to the National Portrait and Tate Galleries in London, was raised to the peerage in 1933 as Lord Duveen of Millbank. (1869-).

Drina, the name of two rivers of Europe, one in Russia, the Northern of which flows into the White Sea, being formed by the confluence of the Sukhona and the Yug near Veliki-Ustyug. It is connected by canal with the Neva and the Volga. Archangel is at the mouth. The Southern (also called the Dnina) rises near the source of the Volga, and flows through Poland and Latvia to the Gulf of Riga, and is an outlet for Russian timber.

Dvinsk (Daugavpils), a town of Latvia, on the Drina (Dnina), with a trade in flax, hemp and timber; the scene of fighting (1915-1916) between Germans and Russians. Pop. 45,000.

Dvorák, Antonín, Bohemian composer. It was his *Stabat Mater*, composed in 1880 that won him international fame. His work shows great originality. (1841-1904).

Dwarf, a person of abnormally small stature by comparison with the standard measurement of the race to which he belongs. The condition is probably due to an abnormally small pituitary gland. Dwarfs are otherwise well formed, and remarkable for liveliness of temperament. A notable English dwarf was "Sir" Jeffery Hudson, who was only 18 in. high at nine years old and never more than 3 ft. 9 in. high, dwarf of Henrietta Maria and served in a cold pie before Charles I. in 1626. Another famous dwarf, Charles Stratton ("General Tom Thumb"), an American, only 2 ft. 7 in. high at 35 years old, came to England in 1848. Dwarf races also exist in Equatorial Africa, Asia and Oceania with an average height of about 4 ft.

Dwarf Stars, are those of comparatively small volume and brightness and of high density.

Dwarf Trees, are cultivated by the Japanese. Both deciduous and evergreen trees, such, for example, as oak and pine, are grown, and mature at a foot high by means of careful pruning, pruning and root restriction. Some dwarf trees, such as the Juniper, have small, slow-growing varieties which are suitable for growing in small trees in the rock-garden.

Dyaks, or *Dyakas*, aborigines of Borneo, a race nearly allied to the Malays.

They were originally head-hunters, but the last decapitating tribes were dispersed by the Rajah of Sarawak in 1870. They now number over 2,000,000.



DYAK WAR CANOE

Dyce, William, a distinguished Scottish artist, born in Aberdeen, studied in Rome; settled for a time in Edinburgh, and finally removed to London; painted portraits at first, but soon took to higher subjects of art. His work was such as to commend itself to both German and French artists. He gave himself to fresco-painting, and as a fresco-painter was selected to adorn the walls of the Palace of Westminster and the House of Lords. His "Baptism of Ethelbert" in the latter, is considered his best work. (1806-1864).

Dyck, Van. See *Vandyck*.

Dyer, Reginald Edward Harry, brigadier-general; born at Simla, India; educated at Cork. Commissioned 1885; served in Burma and other campaigns.

Received C.B. for efficient command on E. Persia border in World War. In 1919, compelled to resign on account of his drastic method of quelling a rising at Amritsar (q.v.). The rising, however, was a formidable one, and the Hunter Commission of Enquiry merely found that he had been "unduly severe." (1864-1927).

Dyes, substances, usually themselves coloured, employed to colour a fabric or other material in such a way as to resist the action of soap, water and, if possible, light. Until the development of modern chemistry, dyes were comparatively few, the chief of those previously known being indigo, madder and Tyrian purple. During the last half-century the range has been enormously widened, both in variety of colours and in the production of fadeless dyes.

Chemically, all dyes are carbon compounds containing carbon atoms in rings and one or more groups of atoms known as chromophores, together with such groups as $-NH_2$ and $-OH$ (auxochromes). Without the auxochrome(s) the substance may be coloured, but will probably not be a dye—i.e., anything coloured with it would lose the colour on washing.

There are several classes of dye, the chief being: (a) direct dyes, which will dye silk and wool directly; (b) mordant dyes, which will dye cotton (or wool, etc.) if the fabric is first steeped in a solution of mordant, such as alum, the object of the mordant being to form an insoluble coloured body with the dye; (c) vat dyes—e.g., indigo—in which the fabric is soaked in a solution of a soluble derivative of the dyestuff and then treated in such a way as to regenerate the dye itself, which is insoluble in the fibres; (d) ingrain dyes, which are actually produced within the fibres by suitable chemical reactions; an example is aniline black.

Fadeless dyes are mostly derivatives of the coal-tar substance anthracene, $C_{14}H_{10}$, whilst another ingredient of tar—viz., naphthalene, $C_{10}H_8$ —is the starting-point in the synthetic manufacture of indigo. Tyrian purple is itself now obtained synthetically. It is closely related to indigo, having two bromine atoms in place of two of the hydrogen atoms in the latter dye. The first synthetic dye was mauveine, prepared in 1856 by (Sir) W. H. Perkin, then a lad of 13.

Dykes, veins of igneous rock traversing sedimentary strata in a vertical direction, which originated through molten lava, being forced out through the cracks in the overlying rocks and solidifying. These dykes are often harder than the surrounding rock, and, consequently, they stand out above the surface when the latter has been removed by denudation.

Dymchurch, a village and seaside resort of E. Kent, England, on Romney Marsh, once notorious for its smugglers. Pop. 1,000.

Dymoke, King's Champion; holding the manor of Scivelshy, Lincolnshire, in right of succession to the Marmions, who held it in the 12th and 13th Centuries. The challenge on Coronation Day was last given in 1821 (George IV.'s Coronation).

Dynamics, the branch of mechanics which deals with the relations between forces and the motions caused by these forces. The principal laws of dynamics were discovered by Sir Isaac Newton, and may be shortly stated as follows: (1) Every body continues in a state of rest, or of uniform motion in a straight line, unless acted upon by some force. (2) Any change of motion of a body is directly proportional to the force applied and takes place



DYMOKE ARMOUR (17TH CENT.)

in the direction of the force. (3) To every action there is always an equal and opposite reaction. The third law may be understood by an example. Suppose a book of 2 lb. weight is resting on a table and consequently exerting a force of 2 lb. wt. on the latter, then the table is also exerting an upward force of 2 lb. wt. on the book.

Dynamite, an explosive invented by the Swedish chemist Alfred Nobel, in 1863-1867. It had been shown in 1846 by Sobrero that when glycerine is treated with a mixture of concentrated nitric acid and concentrated sulphuric acid, it is converted into a colourless liquid—nitroglycerine (q.v.) or glyceryl trinitrate—of extremely explosive nature. The explosion is very rapid and shattering, and since the liquid is likely to explode even on slight mechanical shock, its direct application is impracticable.

Nobel found that if nitroglycerine is absorbed in about one-third of its weight of kieselguhr (a variety of very fine sand) it forms a putty-like mass of a much more stable character, he called this dynamite. Dynamite is fired by means of detonators, and is used for blasting. It cannot be used as a propellant explosive in artillery, owing to its tremendously violent disruptive effect. Sawdust is sometimes substituted for kieselguhr, while if cork-charcoal is used as the absorbent, the carbo-dynamite so obtained has a much greater explosive power.

Dynamos. See Electric Generators.

Dyne, the unit of force in the metric system, that force which gives a mass of one gram an acceleration of one centimetre per second per second.

Dysart, a royal borough, seaport and colliery town of Fifeshire, Scotland, on the Firth of Forth. Pop. 4,800.

Dysentery, an infectious disease, causing inflammation and ulceration of the large intestine. Once prevalent in temperate regions, it is now mainly a tropical disease, where it is more epidemic, especially when sanitary conditions are bad. It sometimes combines with *acutry* or *malaria*. One form of dysentery is due to an animal parasite (a protozoa); another to bacilli. The chief symptom is painful diarrhoea, accompanied by the evacuation of blood and shreds of tissue in the faeces. Castor oil mixed with laudanum can be administered in early stages, but the drug of chief value in the cure is ipecacuanha. Dysentery may become chronic.

Dyspepsia, meaning bad digestion. A disordered digestion, so that the passage of food through the stomach is accompanied by pain and discomfort. There is an acute form following a fault in diet or due to poisoning. Excess of acidity in the gastric juices, combined with irregular meals and hurried feeding, produces a dyspepsia, which may lead to a chronic condition of catarrh of the stomach. Nervous dyspepsia is the inability of the stomach to digest or expel its contents, and results from nervous and mental exhaustion, accompanied by depression. Treatment in all cases of dyspepsia involves rest and extreme care in the diet.

Dysprosium, an element, exceedingly rare and not yet isolated. It is found in gadolinite and other rare earths of the same group. Symbol, Dy. Atomic weight, 162.5.

E

Eadmer, a celebrated monk of Canterbury, bury; friend and biographer of St. Anselm, author of a history of his own times (*Historia Norwicum*), as also of Lives of several of the Saints; nominated to the bishopric of St. Andrews in 1120, but Alexander I. of Scotland refused to permit an English Archbishop of Canterbury to perform the ceremony of consecration. (c. 1060-1124).

Eagle, the name of the large birds of flight, forming the sub-family Aquilinae of the Falcons (Falconidae) and inhabiting all parts of the world. There are two main divisions of the family—viz., those with legs feathered all the way to the toes and those with bare legs (i.e., the tarsus unfeathered). The first section includes the genera *Aquila* (to which belongs the Golden Eagle), *Archibuteo* (the Rough-legged Buzzards or Buzzard *Buteo*), *Eurystomus* (including the Booted Eagle), *S. Europe and Africa*. The second division includes the five magnificent species of Sea-Eagles of the genus *Haliaeetus*. The Golden Eagle (*Aquila chrysaetos*) still breeds in the more remote parts of Scotland. Its nest or eyrie is usually built on cliffs or mountains. The Erne or White-tailed Sea-Eagle (*Haliaeetus albicilla*) has only ceased to breed in Britain in comparatively recent years.



GOLDEN EAGLE

The eagle has been adopted by various nations as an emblem of power, nobility and generosity, and in Christian art it is the symbol of meditation, and the attribute of St. John.

Ealing, a parliamentary borough of Middlesex, England, a westerly suburb of London, until a century ago a small village. Pop. 117,000.

Ear, the organ of hearing, comprising the ear, inner ear, the middle ear and the external ear. The inner ear contains a small coiled tube (cochlea) lodged in the skull and filled with fluid. It is separated by a membrane from the middle ear, or "drum," which is filled with air, and which in turn is separated by the tympanic membrane from the tube of the external ear leading to the auricle on the outside of the head.

Three small bone "auditory ossicles" stretch from the tympanic membrane across the middle ear and transfer vibrations to the inner ear, the fluid of which is set in motion, interpreted by the auditory nerves connecting the organ of Corti in the inner part of the cochlea with the brain. The air pressure in the drum is kept constant by the Eustachian tube, which has an outlet in the pharynx. Attached to the cavity of the inner ear are three semicircular canals filled with fluid, and the sense of equilibrium is largely dependent on the movement of this fluid.

Earhart, Amelia (Mrs. G. Palmer Putnam, nam), American aviator; born at Atchison, Kansas; served with the Red Cross in World War. She was the first woman to cross the Atlantic by aeroplane—Newfoundland to Burry Port (Wales), 1931. Flew from Newfoundland to Ireland in 1931 hours, 1932.

and made the first solo flight from Honolulu to Oakland, Cal., in 184 hrs., 1935. On July 3, 1937, while attempting a flight round the world, he was lost at sea with her navigator, Capt. Noonan, near Howland I. (1898-1937).

Earl, the oldest title of English nobility, the third in the British peerage. Originally conferred on the dignity of earl was the right of land held in feudal tenure, the exercise of judicial and administrative functions connected therewith, and was a solemn service of investiture. Since the title lost its official significance during the reign of Queen Anne (1702-1714), investiture has been dispensed with, the title being conferred by letters patent. The wife of an earl is a countess. The title is hereditary, the eldest son assuming during his father's lifetime the title of "viscount," which is in most cases the second title of the father.

Earl Marshal, the eighth great officer of State in England, an office of very ancient institution, now the head of the college of arms, and hereditary in the family of the Dukes of Norfolk since 1672; is responsible for organisation of all matters of high ceremonial, such as coronations, royal processions, etc.

Early Closing, the result of a movement for shortening the working hours of shop assistants and improving their working conditions. It was inaugurated at a meeting of drapers' assistants in 1842, but statutory provision only came many years later. The Shops Act of 1899 stipulated one seat for every three female assistants. The Shops Act of 1912 made a weekly half-holiday compulsory for every assistant. The Shops Act of 1920 ordered compulsory closing of shops at eight o'clock weekdays, nine o'clock Saturdays. Longer hours are permitted in the case of shops at holiday resorts, during special seasons like Christmas, and in exhibitions. There are also provisions for compulsory weekly half-holidays. The particular day for closing is fixed by the local authorities, and may vary at different seasons of the year and for different kinds of shops. Fines up to £20 may be inflicted for any infringement of the Act after a first offence. The headquarters of the Early Closing Association are in Ludgate Hill, London, E.C.

Early English, a term in architecture used to designate that particular form of Gothic architecture in vogue in England in the 13th Century, whose chief characteristic was the pointed arch.

Earn, loch of Perthshire, Scotland, measuring 6½ m. by 3 m. broad. The R. Earn issues from it to join the Firth of Tay after a course of 46 m. Fish abound.

Ear-ring, a ring worn suspended from the lobe of the ear, which is usually pierced (though not always) to take a supporting pin. The custom of wearing ear-rings is one of the greatest antiquity, and has not always been confined to the female sex. Pendant jewels are often worn.

Earth, The planet on which we live, and one of the lesser planets of the Solar System (q.v.). In shape it is oblate spheroid—i.e., very nearly spherical, but slightly depressed at the two poles, the diameter at the equator being 7,926 m. and at the poles 7,900 m. The circumference of the earth at the equator is 24,902 m. The surface area is approximately 197,000,000 sq. m., nearly three-quarters of which is water. In the Solar System its orbit lies between those of Mercury and Venus. It has one satellite of its own, the Moon, which revolves round it. It is composed of an outer gaseous envelope and an inner globe. The gaseous envelope, known as the atmosphere (q.v.), consists of 78 per cent. nitrogen, 21 per cent. oxygen and

a small proportion of other gases. The lower regions of the atmosphere are frequently impregnated with water vapour as a result of evaporation of the water areas in the heat of the sun. The globe itself has a solid crust in which some 92 chemical elements occur either free or in combination.

The earth also has the properties of a gigantic magnet, with a N. magnetic pole and a S. magnetic pole, the N. pole of the compass being the one which points to the Northern magnetic pole. The magnetic N. and S. poles do not coincide with the geographical N. and S. poles, the geographical N. pole pointing upwards approximately in the direction of the pole star.

The sun is the chief source of heat and light on the earth. The surface which is turned away from the sun is in darkness (night) and cold. The most important variations of heat and light are those caused by the earth's own motion inside the Solar System, which are two—viz., (1) its rotation on its own axis (an imaginary line passing through the true N. and S. poles) from W. to E., this causing the apparent rising of the sun in the E. every day, and the apparent setting in the W. The light of the sun reaches London some five hours earlier than it reaches New York, which is 3,200 m. further W. The complete rotation of the earth takes 24 hours, our time system being derived from the rotation itself. (2) Like other planets, it also revolves round the sun in an elliptical orbit (called the "ecliptic") the whole circuit taking approximately 365½ days, which is the Solar Year. The greatest distance from the sun is approximately 93,000,000 m. and the smallest distance approximately 90,000,000 m.

The axis of the earth is inclined at an angle of 23½° from the true vertical to the ecliptic, this giving rise to the phenomenon of the seasons. At one point in the revolution of the earth round the sun the tilt of the axis is such that the northern half of the hemisphere is inclined towards the sun, at another time the southern half. The hemisphere which is tilted towards the sun receives the rays more directly, and a warmer season (summer) is the result. At the equinoxes (March 21 and Sept. 22) the tilt of the earth's axis is across the rays of the sun, and equal day and night exists all over the face of the globe.

Earth, name given to that wire of a wireless set or other electrical apparatus which connects a certain part with the earth, and therefore keeps it at zero potential.

Earth Houses, known also as Yird Houses, Weems and Picts' Houses, underground dwellings in use in Scotland, extant even after the Roman evacuation of Britain. Entrance was effected by a passage not much wider than a fox burrow, which sloped downwards 10 or 12 ft. to the floor of the house. The inside was oval in shape, and was walled with overlapping, rough stone slabs. They probably served as storehouses, winter quarters and as places of refuge in times of war.

Earth Pillars, or Pyramids, structures found mostly in Switzerland in the moraines of glaciers in Valais, near Botzen, and also in the Tyrol. They range up to 100 ft. high, and are sometimes capped by a single boulder of limestone or sandstone. They once formed part of rock terraces, from which they have been cut off by rain. Specimens are also to be found in Colorado and at Fochabers, Scotland.

Earthquakes, disturbances of the earth's surface, sometimes due to the contraction of a section of the crust of the earth caused by the cooling of the planet. The point at which the earthquake originates is the seismic focus, the point of the surface immediately above, where the effects

are most immediately felt, being the epifocus. The contraction of an interior section affects the support given by the underlying structures to the outer sections. This causes the folding movements or the subsidence of parts of the earth. The disturbances, which rarely last for more than two minutes, vary in intensity from a slight tremor to a violent convulsion, changing the appearance of the surface, and a series of disturbances may extend over a period of years, gradually diminishing in intensity and frequency. Another frequent cause is the movement of the earth's crust along existing fault planes, which may be horizontal, appearing as a crack or fissure, vertical, or partly horizontal and partly vertical.

Earthquakes occur most frequently round the Pacific coast and in regions which include the Alps, Caucasus and Himalayas. The most disastrous earthquakes of modern times have been those at Lisbon (1755), Krakatos, in the Dutch E. Indies (1883), Japan (Tokyo and Yokohama) (1923), and Quetta (British Baluchistan) (1935).

Earthwork, mounds of earth raised as a defence in warfare, or to form the banks of canals, or the embankments for railways. The term also covers the barrows (q.v.), cairns and circles, such as those in Cernwall and Wales, constructed by primitive races and used as tombs or places of sacrifice, or merely as settlements.

Earthworm, a large group of annelids, and represented in England chiefly by members of the family Hemicidae. They are elongated in form, consist (like all the annelids) of many narrow rings in contact with each other, have a naked skin, and a fleshy or bluish colouring. They have no tentacles, no eyes and no teeth, but the mouth has a short proboscis. They progress through the ground by swallowing the earth as they burrow and casting it up, thus breaking, ploughing and ventilating the earth. The species found in Britain are never more than 10 in. in length, but some tropical species reach a length of 4 ft.

Earwig, the common name of the insects of the family Forficulidae, which is almost cosmopolitan in distribution. It has a body terminated by a pair of horny forceps, which in the males is considerably curved. The majority of species have two distinctive pairs of wings, of which the fore pair are very short and leathery, but the hind pair large and membranous. The hind pair fold fan-wise and transversely and at rest are completely concealed under the fore pair. As far as is known, they are seldom used in flight. The most important species is the common European earwig (*Forficula auricularia*), familiar in England and also in parts of N. America and New Zealand, where it has established itself. It is nocturnal, frequents dark places (under stones, bark, etc.) and at night feeds on leaves, petals of flowers, etc. The name is of uncertain origin.

Easement, in law a liberty, advantage or privilege, without profit, which one proprietor has in or through the estate of another, distinct from the ownership of the soil; as, e.g., a right of way, a water-course, a right to light (see Light, Ancient). Easements arise by custom; prescription or immemorial user for a certain time; by express grant; or by necessity—i.e., where it is absolutely necessary to the reasonable enjoyment of a property.

East, Sir Alfred, British landscape-painter; born and educated at Kettering; studied art in Glasgow and Paris. Exhibited

at Academy from 1883. Among his best paintings are "A Passing Storm" (in the Luxembourg), "The White Carnival" (Brussels) and "The Golden Valley" (Leeds). (Knights, 1910; R.A., 1913. (1849-1913).

East Anglia, one of the kingdoms of Britain, a Saxon-Saxon times, established in the mid-6th Century, and at the height of its power in the early 7th. It comprised the counties of Norfolk and Suffolk. It has since been involved in frequent wars and for some time subject to Mercian supremacy, but it was subject to the Danes from 878, when the Danes of East Anglia were defeated by Edward the Elder and the country was governed by English earls.

Eastbourne, a watering-place and health resort on the Sussex coast, England, between Brighton and Hastings and 66 m. S. of London. The famous cliff, Beachy Head, is included in the borough. Pop. 58,000.

Easter, an important festival of the Church, commemorating the resurrection of Christ; held on the first Sunday after the first full moon of the calendar which happens on or next after March 21, and constituting the beginning of the ecclesiastical year; the date of it determines the dates of other movable festivals. It derives its name from Eostre, a Saxon goddess of the Spring, whose festival was celebrated about the same time, and to which many of the Easter customs owe their origin. Easter can vary at present between March 22 and April 25, and there has been a strong movement to fix it, this resulting in the Easter Act of 1928, which fixes Easter as the first Sunday after the second Saturday in April though international acceptance is necessary before it is applied.

Easter Island (Rapa Nui), a small volcanic island in the S.E. Pacific, 2,000 m. W. of Chile, to which it belongs, and the most easterly island of Polynesia. It is remarkable for remains of ancient stone statues of great size, the origin of which has given rise to much conjecture.

Eastern Church, in Church History, means the Greek Church, which formerly had its chief seat at Constantinople, and for its chief ruler the Patriarch of that capital, as opposed to the Western Church, which had its metropolis at Rome and was ruled by the Papacy. The official designation is: "The Holy Orthodox Catholic Apostolic Eastern Church."

Eastern Question, problem relating to the existence of Turkish rule over European territory as affecting the European Powers. The Eastern Question became acute in the 19th Century owing to Turkish oppression of the subject Balkan peoples. Serbians and Montenegrins allied with Russia defeated the Turks at the Battle of Plevna (1877), but although by the Treaty of Berlin Turkish Territory in Europe was reduced, English and French jealousy of Russian predominance kept Turkey in power. As a result of the World War, however, Turkey-in-Europe was limited to some 9,360 sq. m. of East Thrace.

East Ham, a borough of Essex, England, sending two members to Parliament. It is part of Greater London, and is mainly industrial. Pop. 142,500.

East India Company, chartered by Queen Elizabeth in 1600; erected its first factories on the mainland in 1613 at Surat, but its most profitable trade in these early years was with the Spice Is., Java, Sumatra, etc. Driven from these islands by the Dutch in 1633, the Company established itself altogether on the mainland. Although originally created under royal charter for purely com-



EARWIG

mercantile purposes, it entered in 1689 upon a career of territorial acquisition, which culminated in the establishment of British power in India. Gradually, as from time to time fresh renewals of its charter were granted, it was stripped of its privileges and monopolies, till in 1858, after the Mutiny, all its powers were vested in the British Crown.

East Indies, a term variously applied to the Dutch E. Indies, to the Malay Archipelago; or to India, Indo-China, Malaya and the Malay Archipelago.

Eastlake, Sir Charles Lock, English Plymouth; artist and author, born at Paris; studied painting in London and in Paris; produced the last portrait of Napoleon, which he executed from a series of sketches of the emperor on board the *Bellerophon* in Plymouth harbour. He travelled in Greece, and from 1816 to 1830 made his home at Rome. "Christ Weeping over Jerusalem," his greatest work, appeared in 1841; was president of the Royal Academy. (1793-1865).

Eastleigh, (with Bishopstoke) urban district of Hampshire, England, adjoining Southampton to the NE. Here are the Southern Railway's rolling-stock works. Pop. 18,000.

East London, seaport and seaside resort of Cape Province, S. Africa, with a fine harbour at the mouth of the Buffalo R.; the chief port for wool and mohair export in S. Africa. Pop. (white) 31,000.

East Lothian, a maritime county of Scotland, on the E., fronting the Firth of Forth and the North Sea, N. of Berwickshire; on the southern border lie the Lammermuir Hills; the Tyne is the only river; considerable quantities of coal and limestone are wrought, but agriculture is the chief industry, 64 per cent. of the land being under cultivation. Area 267 sq. m. Pop. 47,600.

Eastman, George, American scientist, inventor of the roll-film for photography and designer of the Kodak cameras; founder of the Eastman-Kodak Company, and Philanthropist. Died by his own hand. (1854-1932).

East Providence, township and summer resort on Rhode I., U.S.A., on Providence R., opposite Providence. Chemicals and electrical supplies are manufactured, and there is trade in oysters. Pop. 30,000.

East Prussia. See Prussia.

East River, the strait which separates Brooklyn, on Long I., and Manhattan and the Bronx (New York), lying between Long I. Sound and Upper Bay, about 15 m. long; is spanned by four suspension bridges.

Eau de Cologne, a perfume originally manufactured by Johann (or Giovanni) Maria Farina, an Italian who settled at Cologne in 1709, by distillation from certain essential oils with rectified spirit.

Ebbw Vale, urban district of Monmouthshire, England, 18 m. NW. of Newport. A colliery town with a large iron and steel works, it suffered severely in the post-war trade depression. Pop. 32,000.

Ebert, Friedrich, German statesman. Educated at an elementary school, he became a saddler in Heidelberg; at 22 he edited a Socialist newspaper, but was practically an unknown man when on the revolution of 1918 he was made Chancellor in succession to Prince Max of Baden. In 1919 he became first President of the German Republic. (1870-1935).

Ebonite, hard rubber, or a vulcanite, containing a larger proportion of sulphur and other such as

shellac, gutta-percha, antimony, etc. Its hardness ensures its taking a good polish, and despite its name it may resemble ivory, bone or horn. It acts as an electrical insulator.

Ebony, the heavy, hard, deep-black, heartwood of various species of

trees, genus *Diospyros*, of the natural order Ebenaceae, especially of the *Diospyros Ebenus* of India and Ceylon, the *Diospyros Melanoxylon* (Cormandel Ebony) of E. India and the *Diospyros Tomentosa* of N. Bengal. The trees are characterised by their jet-black bark, narrow trunk and the fact that until the heartwood is reached, the wood of the trunk is white. The heartwood is chiefly used for mosaic work, inlayings and ornaments.



EBONY TREE

Ebro, a river of Spain, rises in the Cantabrian Mts. in the province of Santander, flows SE. into the Mediterranean 80 m. SW. of Barcelona, after a course of about 465 m.

Ecarté, a card-game first played in the 19th Century. It is played by two persons with a pack of 32 cards, the twos, threes, fours fives and sixes of each suit being discarded.

Ecbatana, the ancient capital of Media, situated near Mount Orontes (now Alvand); was surrounded by seven walls of different colours that increased in elevation towards the central citadel; was a summer residence of the Persian and Parthian kings. The modern town of Hamadan now occupies the site of it.

Ecce Homo (i.e., Behold the Man), a representation of Christ as He appeared before Pilate crowned with thorns and bound with ropes, as in the painting of Correggio, a subject which has been treated by many of the other masters, such as Titian and Vandyck.

Ecclefechan, a very small market town of Dumfriesshire, Scotland, 5 m. S. of Lockerbie, on the main road to Carlisle, noted as the birth and burial-place of Thomas Carlyle.

Eccles, a municipal borough of Lancashire, England, a westerly suburb of Manchester, with manufactures of cotton and other textiles. Eccles cakes are well known. Pop. 44,500.

Ecclesfield, town of Yorkshire, England, 5 m. N. of Sheffield. Here are coal-mines and iron and steel works. Cutlery, tools and paper are made. Pop. 16,000.

Ecclesia, the general assembly of the free citizens of ancient Athens who met in the Pryx or place of assembly to discuss public business and to pass laws as prepared and laid before them by the Boule or Senate. The right to convene the Ecclesia was vested in the Boule.

Ecclesiastes (i.e., the Preacher), a book of the Old Testament, questionably ascribed to Solomon, and now deemed of more recent date as belonging to a period when the reflective spirit prevailed. It is written apparently in depreciation of mere reflection as a stepping-stone to wisdom. The standpoint of the author is a religious one. Experience supplies the data on which he rests, and his object is to expose the vanity of every source of satisfaction which is not founded on the fear,

and has not supreme regard for the commandments of God, a doctrine which is the very ground-principle of the Jewish faith; but if vanity is written over the whole field of human experience, he argues, this is not the fault of the system of things, but due to the folly of man who, though made upright by God, has "sought out many inventions."

Ecclesiastical and Church

Estate Commissioners, ^{b o d y} the which looks after Church of England property and estates, being a permanent commission set up in 1836 under the Ecclesiastical Commissioners Act. The Commission to-day consists of the archbishops and bishops of the Church, the Deans of Canterbury, St. Paul's and Westminster, the Lord Chancellor, the Lord President of the Council, the Lord Chief Justice and a number of other representatives of Parliament, the Crown, the Church and the laity. It reports to Parliament every year.

Ecclesiastical Law, the law formerly administered in the ecclesiastical courts. It is derived from the civil (Roman) and canon law. In England it was instrumental in mitigating the rigour of the common law in certain particulars, especially in the matter of disposing of land by will, and in matrimonial causes. All this jurisdiction has long ago been transferred to the ordinary civil courts, but the principles have been engrafted on to the common law. The term is confined to-day to the branch of English Law dealing with Church of England matters, including plurality of benefices, the rights and duties of clergymen and the constitution of ecclesiastical courts. It is mainly based on Acts of Parliament. Except where Parliamentary sanction is required (as, e.g., for innovations touching doctrinal formulae), it is administered by the Church Assembly (q.v.), which can make provision in respect of any proposal which it has deliberated.

Ecclesiasticus, one of the books of the Apocrypha, ascribed to Jesus, the son of Sirach, admitted to the sacred canon by the Council of Trent, though excluded by the Jews. It contains a body of wise maxims, in imitation, as regards matter as well as form, of the Proverbs of Solomon, and an appendix on the men who were the disciples of wisdom. Its general aim, as has been said, is "to represent wisdom as the source of all virtue and blessedness, and by warnings, admonitions, and promises to encourage in the pursuit of it." It was originally written in Hebrew, but was extant only in a Greek translation executed in Egypt, professedly by the author's grandson, until in 1896 portions of the original Hebrew MSS. were discovered.

Echelon (French meaning ladder), an arrangement of battalions or of lines of troops in steps, i.e., the men are placed in ranks, each succeeding rank extending farther to the left or to the right than the line immediately preceding it.

Echidna, or Spiny Ant-eater, a family of mammals, having a long snout,

small mouth
long tongue
(with which
they catch the
ants on which
they live), no
teeth or tail and
claws adapted
for digging.



FIVE-TOED ECHIDNA

The species include the common, or five-toed, *Echidna (Echidna aculeata)* found in Australia and the three-toed *Echidna (Proechidna bruijii)* of New Guinea. They are burrowing animals about 18 in. long.

Echinoderms (Hk. "hedgehog-skin," from the Greek), the name of a large branch of invertebrates, including the sea-urchins (Echinoids), sea-cucumbers, star-fishes and other marine animals. They have a leathery integument, often covered with calcareous spines, taking the form of spines, hence the name.

Echo, a Greek legendary wood-nymph, according to Ovid in love with Narcissus, who did not return her love, in consequence of which she pined away till all that remained of her was her voice. According to another legend she rejected the advances of Pan, who thereupon made the shepherds tear her to pieces, only her voice remaining.

Echo, in acoustics, the imitative repetition of a sound due to the reflection of the sound-waves from an obstacle, and frequently noticeable in the neighbourhood of cliffs, high walls, clouds, etc. In building concert-halls, churches, etc., it is important to obviate echo.

Eckener, Hugo, German airman, born at Glensburg, doctor of Philosophy; in 1906 joined staff of Zeppelin Company, manager 1910, supervised air-raids upon England. Has piloted airships in civil flights since the war, in particular the Graf Zeppelin to the U.S.A. and S. America in an endeavour to prove the commercial possibilities of airships for passenger and mail trans-atlantic services. (1868-)

Eckington, a colliery town of Derbyshire, shire, England, 6 m. S.E. of Sheffield. Agricultural implements are made. Pop. 12,000.

Eckmühl (or Eggmühl), a village in Bavaria where Napoleon defeated the Austrians in 1809, and later gave to Davout, one of his generals, the title Prince of Eckmühl.

Eclampsia, a disorder accompanying pregnancy, and occurring in the last five months, always serious, and in the last stages of pregnancy dangerous to mother and child. It is characterised by severe and alarming fits, the cause of which is unknown, though they are believed to be due to some poison in the system arising out of the pregnancy. One of the first symptoms is the presence of albumen in the urine. Medical attention is always essential.

Eclectics, so-called philosophers who attach themselves to no system, but select what, in their judgment, is true out of others. In antiquity the Eclectic philosophy is that which sought to unite into a coherent whole the doctrines of Pythagoras, Plato and Aristotle. There is an eclecticism in art as well as philosophy, and the term is applied to an Italian school which aimed at uniting the excellencies of individual great masters.

Eclipse, the name of a famous race-horse of Arab stock of the middle 18th Century (born 1764), which was never beaten. The Eclipse Stakes, instituted 1886 and run at Sandown Park in mid-July, are named after the horse, which is the ancestor of most of the later English racehorses.

Eclipses, the obscuring of a heavenly body by the intervention of another heavenly body between it and the observer. Such phenomena are caused in particular by the sun, earth and moon being in one straight line. A solar eclipse occurs when the moon passes between the sun and the earth, when it may obscure the whole of the sun's disc (total eclipse), a portion of the disc (partial eclipse), or the whole of the central part leaving a bright rim (annular eclipse). The last total eclipse visible in England was in June 1837, and the next will occur in 1999. A lunar eclipse takes place when the moon passes into the earth's shadow; it may be either total or partial. In every year there are at least two and at most seven eclipses, either solar or lunar.

Ecliptic, the name given to the circular path in the heavens round which the sun appears to move in the course of the year, an illusion caused by the earth's annual circuit round the sun, in a plane inclined at an angle of 23½ degrees to the equator; is the central line of the Zodiac (q.v.), so called because it was observed that eclipses occurred only when the moon was on or close upon this path.

Eclogue, the name of a short poem of a pastoral nature; applied to some of the work of Virgil and Horace, and in later times to poems by Spenser, Drayton, Fletcher and others.

Ecology, the branch of biology which studies the relations between animals and plants and their environment.

Economics, the science which deals with the production, distribution and consumption of the world's resources, such as food, clothing, building material, fuel, power, transport, etc., and the management of State income and expenditure in terms of money. Before the 19th Century it was known as "Political Economy." It embraces economic history and geography, social economy, economic statistics and applied political economy.

Ecuador, a republic of S. America, of Spanish origin; derives its name from its position on the equator; lies between Colombia and Peru; is traversed by the Andes, several of the peaks of which are actively volcanic. Tributaries of the Amazon drain from the E. slopes. With the exception of the Andean plateau, the country is a vast forest-land of valuable woods. The population consists of Peruvian Indians, negroes and Spanish Creoles. The chief agricultural products and exports are cocoa, coffee, rice, cotton and ivory nuts. Mineral resources include gold (cyanide ore), silver and petroleum. In 1935 the Constitution was abolished by Señor Febrerico Paez, who was placed in power by the Army and that of 1908 restored pending the drafting of a new. Area (including the Galapagos Is. which belong to Ecuador) 276,000 sq. m. Pop. 2,700,000.

Eczema, a skin disease now more frequently described as various kinds of dermatitis. It commences as a redness of the skin caused by dilation of the blood-vessels. The relaxed walls of the vessels allow fluid to be poured into the tissues of the skin, the outer layer of which begins to come off as scales. This outpouring of fluid may become so great as to form tiny blisters called vesicles, or to wash the outer layer of skin right off and leave a raw, red, weeping surface. It is caused by irritation either from the outside or from within, debilitating illness, etc., and treatment, which may include dieting, aims at allaying the cause and the irritation.

Edam, picturesque old town of Netherlands, on the Zuider Zee, 12 m. N.E. of Amsterdam. It is noted for its cheeses. Pop. 8,000.

Edda (Æl. grandmother), the name given to two collections of old Icelandic literature based on the Norse mythology; the Elder, or Poetic, Edda, the collection of which was attributed to one Sæmundr Sigfusson of an old Icelandic family who lived about 1056 to 1133; and the Younger, or Prose, Edda, collected in the next century by Snorri Sturluson. (1173-1241).

Eddington, Sir Arthur Stanley, astronomer, director of the Cambridge Observatory; devoted himself to the study of astrophysics, in which sphere he has produced important results; wrote many books on astronomical subjects and on the application of the relativity theory of Einstein to astronomy and on philosophical aspects of it. He was knighted in 1930 and awarded the O.M. in 1938. (1882-).

Eddy, Mrs. Mary Baker, the American woman founder of Christian Science and the Church of Christ, Scientist. Her maiden name was Baker, and she was three times married, first to Major G. W. Baker, who died six months later, then to Dr. Daniel Patterson, whom she divorced after 10 years unhappiness, and finally to Asa Gilbert Eddy, who predeceased her. In 1875 she produced the sect's standard work, *Science and Health with Key to the Scriptures*, which has achieved wide circulation. (1821-1910).

Eddystone Lighthouse, situated on a low reef of rocks submerged at high tide, 14 m. SW. of Plymouth; first built of wood by Winstanley, 1696; destroyed by a storm in 1703; rebuilt of wood on a stone base by Rudyard; burnt in 1756, and reconstructed by Smeaton of solid stone, this structure lasting for over 100 years before being dismantled; the present edifice, on a different site, was completed by Sir James Douglas in 1882, is 133 ft. in height, and has a light visible for 17½ m.

Edelweiss (*Leontopodium alpinum*), a small flowering plant of the Compositae order found in the Swiss Alps, but readily transplanted. It grows to about 6 in. high, and has leaves and bracts covered with woolly hairs.

Eden (i.e., place of delight), the name of the garden where, according to Gen. ii. 8-14, man first resided after the creation; called Paradise in the Septuagint. A river flowed through it and branched into four arms, two of which have been identified as the Euphrates and the Tigris. In it was the tree of the knowledge of Good and Evil.

Eden, the name of two rivers, one in NW. England, rising in the Pennines and emptying into the Solway Firth at Rockliff. Carlisle is on its banks. The other is in Fifeshire, Scotland, passing Cupar and flowing to the North Sea at St. Andrews.

Eden, Rt. Hon. Robert Anthony, English statesman, son of Sir William Eden, of Windlestone Hall, Bishop Auckland. Served in the World War; went to Oxford University afterwards; was elected in 1923 M.P. for Warwick and Leamington, which constituency he has represented subsequently. He was Parliamentary Under-Secretary for Foreign Affairs in the first National Government, having rendered good service at the abortive Disarmament Conference. He was made Lord Privy Seal in 1934. When the National Government was reconstructed in 1935, he became Minister for League of Nations Affairs, and was prominent in the British effort to pursue the policy of collective action against Italian aggression in Ethiopia. On the resignation of Sir Samuel Hoare following the Hoare-Laval Pact, he took his place as Foreign Secretary. In the Spanish Civil War, it was he who initiated and carried through the policy of non-intervention. He resigned Feb. 1938, as a result of differences of opinion with the Premier, Mr. Neville Chamberlain, concerning a proposed Anglo-Italian pact. (1897-).

Edenbridge, a market town of Kent, England, 10 m. W. of Tunbridge Wells. Hever Castle, near by, was the home of Anne Boleyn, second wife of Henry VIII. Pop. 3,000.

Edenhall, village of Cumberland, England, 3 m. N.E. of Penrith. The Luck of Eden Hall is a goblet, damage to which will, says legend, bring ill-fortune to the mansion of Eden Hall. Wordsworth's poem is on this legend.



EDEL-
WEISS

Edentata, an order of mammals, comprising the sloths, ant-eaters

and armadillos of S. and Central America and the pangolins and aardvarks of Africa. They are characterised by and take their name from their incomplete dentition, in many species teeth being absent altogether, in others there being no teeth in front of the jaws, and the cheek teeth having no enamel casing. See under Sloth, Ant-eater, Aardvark, Pangolin, Armadillo, etc., for descriptions of the main types.



PERA ARMADILLO

Ederle, Gertrude, an American swimmer, the first woman to swim the English Channel, which she did from France to England in 14 hrs. 34 min., then a record, and still the women's record, in 1926, with the crawl stroke.

Edessa, an ancient city in Mesopotamia; figures in early Church history, and is reputed to have contained at one time 300 monasteries. It fell into the hands of the Turks in 1637; is regarded as the sacred city of Abraham by Orientals. Modern name Urfa. Pop. 31,000. Also the name of a town in Greece, capital of the dept. of Pella in Macedonia and ancient capital of Macedonia. Pop. 13,000.

Edgar, a king of Saxon England from 959 to 975, surnamed the Peaceable; promoted the union and consolidation of the Danish and Saxon elements within his realm; cleared Wales of wolves by exacting of its inhabitants a levy of 300 wolves' heads yearly. During his reign a new code of law was drawn up. St. Dunstan, the Archbishop of Canterbury, was the most prominent figure of the reign. (944-975).

Edgar the Atheling, a Saxon grandson of Edmund Ironside; was hurriedly proclaimed King of England after the death of Harold in the Battle of Hastings, but was amongst the first to offer submission on the approach of the Conqueror; spent his life in feeble attempts at rebellion, and lived into the reign of Henry I. (c. 1050-1130).

Edge Hill, a ridge in the S. of Warwickshire, England, which gave name to the first battle in the Civil War on Oct. 23, 1642, between the royal forces under Charles I. and the Parliamentary under Essex.

Edgeworth, Maria, novelist, born at Black Bourton, Oxfordshire, from her fifteenth year her home was in Ireland. She declined the suit of a Swedish count, and remained till the close of her life unmarried. Amongst the best known of her works are *Moral Tales*, *Tales from Fashionable Life*, *Castle Rackrent*, *The Absentee* and *Ormond*. Her novels are notable for their animated pictures of Irish life, and were acknowledged by Scott to have given him the first suggestion of the Waverley series. (1767-1849).

Edgeworth, Richard Lovell, an Irish landlord, father of Maria Edgeworth; had a genius for mechanics, in which he displayed a remarkable talent for invention; was member of the last Irish Parliament; educated his son in accordance with the notions of Rousseau; wrote on *Practical Education* in collaboration with his daughter. (1744-1817).

Edgware, town of Middlesex, England, 8½ m. from Marble Arch, on Watling Street. Here Handel was organist at the Church of St. Lawrence, and is said to have composed *The Harmonious Blacksmith* here. Pop. 5,000.

Edict, a proclamation in Roman times, made by a higher magistrate, consisting of the principles of administration which he would follow.

Edict of Nantes, an edict issued in 1598 by Henry IV. of France, granting freedom of worship and certain civic rights to the Huguenots. It was revoked by Louis XIV. in 1685.

Edinburgh, the capital of Scotland, on a picturesque site amid surrounding hills; derives its name from Edwin, King of Northumbria in the 7th Century; was created a burgh in 1329 by Robert the Bruce, and recognised as the capital in the 15th Century, under the Stuarts. It has absorbed in its growth adjoining municipalities; is noted as an educational centre; is the seat of the Supreme Courts; has a university, castle and royal palace, and the old Scottish Parliament House, now utilised by the Law Courts. Brewing and printing are the chief industries, but the upper classes of the citizens are for the most part either professional people or living in retirement. Pop. 439,000.

Edinburgh Review, a celebrated quarterly review started in Oct. 1802, in Edinburgh to further the Whig interest. Amongst its founders and contributors were Horner, Henry Brougham, Francis Jeffrey and Sydney Smith, the latter being editor of the first three numbers. Jeffrey assumed the editorship in 1803, and in his hands it became famous for its incisive literary critiques, Carlyle and Macaulay contributing some of their finest essays to it. Ceased in 1929.

Edinburgh University, founded in 1583; was the last of the Scottish Universities to receive its charter; was raised to an equal status with the others in 1821. Its site was the famous Kirk o' Field, the scene of the Darnley tragedy; now consists of two separate buildings, one entirely devoted to medicine, and the other to arts and training in other departments.

Edirne (Adrianople), a city in Turkey at the junction of the R. Maritza and Tundja and on the high road between Belgrade and Istanbul, the Ottoman capital until 1453. In 1913, during the Balkan War, it was besieged and captured by the Bulgarians and Serbs, but restored to Turkey during the Second Balkan War. Ceded to Greece by Treaty of S. vres, but restored to Turkey in 1922 by Treaty of Lausanne. Manufactures: silk, leather, woollens, perfumes. Pop. 150,000.

Edison, Thomas Alva, a celebrated American inventor, born at Milan, Ohio; started life as a newsboy; early displayed his genius and enterprise by producing the first newspaper printed in a railway train. Turning his attention to telegraphy, he revolutionised the whole system by a series of inventions, to which he subsequently added others, to the number of 500, the most notable being the megaphone, phonograph, kinetoscope, which was the forerunner of the cinema, a telegraph transmitter, and improvements in electric lighting. (1847-1931).



T. A. EDISON

Edmonton, urban district of Middlesex, Eng., a northern suburb of London. Here Keats and Cowper lived, and Charles and Mary Lamb are buried. Pop. 78,000.

Edmonton, capital of Alberta, Canada, on the North Saskatchewan R. It is the seat of Alberta University, and has flour and saw mills and meat-packing

plants, and coal-mining, lumbering and other industries. It is the centre of a farming district, and is a fur trade depot. Pop. 75,000.

Edmund, the name of two kings of England. E. I., reigned 940-946. He was involved in strife with Northumbria, but reached peace through the services of Odo of Canterbury and Wulfstan of York. Later he ravaged Strathclyde, and eventually met his death at the hands of an assassin in 946. E. II., surnamed Ironside, succeeded to the throne of England on the death of his father Ethelred the Unready in 1016, but reigned only seven months. He struggled bravely, and at first successfully, against Canute the Dane, but, being defeated, the kingdom was ultimately divided between them. (c. 980-1016).

Edmund, St. (Edmund Rich), Archbishop of Canterbury, born at Abingdon; while still at school made a vow of celibacy; sided as archbishop with the popular party against the tyranny of the King, Henry III., and the King's favourites. Henry appealed to the Pope for a legate, who, when appointed, opposed and thwarted Edmund, who eventually retired to France. He spent his last days in a monastery. (c. 1175-1240).

Edmund, St., King of East Anglia from 855 to 870. Little is known of his reign except that he fought a fierce battle with the Danes at Hoxne, being defeated and killed either on the field of battle, or subsequently as a martyr to the Christian faith. He was canonised and his shrine at Bury St. Edmunds became one of the most famous in Europe. (840-870).

Edom, or Idumma, a mountainous but not infertile country, comprising the S. of Judaea and part of the N. of Arabia Petraea, 100 m. long by 20 m. broad, peopled originally by the descendants of Esau, who were bitterly hostile to the Jews, the hostility dating from their refusal to allow the Jews access to Canaan through their country. (Num. xx. 14-21).

Education, the process of instruction is prepared for the demands of life. In Greece state schools flourished during Plato's time. In the 16th Century the revival of learning caused a widespread interest in secular education, and notable names are Erasmus, Melancthon, Victorius de Felire, Dean Colet and Ignatius Loyola. During the 18th Century education was still the privilege of the few. Adam Smith advocated compulsory elementary education in England, but it was not until 1880 that it arrived. In France state elementary education began in 1846. In England the Education Act made elementary education compulsory from the age of 5 to 10. The Act of 1918 raised the age to 14, and the leaving age becomes 15 in 1939, though the Education authorities will be able to grant exception in particular cases where a child can secure beneficial employment.

The instrument of local government in educational matters is the local Education Authority Committee of the council. They are responsible to the Board of Education, from whom they receive an educational grant of approximately 60 per cent. of local education costs. In the Government education is under the direction of the Education Minister, who is president of the Board of Education. No child of the appropriate age can be refused admission to a public elementary school on the grounds of class, wealth or poverty, religion, attainments or nationality. It is entirely free. The syllabus of instruction is laid down in the Code of the Board of Education, and includes mathematics, English and history, geography, science, art, music and physical training and, in many schools, handi-

crrafts. depended on examination results, but this pernicious system was replaced by a Government inspection. Secondary or post-primary education consists of a course at a recognised secondary school, which pupils attend from the age of 11 to 16, and where they receive a more liberal education designed to fit them to enter for civil-service examinations, matriculation and commercial posts. At the end of the course there is held a General Schools Examination, which, in certain conditions, exempts the students from the London Matriculation, and therefore prepares the way for degree study at one of the universities. Scholarships make it possible for a pupil to undergo a course of university study at small cost to the parent.

During recent years the wide interest in secondary education led the Government to organise Central Schools for those pupils whose standard of attainment excluded them from the secondary schools, but justified further education of a lesser kind. Many technical schools and Polytechnics were set up in London by the great City Companies through the City and Guilds of London Institute, while an Act of 1889 gave local authorities power over technical and manual instruction for intending artisans. These have been extended by Trade Schools. There are also Evening Continuation Schools, catering at nominal fees for people employed during the day, known since 1926 as Evening Institutes.

Other varieties of institute for further education are Schools of Commerce in London and the largest towns, such as the City of London College, which offers full-time senior courses, part-time day courses and evening classes. General subjects such as economics, literature, languages, history, art and music are taken also at such colleges as the Morley College and the Working-Men's College.

The peak of education is the university, of which there are twelve in England and Wales, Oxford and Cambridge being the oldest, London, Durham, and Manchester being the next to be founded. Education outside that provided by the State is in the hands of the public schools and the private preparatory schools which feed them. The public schools include Eton, Rugby, Winchester, Marlborough, etc.

The social services rendered by local education authorities are many. In 1902 they were given power to institute school medical inspection, and further powers were granted by the Ministry of Health Act of 1919. Other social services include school holiday camps for those unlikely to have a holiday, convalescent homes for the sick, and the provision of free meals for the destitute. During recent years educational methods have been the subject of examination, and there are schools which specialise in psychological teaching based on the principles of Froebel, Dalton and Montessori.

Education, Board of, the central authority for National Education in England and Wales, established in 1899 with a President, a Parliamentary Secretary and a Consultative Committee. The "Board" never meets as such.

Edward I., (Longshanks), King of England (1272-1307), born in Westminster, son of Henry III., married Eleanor of Castile; came first into prominence in the Barons' War; defeated the nobles at Evesham (1265), and liberated his father; joined the last Crusade in 1270, and distinguished himself at Acre; returned to England in 1274 to assume the crown, having been two years previously proclaimed king; during his reign the ascendancy of the Church and the nobles received a check, the growing aspiration of the people for a larger share in the affairs of the nation was met by an ex-

Before 1895 grant from the Treasury

tended franchise, while the right of Parliament to regulate taxation was recognised; under his reign Wales was finally subdued and annexed to England, and a temporary conquest of Scotland was achieved. (1239-1307).

Edward II., King of England (1307-1327), fourth son of the preceding; was first Prince of Wales, being born in Caernarvon; being a weakling, was governed by favourites, Gaveston and the Despencers, whose influence, as foreigners and unpatriotic, offended the barons, who rose against him. In 1314 Scotland rose in arms under Bruce, and an ill-fated expedition under him ended in the crushing defeat at Bannockburn. In 1327 he was deposed, and was brutally murdered in Berkeley Castle. (1284-1327).

Edward III., King of England (1327-1377), son of the preceding, married Philippa of Hainault. During his boyhood the government was carried on by a council of regency. In 1328 the independence of Scotland was recognised, and nine years later began the Hundred Years War with France, memorable in this reign for the heroic achievements of Edward the Black Prince (q.v.), the king's eldest son. Associated with this reign are the glorious victories of Crécy and Poitiers, and the great naval battle at Sluys, one of the earliest victories of English arms at sea. These successes were not maintained in the later stages of the war, and the treaty of Bretigny involved the withdrawal of Edward's claim to the French crown. In 1376 the Black Prince died. (1312-1377).



EDWARD II

Edward IV., King of England (1461-1483), Duke of York, and successor to the Lancastrian Henry VI., whom he defeated at Towton. Throughout his reign the country was torn by the Wars of the Roses, in which victory rested with the Yorkists at Hedgeley Moor, Hexham, Barnet and Tewkesbury. In this reign little social progress was made, but a great step towards it was made by the introduction of printing by Caxton. (1442-1483).

Edward V., King of England for three months in 1483, son of the preceding; deposed by his uncle, Richard, Duke of Gloucester; was ultimately murdered in the Tower, along with his young brother. (1470-1483).

Edward VI., King of England (1547-1553), son of Henry VIII. and Jane Seymour. His reign, which was a brief one, was marked by a victory over the Scots at Pinkie (1547), Catholic and agrarian risings, and certain ecclesiastical reforms. (1537-1553).

Edward VII., King of Great Britain and Ireland, of the British Dominions beyond the seas and Emperor of India, succeeded his mother, Queen Victoria, Jan. 22, 1901. On March 10, 1863, he married Princess Alexandra, eldest daughter of Christian IX. of Denmark. He left four surviving children: George, who succeeded him, b. 1865; Louise, Duchess of Fife, b. 1867; Victoria, b. 1868; and Maud, b. 1869, who married Prince Charles of Denmark (King Haakon VII. of Norway since 1905). The King's eldest son, Albert Victor, b. 1864, died Jan. 14, 1892. Born Nov. 9, 1841. Died May 6, 1910. He was known as the Peacemaker.

Edward VIII. (Edward Albert Christian George Andrew David), King of Great Britain, Ireland, etc., from Jan. 20 to Dec. 10, 1936; born June 23,

1894, at Richmond, eldest son of the Duke and Duchess of York (afterwards George V. and Queen Mary); went to Osborne, 1907, and to Dartmouth, 1909. Invested Prince of Wales at Caernarvon, 1911. Went to Oxford, 1912. During the World War served in France, Egypt and Italy. After 1918 made tours throughout the Empire. He succeeded to the throne on his father's death, but abdicated, unceremoniously, because of manifestations of widespread distaste in regard to his proposed marriage to Mrs. Wallis Warfield (formerly Mrs. Ernest Simpson), an American citizen. He left England immediately afterwards and married her at the Château of Condé, France, on June 3, 1937. After his abdication he was created Duke of Windsor. (1894-).

Edward George Nicolas Paul Patrick, Prince, eldest child of the Duke and Duchess of Kent, and grandson of George V. of England, born at Belgrave Square, London, on Oct. 9, 1935.

Edward, Lake (formerly Albert Edward), ward Nyanza, lake of Central Africa, between the Belgian Congo and Uganda, the source of a headstream of the Nile. It was discovered by H. M. Stanley in 1889.

Edward Medal, an award for acts of heroism performed by miners and quarrymen or to those who rescue them when in danger; established in 1907 by King Edward VII.

Edwards, Alfred George, first Archbishop of Wales; born at Llanymawddwy; educated at Jesus College, Oxford; headmaster Llandoverly College, 1876-1885; vicar of Carmarthen, 1885-1889; Bishop of St. Asaph, 1889-1934; Archbishop of Wales, 1920-1934. (1848-1937).

Edwards, John Pasmore, philanthropist; born in Cornwall; as newspaper proprietor owned the *Exeter*; founded libraries, hospitals and other institutions in various parts of England, and established many clubs for working men and women. (1823-1911).

Edwards, Jonathan, a celebrated American divine; born in E. Windsor, Connecticut; graduated at Yale; minister at Northampton, Mass.; missionary to Housatonic Indians; was elected to the Presidency of Princeton College; wrote an acute and original work *The Freedom of the Will*, a masterpiece of cogent reasoning; has been called the "Spinoza of Calvinism." (1703-1758).

Edward the Confessor, King of England (1042-1066), married Edith, daughter of the great Earl Godwin; was a feeble monarch of ascetic proclivities. His appeal to the Duke of Normandy precipitated the Norman invasion, and in him perished the royal Saxon line; was canonised in 1611 for his piety. (1004-1066).

Edward the Elder, King of the West Saxons from 899 to 924; was the son and successor of Alfred the Great; extended the Anglo-Saxon dominions.

Edwin, King of Northumbria in the 6th Century; through the influence of his wife Ethelburga Christianity was introduced into England by St. Augustine; founded Edinburgh; was defeated and slain in battle by the Mercians. (585-633).

Edwy, King of the Anglo-Saxons from 955 to 957; "persecuted and dethroned by the insolence of monks exciting a superstitious people against him." The clerical party headed by Dunstan and Odo put his wife Elgiva to death. He was a weak ruler, lost all England N. of the Thames to his half-brother, whereupon he recalled Dunstan and made him Archbishop of Canterbury, but died 959.

Eel, a group of fishes of the order Apodes, with elongated bodies and no ventral fins.

They abound in both fresh and salt water, practically all over the world. Various genera include the *Anguilla* (in which is placed the common Eel, *Anguilla anguilla*, which abounds in British waters), the Conger-eels (g.v.), the Morays (*Muraena*) and the Serpent Eels. They are for the most part voracious feeders. Some, especially the Congers and Morays, grow to a great size (as much as 8 to 10 ft.), and some are capable of inflicting severe wounds even on man. The Common or Sharp-nosed Eel, to which the name is especially applied in England, can grow as long as 4 ft. and weigh up to 10 lb. It has a shiny skin covered with small oval scales and, owing to its ability to keep its gills moist, is able to live out of water. In the autumn some become silvery and descend to the sea, going then to the spawning-grounds in the Atlantic S. of the Bermudas. The evers return to Europe, and may be seen ascending rivers in great numbers towards the end of the summer of their fourth year. This and other species have been popular as food since Roman times. There are large eel fisheries in Holland and Ireland.

EEL (Larva, Elver and Mature Fish)

Efflorescent Substances, a term those crystalline substances which lose their water of crystallisation when exposed to the air and become amorphous, e.g., washing soda.

Egbert, King of Wessex, 802-839, a descendant of Cedric the Founder; after an exile of 13 years at the court of Charlemagne ascended the throne; reigned till 809, governing his people in tranquillity, when, by successful wars with the other Saxon tribes, he in two years became virtual king of all England, and received the revived title of Bretwalda. (d. 839).

Egede, Hans, a Norwegian priest, founder of the Danish mission in Greenland, whither he embarked with his family and a small colony of traders in 1721; leaving his son Paul (1708-1789) to carry on the mission, and returning to Denmark, he became head of a training school for young missionaries to Greenland. (1686-1753).

Eger, (Czech, Cheb), a manufacturing town in Bohemia (Czechoslovakia), on the R. Egre or Ohře, a 190-m.-long tributary of the Elbe; 91 m. W. of Prague, in the centre of a German-speaking district and near the German frontier. Wallenstein was murdered here in 1634. Pop. 31,500. There is another city of the same name in N. Hungary, manufacturing wine and soap. Pop. 30,000.

Egeria, a nymph who inhabited a grotto to the Camenae, some 16 m. from Rome, and whom, according to tradition, King Numa was in the habit of consulting when engaged in framing forms of religious worship for the Roman community. She figures as his spiritual adviser, and has become the symbol of such.

Egg. All animals are, at the beginning, in the state of impregnated ova, but the word egg is commonly applied to those ova or eggs which are extruded, and the young contained in them complete their development apart from the parent body. The female egg-cell is fertilised by the male gamete. The embryo of eggs is very small, but eggs vary in size, thickness of the shell and the quantity of yolk. The largest eggs are laid by birds, that of the ostrich being

the largest of all, while the humming-bird's egg weighs only a few grains.

Most birds' eggs are edible, but the common domestic hen's egg is the most nourishing and easiest digested. It consists of a calcareous shell, a thin membrane or skin, an albuminous substance called the "white," a yolk, and the central cavity of the yolk. It contains a certain quantity of oil, salt, carbon and nitrogen. The egg of the domestic fowl is white or brown in colour, but the eggs of wild birds are conspicuously coloured to harmonise with their surroundings. Reptile's eggs are smaller than those of birds, and the shell is skin-like. Fishes' eggs show extraordinary variety, and their innumerable quantity forms the hard roe of the fish. A sturgeon lays over 7 million eggs, many of which are destroyed or devoured.

Egham, a small town in Surrey, on the Thames, 20 m. W. of London; has in its vicinity Runnymede, where King John signed *Magna Carta* in 1215. Pop. 16,000.

Eglantine, a popular name of several English wild flowering plants. More properly it is the sweet-briar *Rosa Eglanteria*, but it has also been applied to the sweet-briar *Rosa rubiginosa* and by Milton (the "twisted eglantine") to the honeysuckle (*Lonicera Periclymenum*).

Egmont, Lamoral, Count of, born in Hainault, son of John IV., became attached to the Court of Charles V., by whom, for distinguished military and diplomatic services, he was appointed Governor of Flanders; came to England to ask the hand of Mary of England for Philip; fell into disfavour for espousing the cause of the Protestants of the Netherlands, and was beheaded in Brussels by the Duke of Alva; his career and fate form the theme of Goethe's tragedy *Egmont*. (1522-1568).

Egmont, Mount, one of the loftiest peaks in North I., New Zealand, is 8,270 ft. in height, and of volcanic origin. It is in the Taranaki district in the W. of the island.

Ego and Non-Ego (i.e., I and Not-Self), are terms used in philosophy to denote respectively the subjective and the objective in cognition, what is from self and what is from the external to self, what is merely individual and what is universal.

Egoism, the philosophy of those who, uncertain of anything but the existence of the Ego or I, resolve all existence as known into forms or modifications of its self-consciousness, and base their system of ethics on the good or happiness of the individual.

Egremont, (1) a town of Cheshire, England, 2 m. NW. of Birkenhead, connected by ferry-boat to Liverpool. Pop. 16,000. (2) A town of Cumberland, England, 5 m. SE. of Whitehaven. Iron ore is mined and there is a rined castle. Pop. 6,000.

Egret, the common name of a number of birds of the Heron tribe,

characterised by their fine white plumage and in the nesting season by the ornamental plumage in the form of a long silky, "dorsal train" which they assume.

This dorsal plumage yields the "ospreys" (as they are known in the trade) so valuable as ornaments. Some of the chief species are the American Egret (*Herodias egretta*), the Little Egret (*Gareta garceta*), which occurs in Britain as a rare visitor, and the Snowy Egret (*Gareta candidissima*).



LITTLE EGRET

Egypt, a country in the N.E. of Africa; lies along the W. shore of the Red Sea, has a northern coastline on the Mediterranean, and stretches as far as the Anglo-Egyptian Sudan. The area is nearly 383,000 sq. m., a large proportion of which is desert, only about 13,000 sq. m. being cultivated. Its chief natural regions are three: Upper Egypt, the narrow alluvial valley of the Nile from Cairo to the Southern boundary; Lower Egypt, the delta of the Nile, from Cairo to the Mediterranean; and the desert plateau on each side of the Nile.

The river brings down fertilising mud and provides navigation as far as Aswân. The annual rainfall is small, and cultivation of the soil is possible only by extensive irrigation, the Aswân dam being a feature of the system, while barrages at Asyût and Fena regulate the water flow. In Upper Egypt the basin system of irrigation is employed. A network of canals includes that at Ibrahimiyeh and at Bahr-Yusuf. There are over 3,000 m. of railway, mostly State-owned, the chief lines being from Cairo to Alexandria and Damietta, Ismailia to Port Said and Suez, and an important line from Cairo to Shellat connecting with the steamer service to Wadi Halfa.

Most of the trade of Egypt is with the United Kingdom, Germany, India, Turkey, France, Japan and the U.S.A. The principal towns are Cairo, the largest town in Africa, and the capital, an administrative centre; Alexandria, a commercial port; Port Said, an important coaling-station at the northern end of the Suez Canal (q.v.); Asyût, the capital of Upper Egypt; Aswân, a rail centre; Suez, at the Red Sea extremity of the Canal, and Rosetta and Damietta, delta ports. Cereals, sugar, cotton and tobacco are important products. Mohammedan Arabs constitute the bulk of the people, but there is also a remnant of the ancient Coptic race.

The country, long a part of the Ottoman Empire, became a British Protectorate on Dec. 18, 1914, when Hussein Kamil was made the first Sultan, the deposed Khedive being Abbas Hilmi II. This removed Egypt from the suzerainty of Turkey. Hussein Kamil died in Oct. 1917, and was succeeded by Fuad, who was proclaimed King in 1922, and, dying in 1936, was succeeded by his son Faruk I. In March 1922 Egypt was made an independent kingdom, and in Aug. 1936, by the Anglo-Egyptian Treaty, the British Military occupation was terminated, with the qualification that the garrison of the Suez Canal is to remain until the Egyptian forces are sufficiently organised, the designation of Egypt as an ally, the development of military roads, railways and bridges and facilities for the passage of aircraft including the provision of landing-grounds and seaplane anchorages.

The noble monuments and relics of her ancient civilisation, chief amongst which are the Pyramids, as well as the philosophies and religions she inherited, together with the arts she practised and her close connection with Jewish history, give her a peculiar claim to the interested regard of mankind. Nothing, perhaps, has excited more wonder in connection with Egypt than the advanced state of her civilisation when she first came to play a part in the history of the world. There is evidence that 4,000 years before the Christian era the arts of building, pottery, sculpture, literature, music and painting were highly developed, her social institutions well organised, and that considerable advance had been made in astronomy, chemistry, medicine and anatomy. Already the Egyptians had divided the year into 365 days and 12 months, and had invented an elaborate system of weights and measures based on the decimal notation.

Recent exploration of Egyptian antiquarian remains received stimulation by the significant

discoveries of Mr. Howard Carter and the late Earl of Carnarvon with their discovery of the famous tomb of Tutankhamen in Thebes, in 1922. In 1925, in the neighbourhood of the step Pyramid, the oldest stone building in the world was revealed—namely, the temple commemorating the Jubilee of King Zoser—while a colonnade of 48 carved columns, the work of Imhotep, the first known architect, was brought to light. The temple to Pharaoh Akhenaton was discovered in 1926, and in the following year a secret tomb of Queen Hetepheres was unearthed at Giza.

Egyptology, the science, in the interest of ancient history, of Egyptian antiquities, such as the monuments and their inscriptions, and one in which of late years great interest has been taken and much progress made. See *Egypt*.

Ehrenbreitstein (i.e., broad stone of honour), a strongly fortified German town in the State of Prussia, on the Rhine, opposite Coblenz, with which it has communication by a bridge of boats and a railway viaduct; the fortress occupies the summit of the rock, which is precipitous; is about 400 ft. high, and has large garrison accommodation. Pop. 5,000.

Ehrlich, Paul, German chemist; M.D., 1898; discoverer of salvarsan, specific for syphilis, 1910; divided Nobel Prize for medicine with Metchnikoff, 1908. (1854–1915).

Ehud, son of Gera, a Benamite, a left-handed man and a deliverer or "judge" of Israel, who, under the guise of making a present to Eglon, the King of Moab, entered his chamber and thrust a dagger into his belly so that the haft went in and the fat closed over it. Ehud escaped, locking the door behind him, and led the Israelites against Moab, defeating them and slaying 10,000.

Eichhorn, Johann Gottfried, a German theologian and Orientalist, born in Dörrenzimmern, Franconia; a man of extensive scholarship; was the first to apply a bold rationalism to the critical treatment of the Scriptures. He was of the old school of rationalists, now superseded by the historical-critical. (1752–1827).

Eider Duck, the common name of a number of species of sea-

ducks, the Common Eider (*Somateria mollissima*) being an English resident species, the King-eider (*S. spectabilis*) and the Steller's Eider (*Polysticta stelleri*) occasional visitors. They all inhabit Northern regions, and yield the commercially valuable eider-down with which the female



COMMON EIDER

lines its nest. The Common Eider nests on rocky islands near the shore from the Farnes Is. to Spitzbergen and is protected in Norway and Iceland.

Eiffel Tower, an iron structure on the banks of the Seine in Paris, France; designed by Alexandre Gustave Eiffel (1832–1923). It consists of three platforms, the platform at the summit being 985 ft. in height. The ascent is made by powerful lifts. It was erected 1887–1889.

Eigg, or Eeg, a rocky island in the Hebrides, Argy. W. Scotland, 5 m. SW. of Skye. Area 12 sq. m. Pop. 300. Here in a cave in the 10th Century the Macleods suffocated 200 of the Macdonalds, including women and children.

Eikon Basilike (i.e., the Royal Likeness or image), a book containing an account of Charles I. during his imprisonment, and ascribed to him

as author, but really written by Bishop Gaden, though the MS. may have been perused and corrected by the King. It was published shortly after the King's execution, and proved so popular that a reply to it was made by Milton in his prose *Eikonoklastes* ("image-breaker") in 1649.

Eildons, The, a "triple-crested eminence" near Melrose, Roxburghshire, Scotland. The central peak is 1,385 ft. high and overlooks Teviotdale to the S., associated with Sir Walter Scott and Thomas the Rhymer. They are of volcanic origin.

Einstein, Albert, German scientist, born at Ulm. In 1901 became a naturalised Swiss, until 1909. In 1914 appointed Director of the Kaiser Wilhelm Physical Institute at Berlin, where he lived till 1933, when, owing to his Jewish origin, he was deprived of his appointment. He came to England, later went to America and became a Professor at Princetown, N.J. He is famous for his researches in mathematical physics in connection with the quantum theory (q.v.), and more especially with relativity. His *General Theory of Relativity*, published in 1916, caused a revolutionary change in the scientific views of gravitation. (1879-). See Relativity.

Eire (Ireland), the official name since Dec. 29, 1937, of what was known previously (1922-1937) as the Irish Free State (q.v.). According to the Constitution which came into operation Dec. 1937, it was declared "a sovereign independent democratic State." The authority of the King of Great Britain is only recognised "as head of the British Commonwealth of Nations" for external purposes. The government is republican under a President (the first President being Dr. Hyde), and a National Parliament consisting of a House of Representatives (Dáil Éireann), and Senate (Seanad Éireann), the Senate being partly nominated and partly elective from panels. Irish (Gaelic) is the first, and English is recognised as the second official language. Eamon de Valera (q.v.), who has abolished the Parliamentary Oath of Allegiance to the British Crown, superseded the Governor-General by a President and substituted a form of "External Association" with the British Commonwealth of Nations for Dominion status, is the present President of the Executive Council.

The State comprises the southern portion of the island of Ireland (i.e., exclusive of Northern Ireland, the question of unification of the two being in abeyance until such time as some mutually agreeable arrangement between N. & S. Ireland is reached).

The area of Eire (Ireland) is 26,600 sq. m., embracing the provinces of Leinster, Munster and Connaught, with the Ulster Counties of Cavan, Donegal and Monaghan, with capital at Dublin. The population is slightly less than 3,000,000. Agriculture is the chief industry, cattle, sheep, pigs, horses and poultry being raised, and these and dairy products exported. The population is predominantly Catholic.

On April 25, 1938, an Anglo-Irish agreement was signed in London in an endeavour to dispose of outstanding differences, especially the question of the land annuities. It was agreed (in accordance with the Treaty of 1922) to transfer control of the coast-defence stations (one of the outstanding causes of friction) to Eire, to accept £10,000,000 from Eire in commutation of the annuities, and to reduce or remove the special and retaliatory customs duties on Irish and British imports respectively. See also Ireland.

Eisenach, a flourishing German manufacturing town in Thuringia, some 40 m. W. of Weimar; was the birth-place of Sebastian Bach; in the vicinity stands the castle of Wartburg, the hiding-place for

10 months of Luther after the Diet of Worms. Manufactures chemicals, pottery, dyes, electrical instruments, etc. Pop. 44,700.

Eisleben, a mining town in Prussian Saxony, 24 m. NW. of Halle; the birthplace and burial-place of Luther. Pop. 24,000.

Eisteddfod, a gathering of Welsh bards and others, now annual, at which, out of a patriotic motive, prizes are awarded for the encouragement of Welsh literature and music and the preservation of the Welsh language and ancient national customs. Competitions in singing, poetry, music, etc., are held. The ceremony dates back to the 6th Century, perhaps even earlier, and was revived in the late 18th Century.

Ekaterinburg (now Sverdlovsk), a Russian town on the E. side of the Ural Mts., the centre of the mining (coal, platinum and gold) industry; has various manufactures and a trade in the cutting and sorting of precious stones. Here, in a house belonging to Ipatiev, the Czar, Nicholas II., his wife, only son and four daughters were put to death in 1918. Pop. 400,800.

Eland, a genus (*Taurotragus*) of antelopes including the largest of all antelopes, and found almost exclusively in Central, W., E. and S. Africa. Horns occur in both sexes, those of the male being twisted and angulated in front. Both sexes also have a large dewlap. It is rapidly becoming extinct.



ELAND

Elandslaagte, village of Natal, S. Africa, 16 m. from Ladysmith, scene of a British victory over the Boers on Oct. 21, 1899, early in the S. African War.

Elasticity, the power of a body to regain its original form more or less completely after forcible deformation. Thus under ordinary conditions gases are perfectly elastic, whilst such a substance as putty is practically non-elastic. All bodies are elastic up to a point, which is called the elastic limit, and varies with each substance.

Elba, a small mountainous island in the Tyrrhenian, Mediterranean between Corsica and Tuscany, with a bold, precipitous coast; belongs to Italy; has trade in fish, fruits, iron ore, marble, etc.; famous as Napoleon's place of exile from May 1814 to Feb. 1815. Pop. 29,500. Cap. Porto Ferrajo.

Elbe, the most important river in N. Germany; rises in the Riesengebirge, in Bohemia (Czechoslovakia), flows through Bohemia (where it is known to the Czechs as the Labe), then NW. through Germany, and enters the North Sea at Cuxhaven; 725 m. long, navigable 520 m.; abounds in fish. The chief tributaries are the Moldau (Vltava) in Bohemia, the Mulde, the Saale, the Havel and Altona. On the banks of the main stream stand Dresden, Magdeburg, Hamburg and Altona. It is navigable as far as Hamburg for ocean vessels. Under the Treaty of Versailles the river was internationalised from the point of its confluence with the Moldau and was placed under an International Commission on which Germany, Czechoslovakia, Great Britain, France, Italy and Belgium are represented.

Elberfeld, an important manufacturing and commercial centre, 16 m. E. of Düsseldorf; on the Wupper, and included with Barmen as a part of Wuppertal; noted for its textiles and dyeworks. Pop. (Wuppertal which includes Elberfeld, Barmen, etc.), 408,600.

Elbing, seaport of Germany, in E. Prussia, on the R. Elbing. Ship-building, iron-making and the manufacture of machinery, aircraft parts, textiles, etc., are carried on. It was a member of the Hansatic League, Pop. 72,400.

Elbow, the hinged joint connecting the upper arm with the fore-arm, and formed by the humerus or bone of the upper arm and the ulna and radius or bones of the fore-arm, all three of which are covered with cartilage or gristle. The rounded end of the humerus fits into the cup-shaped socket formed by the upper ends of the ulna and radius.

Elbruz, the highest peak in the Caucasus Mts., in Russia, 18,571 ft. high.

Elburz, a lofty mountain range in N. long. The highest peak is Mt. Demavend.

Elder, a name given to certain office-bearers in the Presbyterian Church, associated with the minister in certain spiritual functions short of teaching and administering sacraments. Their duties embrace the general oversight of the congregation, and are of a wider nature than those of the deacons, whose functions are confined strictly to the secular interests of the church. They are generally elected by the church members, and ordained in the presence of the congregation. Their term of office is in some cases for a stated number of years, but more generally for life. The preaching or teaching elders are the ministers.

Elder, the popular name of the deciduous shrub of the genus *Sambucus* of the natural order Caprifoliaceae. They are widely distributed. The Common Elder (*S. nigra*) or bourn-tree of Scotland abounds in Europe. It grows to a height of 20 ft. A volatile oil is yielded by the flowers and from the berry wine is made. The wood when polished furnishes material for fishing-rods. Other notable species are the Scarlet-berried Elder (*S. racemosa*), perhaps the most handsome of all, and the Dwarf Elder (*S. ebulus*) or Danewort (*q.v.*).



COMMON ELDER

Eldon, John Scott, first Earl of, a celebrated English lawyer, born in Newcastle, of humble parentage; rose rapidly in his profession, and, entering Parliament, held important legal offices under Pitt; was made a Baron and Lord Chancellor, 1801, an office which he held for 26 years; was noted for his great share in formulating the principles of modern equity jurisprudence. (1851-1938).

El Dorado (El Gilded One), a fabulous country which many sought and which Orellana, the lieutenant of Pizarro, pretended to have discovered in S. America, between the Amazon and Orinoco, and which he represented as abounding in gold and precious gems. The actual "city of gold" which was the conquistadors' quest was Manoa, in Guiana, and El Dorado, whose name was applied to the country and is now a synonym for fabulous wealth, was the cacique, or chief of it.

Eleanor of Castile, Queen of England and half-sister of Alfonso X. (*q.v.*) of Castile, surnamed the Wise, accompanied her husband to the Crusade in 1270, and is said to have saved him by sucking the poison from a wound inflicted by a poisoned arrow; was buried at Westminster. (1244-1290).

Eleanor of Guienne, Queen of France and afterwards of England, daughter of William X., Duke of Aquitaine, whom she succeeded, 1157; the same year married Louis VII. of

France; accompanied him to Palestine, 1147. The marriage was annulled in 1151. In 1155 she proposed to and married Henry of Anjou, who became Henry II. of England, 1154; aided their son Richard's rebellion, 1173, and was imprisoned till Henry's death, 1189. She acted as regent during her son, Richard I.'s absences. (1122?-1204).

Eleanor of Provence, Queen of England, daughter of Raymond Berenger IV., Count of Provence. She married Henry in 1236, and was the cause of much of Henry's favouring foreigners. Took the veil in 1276 and died at Amesbury, Wilts. Her eldest son was Edward I. (1221?-1291).

Eleatics, a school of philosophy in Greece, founded in the late 6th Century B.C. by Xenophanes of Colophon of which Parmenides and Zeno, both of Elea (whence the name), were the two leading adherents and advocates, the former developing the system and the latter completing it, the ground-principle of which was twofold—the affirmation of the unity, and the negation of the diversity, of being—in other words, the affirmation of pure being as alone real, to the exclusion of everything finite and merely phenomenal.

Elections (political). The procedure and conditions of political elections are defined in the Representation of the People Act of 1918. Upon the dissolution of Parliament a Royal Proclamation is announced calling for a newly elected Parliament. Then follows the nomination of candidates; membership of the House of Commons is now open to nearly all classes over 21 years of age. Nomination day is fixed by the Returning Officer, usually the sheriff of a county or in boroughs, the mayor, as the eighth day after the Proclamation. Polling then takes place by ballot (*q.v.*) at polling-stations, such as schools, etc., appointed by the Returning Officer, and after the counting of the votes by scrutineers the result is publicly declared.

There are numerous acts prohibited at elections by the Corrupt Practices Act. They include bribery, treating, undue influence, personation, payment for advertising and false statement. A candidate must appoint an election agent, who is responsible for the proper conduct of the candidate's election expenses, and he is responsible for the corrupt acts of any person who assists him. Subject to residence qualifications, all men or women over the age of 21 are eligible to vote except lunatics, idiots and aliens. A deposit of £150 must be made by the candidate on nomination, and this sum is returned if he secures more than one-eighth of the total poll.

Elector, The, or Kurfürst, of Germany, German princes who enjoyed the privilege of disposing of the imperial crown of the Holy Roman Empire; ranked next to the emperor, and were originally six in number, but grew to eight and finally nine. Three were ecclesiastical—the Archbishops of Mayence, Cologne and Trier, the three secular—the Electors of Saxony, the Palatinate and Bohemia, to which were added at successive periods the Electors of Brandenburg, of Bavaria and Hanover. The Holy Roman Empire was at last dissolved by Napoleon on Aug. 6, 1806, and after a history of some centuries the power of the electors came to an end, Aug. 6, 1806.

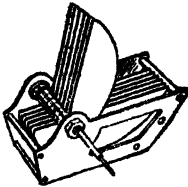
Electra, in Greek legend, the daughter of Agamemnon and Clytemnestra, who, with her brother Orestes, avenged the death of her father on his murderers (Aegisthus and Clytemnestra).

Electrical Circuits are closed systems of wires carrying an electric current which is represented as flowing from a point of high to a point of low potential. A steady current

must flow in a complete circuit from its source, through various conductors and back to its source again. The current flowing in a circuit may flow continuously in one direction (direct current, D.C.), or may reverse its direction at regular intervals (alternating current, A.C.).

Electrical Coherers. When electric waves (wireless waves) fall on a loose heap of metallic particles the resistance of the heap of particles changes. Hence if a current passes from a battery through such a heap and through a galvanometer, the reading of the galvanometer changes when waves reach the metallic particles. A heap of metallic particles, suitably mounted in a tube, is called a coherer, and may be used to detect, but not to measure, wireless waves. After use, a coherer must be shaken or tapped to render it sensitive again.

Electrical Condenser, an arrangement for storing electricity. It consists essentially of two or more metal plates separated by layers of insulating material. The capacity of a condenser is the ratio of the charge stored to the potential difference between the plates, and is measured in farads, microfarads (millionths of a farad), or micro-microfarads (millionths of a microfarad).



ELECTRICAL
CONDENSER

Electrical Potential. An electric current does work, and its electrical energy is thereby converted into other forms such as heat and light. It is found, however, that the same quantity of electricity sometimes produces greater, and sometimes smaller, quantities of heat and light. Electric currents do not produce a pressure, but there is some property of the electric current which is analogous to the pressure in a stream of water. This analogous property is called the electrical potential, or voltage. The potential difference between two points in an electrical circuit is found by measuring the electrical energy converted into other forms between the two points, and dividing this quantity by the number of coulombs of electricity which pass between the points. The unit of potential difference is the volt.

Electric Distribution. Electrical power is usually generated as three-phase alternating current. In Great Britain the power generated is purchased at specified prices by the Central Electricity Board, which retails the power to the distributing companies. The generating-stations are connected by the power-lines of the grid, and by this means a distant station is enabled to supply power to a district where the demand is temporarily heavy. The current is transmitted at a high voltage (33,000 or 132,000 volts), and is transformed to lower voltages for use.

Electric Fish. A number of species of fish are provided

with special organs with which they are able to give an electric shock, the organs being muscular modifications, the full shock being obtained when the circuit is completed by making contact with the fish at two separate points.

Some of the species which are notable in this respect are the Electric Rays or Torpedoes



ELECTRIC CAT-FISH

which can disable a man, the Electric Eel (*Electrophorus electricus*) found in the Orinoco and Amazon and growing as large as 7 ft., and the Electric Cat-fish (*Mastomys electricus*) found in the Nile and other parts of Africa, and in which the electric organ extends over the whole body. In most cases the shock is used for defensive purposes and for catching prey, and is usually followed by a period of exhaustion.

Electric Generators. Owing to the fact that alternating current can be transmitted through power-cables more efficiently than can direct current, alternating current is usually employed in modern power circuits. An alternating-current generator consists of two chief parts, the rotor and the stator. The rotor is mounted on an axle, and is turned at high speed by a steam or water turbine. It consists of a number of electro-magnets with their poles directed away from the axle, and is surrounded by the stator, a steel shell which has copper conductors wound on its inner face. Currents are induced in these conductors, and are led away to the switches and distributing system. In large machines as much as 89 per cent. of the energy supplied by the turbine may be converted into electrical energy and supplied as such by the generator.

Electric Heaters and Lamps.

When an electric current flows through a conductor, heat is generated in the conductor. This fact is used in electric radiators and in incandescent filament lamps to heat a conductor to such a temperature that radiation occurs. In an electric radiator a spiral of non-oxidising material of high melting point (e.g., the alloy nichrome, 80 per cent. nickel, 20 per cent. chromium) is heated to about 1,300° F. by the current passing through it, and emits heat radiation. A reflector is placed behind the heating element to enable the radiation to be directed in some desired direction.

To obtain large quantities of light from an incandescent filament lamp, the filament must be heated to an extremely high temperature. For a given power-consumption more light is emitted when the temperature is increased, and the light emitted approximates in colour more closely to sunlight, which is regarded as the ideal type of light. The filament must therefore be made of a material such that it conducts electricity, has a high melting point, and does not evaporate rapidly at high temperatures. The metal tungsten is used at the present day. To prevent oxidation the filament is enclosed in a glass bulb containing the gas argon mixed with a small percentage of nitrogen.

Other lamps produce light by means of an electrical discharge through a gas or vapour. Such lamps are neon signs, mercury vapour and sodium vapour lamps. The light produced by these lamps is due to the conversion of electrical energy directly into light, and since the loss of energy as heat is smaller, these lamps have high efficiencies. They are generally unsuitable for domestic lighting on account of the colours of the light emitted, but this difficulty may be overcome by means of a thin layer of fluorescent material placed on the inside of a mercury vapour lamp. This layer absorbs the light emitted by the mercury and emits it as light of another colour. The light emitted by a carbon arc is due to the intense heating of the tips of carbon rods between which an electrical discharge is passed.

Electricity, manifests itself as static electricity which is produced when certain materials, e.g., glass or amber, are rubbed. The substance when electrified in this way has the property of attracting small objects, such as scraps of paper. Experiment shows that a body may acquire

a charge of two different kinds, positive and negative, and that two bodies similarly charged repel one another, whilst two with unlike charges attract one another. Electricity appears as a flowing current or *voltaic electricity* when two plates in certain liquids are connected by a wire (see *Battery*); when a coil of wire is rotated in the neighbourhood of a magnet, as in a dynamo; and when the junction of two different metals is heated. For practical purposes currents are produced by the first two methods.

The most important effects of the current flowing in a conductor are (1) the heating of the conductor, utilised in lamps, electric fires, etc.; (2) the induction of a current in a neighbouring circuit, as in a transformer and the coils of a wireless set; (3) its influence upon a magnetic needle, made use of in the construction of instruments for measuring currents, e.g., galvanometers; (4) the motion given to a coil through which a current is flowing when placed between the poles of a powerful magnet; this is the fundamental principle of all electric motors; (5) electrolysis (q.v.); and (6) production of electro-magnetic waves. The second and sixth effects only appear when the current is alternating, and in the case of the last named it must be of high frequency.

Electricity was originally looked upon as an invisible fluid contained in all bodies, a positive or negative charge being due to an excess or deficiency of the fluid; this was followed by the theory which postulated two fluids, negative and positive. Modern investigation has shown that a negative charge is due to electrons, which may be considered as the disembodied "atoms" of negative electricity and a current is due to the movement of these along the conductor.

Electricity, Atmospheric. The earth is not an electrically neutral body, but is negatively charged with respect to the atmosphere and to more distant points. At points near the earth's surface the potential decreases at a rate of about 45 volts for each increase of height of 1 ft., but this potential gradient is much smaller at high altitudes, and fluctuates at all points from hour to hour. The atmosphere is not completely insulating, so the charge on the earth is continually leaking away into space. Although a number of theories have been put forward to account for the replenishment of the earth's charge, none is completely satisfactory, and its true explanation is not known.

During thunder-storms abnormal conditions exist, and intense electrical fields are produced between thunder-clouds and the ground. The clouds may be at a potential 1,000,000,000 volts higher than that of the ground, and lightning flashes are merely electrical discharges between adjacent clouds, or between clouds and the earth. The quantity of electricity

erred during a flash is about the same as passes through an ordinary electric lamp in one minute, but the high voltage renders lightning destructive. The function of lightning conductors (see *Lightning*) which are fitted to buildings is to provide conducting paths by which the discharge may pass safely to earth.

Electricity, Conduction of. It is convenient to classify various substances as conductors of electricity, or as insulators, according as electricity passes easily through the substances or not. No perfect insulator is known, but for most purposes such materials as air and other gases, rubber, ebonite and paraffin, may be regarded as non-conducting. With a few exceptions, non-metallic substances, whether solids or liquids, are insulators. Metals and alloys are all comparatively good conductors. (For the conduction of electricity by solutions, see *Electrolysis*). Most solid and liquid conductors

obey Ohm's law (q.v.). The resistance of a conductor of a given shape, and made of a given material, is directly proportional to its length and inversely proportional to its area of cross-section. Silver is the best conductor of electricity, but is seldom used, on account of its cost. Most conductors are made of copper, but aluminium is frequently used where the weight of a conductor is of importance—e.g., for overhead transmission lines. The resistivity of a pure metal increases when its temperature increases; that of a non-metal usually decreases. The resistivity of an alloy is usually greater than the resistivities of its constituent metals, but increases less rapidly when the temperature increases. Certain alloys (e.g., manganin, 84 per cent. copper, 4 per cent. nickel, 12 per cent. manganese, and constantan, 60 per cent. copper, 40 per cent. nickel) have the valuable property that their resistivity alters little when the temperature changes.

In metals an electric current consists of a flow of electrons or "atoms" of negative electricity, from the part at low potential to that at high potential. The convention, however, is to regard an electric current as flowing from points at high, to points at low potential. This convention arose before the true direction of motion was known, and is still retained for ordinary purposes. At ordinary pressures gases are insulators, but they can be rendered conducting by decreasing their pressures, and by other means. Positively and negatively charged atoms and molecules, as well as electrons are the particles the motion of which constitutes an electric current in a gas. Ohm's law is not true for currents in gases.

Electricity, Unit of. The unit of electrical supply is the kilowatt-hour or Board of Trade Unit, and is equivalent to 1,000 watts for one hour; 748 watts are equivalent to one horse-power.

Electric Lamps. See *Electric Heaters and Lamps*.

Electric Lighting and Wiring.

Electric lamps may be operated by direct, or by alternating current, but a lamp cannot be run economically except at the voltage for which it is designed. If the voltage is too high, the lamp will be efficient but its "life" will be short; if the voltage is low, its "life" will be long but its efficiency will be small. The correct voltage for use, and its power consumption, are marked on the bulb of a lamp. The current supplied passes through the main fuses, the meter, and the main switch to the distributing-box, where it divides and passes through further fuses to the separate circuits of the house, before returning via a similar path to the mains. The lamps are connected in parallel with one another so that the full voltage of the local mains is applied to each.

Heat is produced in any conductor through which a current flows, and if a current in a connecting wire becomes large it may generate in the wire sufficient heat to start a fire. It is to eliminate this risk that fuses are used. Each consists of a short length of wire enclosed in a protecting case. The fuse in a circuit is able to carry the normal current for the circuit, but if this becomes too large the fuse wire melts and breaks the circuit before a dangerously large current is reached.



MAINS FUSE

Electric Motors. When a current flows in a coil of wire between the poles of a magnet, forces are exerted which tend to turn the coil. This

principle is applied in the electric motor. A number of flat coils are wound on a laminated iron core, and constitute the armature of the machine. This is supported on an axle so that it is free to rotate between the poles of one or more electromagnets. In a direct-current motor the field windings of the electromagnets may be connected either in series or in parallel with the armature. Series-wound motors exert a powerful torque when they are running slowly (e.g., when starting), and must not be run without a load. The speed increases considerably when the load is reduced. A shunt-wound motor (armature and field coils in parallel) must not be started with a load, can be run with no load, and runs at a nearly constant speed under all permissible loads. In the "Squirrel-cage" type of alternating-current motor the armature is not connected to the mains, but the armature current is produced by electromagnetic induction. The armature is driven by a rotating magnetic field produced by field magnets.

Electric Traction. Electric motors are particularly suitable for traction when a frequent service is required—e.g., in congested districts—and in mountainous regions. The present practice is to generate the power required as alternating current, and to transmit it in this form to automatic sub-stations. Here it is rectified (converted to direct current), and is supplied in this form to the series-wound direct-current motors used to drive trains or trams.

Electrochemistry, the application of electrical operations in chemistry, dates from the later years of the 18th Century, when van Marum discovered that ozone (q.v.) is formed during the working of a frictional electrical machine. In 1800 Alessandro Volta invented the electric battery, and two years later Nicholson and Carlisle split up water into hydrogen and oxygen by passing an electric current through it. In 1807 Sir Humphry Davy isolated sodium and potassium by electrolysis (q.v.) of their fused hydroxides, while about the middle of the 19th Century Faraday showed that such decompositions were governed by definite electrochemical laws.

At the present time the chief ways in which electricity is applied to chemistry are: (a) in electrolytic processes; (b) in the silent discharge, as in the preparation of ozone; (c) in the glow discharge, as in the Lodge-Oottrell method of fume-precipitation; (d) in the production of high temperatures, as in electric furnaces (see Furnaces), and (e) in the spark discharge, as in the Birkeland-Eyde process for preparing oxides of nitrogen from the air. The theoretical side of electrochemistry has so greatly developed during the last 40 years that it now comprehends the principal portion of chemical philosophy. The structure of atoms, molecules, crystals and solutions are explained on electrochemical lines, while the perplexing problem of valency (q.v.) has been largely resolved in the light of electrochemistry.

Electrocution, a form of capital punishment used in the U.S.A. since 1888. A current of high-voltage electricity is sent through the body of the condemned criminal. The method is held to be less barbarous than those of other countries.

Electrode, name given to the plate or wire where an electric current enters or leaves a liquid, which is electrolysed. The positive electrode is known as the anode, the negative as the cathode. The name is also applied to the plates of a vacuum tube, X-ray bulb, or wireless valve.

Electrolysis, the decomposition of a substance by means of an electric current through it.

The process is carried out in a vessel known as an electrolytic cell, and the substance decomposed is called the electrolyte. The current is carried to and from the electrolyte by metallic or carbon plates (electrodes), of which the positive is called the anode and the negative the cathode. Solutions of acids, bases and salts in water are electrolytes, while the two latter classes are often electrolytes in the fused state as well.

According to the theory of electrolytic dissociation, propounded by Arrhenius in 1887 and afterwards extended and modified by Debye, Huckel and others, an electrolyte when dissolved in water is split up into charged atoms or groups of atoms known as ions; and when the current is applied (D.C., not A.C.), the positively charged ions are attracted to, and discharged at, the cathode, while the negatively charged ions are attracted to, and discharged at, the anode.

The products actually obtained at the electrodes may not be those immediately formed by the discharge of the ions, since secondary reactions may occur between the primary products themselves or between the primary products and the water present. Thus when fused salt (sodium chloride) is electrolysed between carbon electrodes, metallic sodium is obtained at the cathode and gaseous chlorine at the anode; but if a solution of salt is similarly electrolysed, the products at the cathode are hydrogen and sodium hydroxide (formed by the action of sodium upon water), the gaseous product at the anode being either chlorine, if the solution is concentrated, or oxygen (formed by the action of chlorine upon water) if the solution is dilute.

During electrolysis metals are liberated at the cathode, and this fact is made use of in the manufacture and refinement of many metals. Thus aluminium is made by the electrolysis of aluminium oxide dissolved in a molten aluminium mineral (cryolite), while crude copper is purified by electrolysis in a bath of acidified copper sulphate solution, the impure metal being made the anode and a thin sheet of pure copper being used as the cathode. On electrolysis copper is gradually transferred from the anode to the cathode, impurities remaining in solution or dropping to the bottom of the cell as a sludge.

Other substances prepared industrially by electrolysis are chlorine, sodium, sodium hydroxide, potassium chlorate, iodoform and sodium hypochlorite. The laws of electrolysis were discovered by Faraday, who showed that the weights of substances liberated during electrolysis are directly proportional to (a) the quantity of electricity passed, and (b) the chemical equivalents of the substances. (See Equivalent).

Electromagnetism. When an electric current flows in a wire, a magnetic field is produced in the space around the wire—that is, forces are exerted on a magnet placed anywhere near the wire. If the wire is in the form of a closely wound spiral, the magnetic field inside the spiral is strong, and if a bar of magnetic material—iron or steel, say—is placed inside the spiral, the bar is magnetised by the magnetic field of the coil. A powerful electromagnet may be produced in this way.

Electromagnets are widely used in electric motors and generators, in telephones, and as magnets for lifting iron and steel. Although an electric current magnetises a steel bar around which the current passes, it is not true that a bar magnet which lies inside a coil of wire produces a current in the coil. If, however, the magnet is moved relative to the coil, a current is produced while the magnet and coil are in motion. The current ceases when the motion ceases.

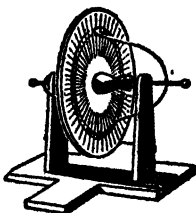
An electric current produced in this way is said to be produced by electromagnetism.

induction. The essential requirement for the production of an induced current in a circuit is that the magnetic field through the circuit should alter. The magnetic field may be altered by moving a permanent magnet relative to the circuit, by moving an electromagnet relative to the circuit, by changing the strength of the current in a neighbouring circuit, or even by changing the strength of the current in other parts of the same circuit. Electromagnetic induction is used in electric generators, in transformers, induction coils, magnetos and in wireless circuits.

Electron, the unit particle of negative electricity. Its mass is about $1/1840$ of that of the hydrogen atom, and it is one of the ultimate constituents of matter. The unit particle of positive electricity or positive electron is more generally known as the positron. Its mass and charge are the same in magnitude as those of a negative electron, but the charge is of opposite sign. Positive electrons have a very short life, since they readily combine with negative electrons, both entirely vanishing, with the emission of an equivalent amount of radiation.

Electrophorus, a device invented by Volta in 1775 for

producing electrical charges. It consists of a plate of ebonite, and a metal plate with an insulating handle. The ebonite is charged negatively by friction by rubbing it with a piece of flannel. When the metal plate is placed on the ebonite, two equal and opposite charges are induced on it, a positive charge on the side nearest the ebonite, and a negative charge on the other side. If it is connected electrically to earth for an instant and is removed by means of its insulating handle, it will be found to bear a positive charge of electricity. The charge on the ebonite is not altered during this process, so the metal plate can be discharged and charged again as often as is desired, without any further rubbing of the ebonite.



ELECTROPHORUS

Electrostatics, the study of electrical charges at rest. For more than 2,000 years it has been known that pieces of amber, after they have been rubbed possess the property of attracting other bodies. This effect is due to the fact that the rubbed amber acquires an electrical charge. Other substances behave in a similar manner and although the effect is more easily shown if the rubbed body is an insulator, conductors may be charged in the same way.

The charged body may have a positive or a negative charge. A negatively charged body possesses an excess of electrons, or "atoms" of negative electricity; a body charged positively has lost some of the electrons which are normally present in it. Bodies which are charged positively repel one another. Bodies which are charged negatively repel one another. But bodies which have dissimilar charges attract one another. An uncharged body is attracted by any charged body.

If an insulated conductor is held near a charged body and is connected to earth for an instant before the charged body is removed, the conductor becomes charged. The sign of its charge is opposite to that of the charge which produces it. Bodies charged in this way are said to be charged by induction, and this principle is applied in most of the electrostatic machines used for producing charges. The quantities of electricity produced

by electrostatic machines are too small to be of practical value.

To move a positive charge up to a positively charged body, work must be done. The amount of this work is a measure of the potential of the charged body. If charges are at rest on a conducting body the potential of all points on it and inside it is the same, and the whole charge resides on the outside of the conductor. An important deduction from the latter fact is that any two charges repel or attract one another with a force which is inversely proportional to the square of the distance between them.

Electrotherapy, the art of curing or by the use of electricity, including the application of X-rays, galvanism, Faradic currents, sinusoidal currents, high-frequency currents and diathermy. The results produced may be divided into physiological, chemical, physical and mental, or combinations of them. An example of purely physiological results are those obtained when cancer cells are destroyed by X-rays. The introduction of drugs into the body by use of an electrical current (known as Medical Ionisation) is an example of a purely chemical effect. Local heating of the body by means of diathermy is a purely physical effect. The application of regulated electrical currents to the body, or to certain bodily organs, has also been found to be beneficial in such diseases as synovitis, arthritis and neuritis (by application of galvanism); to injured nerves or muscles and for muscular atrophy (by use of Faradism); high and low blood-pressure, neurasthenia, disability, gout and a number of other ailments (by high-frequency treatment).

Electrotyping, a method of copying in metal, usually copper, deposited by electricity. The copper shells are deposited on wax models, backed with metal.

Electrum, a word of ancient use in the East for amber, and also for a mixture of gold and silver, resembling amber in colour and used for coins in certain Greek states. Many such coins are still in existence. The metal electrum was also manufactured where natural supplies failed.

Elegy, a song expressive of sustained after loss, one of the most famous English elegies being Milton's *Lycidas*.

Elemental Spirits, a general name Middle Ages to salamanders, undines, sylphs and gnomes, spirits superstitiously believed to have dominion respectively over, as well as to have had their dwelling in, the four elements—fire, water, air and earth.

Elements. According to Aristotle (384-322 B.C.) all substances were to be regarded as composed of four simple bodies or elements—viz., fire, air, water and earth—the difference between one substance and another being ascribed to a difference in the proportions in which the four elements were present. This idea lasted for 2,000 years, but was rejected by the Hon. Robert Boyle (1627-1691) in his *Sceptical Chymist* (1661), in which he proposed not to postulate any preconceived number of elements, but to regard as elements all substances that could not be resolved into simpler ones.

This is still taken as the scientific criterion of an element. About 92 elements are known, ranging from hydrogen, with an atomic weight of unity, to uranium, with an atomic weight of 238. In the last few years artificially produced elements of greater atomic weight have been reported, but they have only a transient existence. Of the elements, by far the greater number are metals. The remainder are mainly non-metals, while a few share metallic

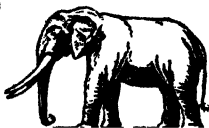
and non-metallic properties and are sometimes known as metalloids (e.g., arsenic and antimony).

Elements were classified by Mendeleeff (1869) on the basis of their atomic weights—i.e., the ratio of the weights of their atoms to the weight of the oxygen atom; or, more strictly, to one-sixteenth of the weight of the oxygen atom. He found that a marked periodicity of chemical properties manifested itself on this arrangement, and the system was known as the Periodic Classification. More recently, the atomic number has been found to be a better basis than the atomic weight, and the Periodic Classification so elaborated is free from anomalies that marred Mendeleeff's scheme.

Most of the so-called chemical elements are not homogeneous individuals, but mixtures of isotopes (q.v.). In practically all cases, however, except that of hydrogen, the isotopic varieties of an element so closely resemble one another in all their chemical properties that their separation from one another is a matter of extreme difficulty, and from the chemical point of view the isotopic mixture thus conforms to Boyle's definition.

Elephant, a sub-order of ungulates (hoofed mammals), of which there

are two living species, the Indian (*Elephas maximus*) and the African (*Elephas africanus*). The latter, which is distinguished by its enormous ears and hollow back, attains the greater size, and is hunted for the sake of its tusks, which may weigh as much as 220 lb. each. The former is more intelligent, and easily capable of being domesticated, and is used for ceremonial purposes, log transport, etc., though they rarely breed in captivity. The white elephant is a variety of this species. Of Indian elephants only the males, as a rule, have tusks, the tusks of the female being only small when there are any. The Indian elephant is found in India, Burma, Malay Peninsula, Cochin China, Sumatra, etc. A dwarf race is found in Africa. A number of species, including the Mammoth, are now extinct.



AFRICAN ELEPHANT

Elephantiasis, a peculiar skin disease, accompanied with abnormal swelling; so called because the skin becomes hard and stiff like an elephant's hide; attacks the lower limbs and scrotum. It is caused by a parasite, a tiny worm, which enters the blood-stream and roaches the lymph vessels, which become blocked and swell. It is chiefly confined to India and other tropical countries.

Eleusinian Mysteries, rites, initiation into which, as religiously conducive to the making of good men and good citizens, was compulsory on every free-born Athenian; celebrated annually at Eleusis, a town in ancient Attica, 12 m. NW. of Athens, in honour of Ceres and Persephone, and lasting nine days. Both men and women were initiated, and it was regarded as the most sacred of all the Greek religious festivals. Its celebration continued for some 1,800 years and was only finally abolished by Theodosius the Great.

Elevator, the rudder-like, movable plane at the tail of an aeroplane, used for raising or lowering the nose of the machine. Also the usual name, in America, of lifts and of the huge silos where grain is stored.

Eliot, Sir Edward, British composer; born at Broadheath, near Worcester; composed the song *Land of Hope and*

Glory. He started as a music teacher at Malvern and composed his first cantata in 1892. It was not till *Caractacus* was produced in 1898 that he became famous. *The Dream of Gerontius* is perhaps his most popular work. He was knighted in 1904, received O.M. 1911; made Master of the King's Musick (1924), baronet (1931). (1857-1934).

Elgin (Moray), county of Scotland. See Moray.

Elgin, the county town of Morayshire, Scotland, on the Loesie; created a royal burgh by David I.; has ruins of a fine Gothic cathedral and bishop's palace. Industries include manufacture of woollens. Pop. 8,800. Also the name of a city in Illinois, U.S.A., centre of a dairy farming district. Pop. 36,000.

Elgin, James Bruce, eighth Earl of, statesman and diplomatist, born in London; governor of Jamaica and Canada negotiated important treaties with China and Japan; rendered opportune assistance at the Indian Mutiny by diverting to the succour of Lord Canning an expedition that was proceeding to China under his command; after holding office as Postmaster-General he became Viceroy of India (1861), where he died; his Journal and Letters were published in 1872. (1811-1863).

Elgin Marbles, a collection of ancient brought from Athens by the seventh Earl of Elgin in 1812, and now deposited in the British Museum, after purchase of them by the Government in 1816 for £36,000. These sculptures adorned certain public buildings in the Acropolis, and consist of portions of statues, of which that of Theseus is the chief, of alto-reliefs representing the struggle of the Centaurs and Lapiths, and of a large section of a frieze.

Eli, high priest, and last but one of the judges of all Israel; informed by the infant Samuel of the ruin coming on his house because of his sons' wickedness. At the age of 98, on hearing of their death and the capture of the ark by the Philistines, he fell back and broke his neck (1 Sam. i-iv.).

Elia, the nom de plume adopted by Charles Lamb in connection with his *Essays*.

Elijah, a Jewish prophet, born in Tishbe, in Gilead, near the desert; prophesied in the reign of Ahab, King of Israel, in the 9th Century B.C.; revealed himself as the deadly enemy of the worship of Baal, 400 of whose priests he is said to have slain with his own hand. His zeal provoked persecution at the hands of the King Ahab and his consort Jezebel, but the Lord protected him, and he was translated from the earth in a chariot of fire, "went up by a whirlwind into heaven." His mantle fell on Elisha whom he had previously consecrated.

Eliot, George, the nom de plume of Mary Anne (or Marian) Evans, distinguished English novelist, born at Arbury in Warwickshire; was educated on evangelical lines but soon lost faith in supernatural Christianity; began her literary career with a translation of Strauss's *Life of Jesus*; became in 1850 a contributor and in 1851 assistant editor of the *Westminster Review*, and formed acquaintance with George Henry Lewes, with whom she lived, and who, it would seem, discovered her latent faculty for fiction. Her first work in that line was *Scenes from Clerical Life*, contributed to *Blackwood* in 1856. The stories proved a signal success, and were followed by a series of novels, beginning in 1859 with *Adam Bede* and ending with the *Ingressions of Theophrastus Such* in 1879. These, with two volumes of poems, make up her works. Lewes died in 1873, and two years later she married an old friend, John Cross, and after a few months of wedded life died of inflammation of the heart. Her other novels

The Mill on the Floss—her masterpiece—*Silas Marner*, *Romola*, *Felix Holt*, *Middlemarch* and *Daniel Deronda*. (1819-1880).

Eliot, Sir John, champion of political liberty; represented St. Germans, Newport and Cornwall in parliaments of James I. and Charles I.; at first adhered to Buckingham, but later became his bitter opponent, speaking against him in the House of Lords on his impeachment and suffering imprisonment for it. He was active in insistence on the Petition of Right, 1628, which he helped to frame, and drew up the resolutions against illegal taxation which were read while the Speaker was held in the Chair. (c. 1592-1632).

Eliot, Thomas Stearns, poet; born in St. Louis, Missouri; educated at Harvard; naturalised British, 1927; professor of Poetry, Harvard, 1932-1933. Author of *The Waste Land* and other poems; also of essays, prose works and the drama *Murder in the Cathedral*. (1888-).

Elis, a district of Ancient Greece, on the W. coast of the Peloponnesus, sacred to all Hellas as the seat of the greatest of the Greek festivals in connection with the Olympian Games, a circumstance which gave a prestige to the inhabitants.

Elisha, a Jewish prophet, the successor of Elijah, who found him at the plough, and consecrated him to his office by throwing his mantle over him, which he again let fall on him as he ascended to heaven; exercised his office for 55 years, but showed none of the fire or austerity of his predecessor.

Elixir, a term employed in pharmacy to designate sweetened and aromatic spirituous preparations such as cascara sagrada, rhubarb and senna. In former times the term was used by alchemists for the essence which they fruitlessly sought in order to transmute base metals into gold.

Elizabeth, Queen of Edward IV. of England; eldest child of Sir Richard Woodville, afterwards Earl Rivers; extremely beautiful; married, c. 1452, Sir John Grey (son of Lord Ferrers), who was killed at St. Albans 1451, fighting for Henry VI. Being impoverished, she appealed to Edward, who married her, 1464. On Edward's flight, 1470, sought sanctuary at Westminster, where she gave birth to Edward V. (c. 1437-1492).

Elizabeth, Queen of England (1558-1603), daughter of Henry VIII.

and Anne Boleyn, born in Greenwich Palace; was an indefatigable student in her youth; acquired Greek and Latin, and a conversational knowledge of German and French. The Pope's opposition to her succession on the ground of being judged illegitimate by the Church strengthened her attachment to the Protestant faith, which was her mother's, and contributed to its firm establishment through her reign. During it the power of Spain was crushed by the defeat of the Armada; maritime enterprise flourished under Drake, Raleigh and Frobenius; commerce was extended, and literature carried to a pitch of perfection never before reached. As a queen she was masterful and adroit, yet displayed the weakness of vanity and vindictiveness. The execution of Mary, Queen of Scots, is a blot upon her fame, and her intrigues with Seymour, Leicester and Essex detract from her dignity. Her wisdom was manifested in her wise choice of counsellors and leaders, and her patriotism endeared her to her people. (1558-1603).



QUEEN ELIZABETH

Elizabeth Angela Marguerite, Queen of George VI. of England; youngest daughter of Sir Claude George Bowes-Lyon, fourteenth Earl of Strathmore and Kinghorne; born Aug. 4, 1900; married at Westminster Abbey, April 26, 1923, to Albert, Duke of York, and became queen when he acceded to the throne as George VI. on Dec. 11, 1936. Her children are: the Princess Elizabeth and the Princess Margaret Rose.

Elizabeth Petrovna, Empress of Russia, daughter of Peter the Great and Catherine I., raised to the throne in 1741 when Ivan VI. was deposed. She assisted Maria Theresa in the war of the Austrian Succession; opposed Frederick the Great in the Seven Years War. Indolent and licentious, she left the affairs of the State mainly in the hands of favourites, but inherited some of her father's gifts as a ruler. (1709-1762).

Elizabeth of York, Queen of Edward IV. and mother of Henry VIII.; eldest child of Edward IV. and his Queen, Elizabeth Woodville; born at Westminster. Married Henry, 1486. Stricken with grief at death of her eldest son, she failed to survive an imprisonment in the Tower. (1465-1503).

Elizabeth of York, Alexandra Mary, Princess, eldest child of George VI.; heir-presumptive to throne of Britain; born at Royal Lodge, Windsor Great Park, on April 21, 1926.

Elizabeth, Madame (Elizabeth Philippine Marie Hélène), French princess, youngest child of Louis the dauphin, only son of Louis XV.; was born at Versailles. On outbreak of the Revolution she went to Paris to be near her brother Louis XVI. She accompanied him in his flight, was arrested with him at Varennes and eventually guillotined. (1764-1794).

Elizabeth, Valérie Gabrielle Marie, queen-dowager (since 1934) of the Belgians, was born at Posenhofen; second daughter of Duke Charles Theodore of Bavaria; married, 1900, to Albert, afterwards King of the Belgians. (1876-).

Elizabethan Architecture, a term applied to the style of architecture which flourished in the reigns of Elizabeth and James I., and was characterised by a revival of classic designs wrought into the decadent Gothic style. Lord Salisbury's house at Hatfield is a good specimen of this mixed style.

Elizabethville, a town of the Belgian Congo, named after the Queen of the Belgians, capital of Elizabethville province and not far from the N. Rhodesia border. Near are rich copper-mines. Pop. (white) 2,648.

Elk, or Moose (*Alces alces*), the largest mammals, found in the N. of Europe and in America, where it is more commonly called Moose. (The name elk is there applied to the Wapiti). It has big horns branching from a huge, palm-shaped base.

Elk, Irish, or Irish Deer (*Megaceros giganteus*), a gigantic extinct deer, standing 6 ft. at the shoulder, remains of which are common in Ireland. Varieties also existed formerly in England and other parts of Europe.

El Kantara, town of Egypt, on the Suez Canal. In Turkish advance guard was defeated; British in 1915.



ELK

Ell, a measure of length in cloth, formerly taken from the forearm, but now three-quarters of a yard in England. The term also appears in Flemish and French tables.

Elland, urban district of Yorkshire, England, in the W. Riding, 3 m. SE. of Halifax. Woollen goods are made, and there are dye and iron works, etc. Pop. 18,300.

Ellenborough, Edward Law, Earl of, an English Conservative statesman, son of Baron Ellenborough, (1750-1818), Lord Chief Justice of England and leading counsel for the defence of Warren Hastings; entered Parliament in 1813; held office under the Duke of Wellington and Sir Robert Peel; appointed Governor-General of India, 1841; recalled in 1844; subsequently First Lord of the Admiralty and Indian Minister under Lord Derby. (1790-1871).

Ellen's Isle, islet in Loch Katrine, Perthshire, Scotland, immortalised in Scott's *Lady of the Lake*.

Ellerman, Sir John Reeves, Bart., Herman Ellerman of Hull, a native of Hamburg; was director Leyland Line, 1892; came to control a Mediterranean fleet, and the City, Hull, Bucknall and Wilson Lines. Baronet, 1905. Left a fortune of £30,000,000. (1862-1933).

Ellesmere Port, urban district (with port of Cheshire, England, 7 m. N. of Chester, at the junction of the Ellesmere Canal and Manchester Ship Canal. Pop. 19,000.

Ellice Islands, a group of British coral islands in the Pacific, North of Fiji, forming part of the Gilbert and Ellice Islands Colony. The Phoenix Isles form part of the Colony. Area 14 sq. m. Pop. 4,300.

Elliot, Jane (or Jean), Scottish poetess born in Teviotdale, and remembered for her lament, *The Flowers of the Forest*. (1727-1805).

Elliot, Rt. Hon. Walter Elliot, Conservative statesman, educated at Glasgow; obtained Military Cross for service in France. M.P., Lanark, 1919-1923; Kelvingrove division of Glasgow, from 1924 onwards; Minister of Agriculture, 1932-1936; Secretary for Scotland, 1936. In the Cabinet reshuffle of May 1938 he became Minister of Health. (1890-).

Elliott, Ebenezer, English poet, born in Rotherham parish, Yorkshire; an active worker in iron; devoted his leisure to poetic composition; wrote the *Corn-Law Rhymes* and other pieces. (1781-1849).

Ellipse, a plane figure in geometry, of a regular oval or the area contained therein. It is formed by the revolution of one point round two fixed points in such a way that the sum of the distances of the one point from the other two is always constant.

Ellipsis, in English syntax a term denoting the leaving out of a word or words from a sentence whereby the complete meaning is obtained by inference.

Ellis, Henry Havelock, author, born at Croydon; spent much of his childhood at sea; taught in New South Wales, 1875-1879; practised medicine briefly in England; has written much on obscure phases of sex, and *My Confessions*, 1934. (1858-).

Ellis Island, in New York harbour, the place where immigrants are examined before being allowed to land.

Ellora, an Indian village in Hyderabad, 13 m. NW. of Aurangabad, famed for its Buddhist and Hindu cave and monastic temples, the most magnificent of which is hewn out of a solid hill of red stone, the

most beautiful being the Hindu temple of Kailās.

Ellwood, Thomas, a celebrated Quaker, born in Crowell, Oxfordshire; the intimate friend of Milton, to whom he suggested the idea of *Paradise Regained*; did much to extend Quakerism in England; his *Autobiography* is still read. (1638-1713).

Elm, the common name of 18 species of trees of the *Ulmus* genus of the

Ulmaceae family.

They are natives of the temperate regions of the Northern hemisphere, and are easily cultivated, flourishing in almost any soil or situation. The common elm (*Ulmus campestris*) is abundant in England, France, Spain and Italy, sometimes attains great age and size, endures in smoky town conditions and is a feature of London parks. In former times its timber was used in making water-pipes and the keels of ships. *U. montana*, also indigenous to Great Britain, is the Scotch, or Wych Elm. Elms are liable to a disease resulting in the death of the tree.



ELM (Leaf and Seed)

Elman, Mischa, Russian-Jewish violinist, born at Talmot, Kiev; trained at Odessa by Fiedelman; at St. Petersburg by Auer. Appeared: Berlin, 1904; London, 1905; New York, 1908. Was a prodigy as a boy, and has attained permanent recognition as one of the leading violinists. (1891-).

El Misti, another name for Arequipa volcano, an active volcano in Peru, in the Andes, not far from the city of Arequipa, 18,640 ft. high.

Elocution, the training of the voice for public speaking. Special attention is paid to enunciation, voice-production, delivery and gesture. It was a feature of instruction in Greece and Rome as a branch of the science of oratory, and is as necessary in public speaking as the worth of the message. Elocution competitions are a feature of such local contests as elistedfods.

Eloge, a discourse in panegyric of some illustrious person deceased, in which composition Fontenelle took the lead in France, and in which he was followed by d'Alembert, Condorcet, Flourens and others.

Elohim, a Hebrew word in the plural number, signifying God or one as God, but with a verb in the singular, signifying generally the one true God. According to the Talmud, it denotes God as just in judgment to all, in contradistinction to Jehovah, which denotes God as merciful to His people.

Elohist, a name given by the critics to the earlier part of the Pentateuch, whose work in it they allege is distinguished by the use of the word Elohim for God. He is to be distinguished from the Jehovist, the presumed author of the later portions, from his use, on the other hand, of the word Jehovah for God.

El Paso, city and port of Texas, U.S.A., on the Rio Grande opposite Ciudad Juarez, Mexico. It trades in minerals, wool, hides and livestock. Pop. 102,000.

Elphinstone, Mountstuart, a noted Indian civil servant and historian; co-operated with Wellesley in firmly establishing British rule in India; was Governor of Bombay where he accomplished many useful reforms, and issued the Elphinstone Code of Laws. Wrote a *History of India*, which earned for him the title of the "Teacher of India." (1779-1869).

Elphinstone, William, an erudite and patriotic Scottish ecclesiastic and statesman, born in Glasgow. Held several high State appointments under James III. and James IV.; continued a zealous servant of the Church, holding the bishoprics of Ross and of Aberdeen, where he founded the university. (1431-1514).

Elsinore (Danish *Helsingør*), a seaport on the island of Zealand, in Denmark, 25 m. N. of Copenhagen; has a good harbour; is the site of scenes in Shakespeare's *Hamlet*. Pop. 16,000.

Eissler, Fanny and Thérèse, two famous dancers, born in Vienna. Fanny (1810-1884) by her art and great personal charm captivating the hearts of all Europe and America. Thérèse was created Baroness von Barnim after entering into a morganatic marriage with Prince Adalbert of Prussia. (1808-1878).

Elstow, village of Bedfordshire, England, 2 m. S. of Bedford, the birth-place of Bunyan.

Elstree, village of Hertfordshire, England, 7 m. S. of St. Albans. Large film studios have been constructed here. Pop. 3,500.

Elswick, a town in the vicinity of Newcastle, noted for the great engineering and ordnance works of the Armstrong company. Pop. 13,000.

Eltham, parish in the municipal borough of Woolwich, England, and the County of London. Here was formerly a royal palace. Pop. 28,000.

Ely, a cathedral city, in the fenland of Cambridgeshire, on the Ouse, 24 m. SE. of Peterborough; noted as the scene of Hereward's heroic stand against William the Conqueror in 1071. The cathedral, founded in 1083, is unique as containing specimens of the various Gothic styles incorporated during the course of 400 years. Pop. 8,400.

Ely, Isle of, a name given to the N. portion of Cambridgeshire, on account of its having been at one time insulated by marshes, being included in the region of the Fens; has been drained, and is now fertile land.

Elyot, Sir Thomas, English author and ambassador of the reign of Henry VIII.; ambassador to the Court of Charles V.; celebrated as the author of *The Governour*, the first English work on moral philosophy, and also of the first Latin-English dictionary. (c. 1490-1546).

Elysium, or The Elysian Fields, the virtuous dead in the nether world as conceived by the poets of Greece and Rome, where the inhabitants live a life of passive blessedness.

Elzevir, the name of an eminent family of printers residing in Amsterdam and Leyden. Louis, the first of them, started in Leyden in 1683. Their publications, mostly of classics, numbered many hundreds.

Emanation, The Doctrine of, a doctrine of Eastern origin, which derives everything that exists from the divine nature by necessary process of emanation, as light from the sun, and ascribes all evil and the degrees of it to a greater and greater distance from the pure ether of this parent source, or to the extent in consequence to which the being gets immersed in and clogged with matter.

Emanuel I., King of Portugal from 1495 to 1521. His reign inaugurated the golden period of Portuguese history, during which Portugal became the first maritime and commercial power in Europe; was the patron of Vasco da Gama and Albuquerque; issued an edict for the expulsion of the Jews from his kingdom. (1469-1521).

Embalming, the art of preserving, by means of antiseptic agents applied both externally and internally. Although known to other people, e.g., the Persians, the art was chiefly practised among the Egyptians, and dates back to 4000 B.C. The thoroughness of the process depended on the expenditure, but usually involved the removal of the viscera, save the heart and kidneys, the extraction of the brain, the introduction of drugs to the cavities, and the plugging of the body in carbonate of soda, and the wrapping of it in linen. Experiments in embalming, more or less successful, have been made in recent times.



EGYPTIAN MUMMIES
(Human Being and Cat)

Embankments, a term used in road engineering to denote an earthwork built in low-lying ground and designed to carry the road or railway lines; also the raised mounds or dykes built along rivers or at the sea-shore to prevent flooding, a form of structure very common in the Netherlands. In tropical countries they are often of cement or stone and form a prominent part of irrigation schemes. They are sometimes elaborated in the case of river-embankments into levees, such as are seen in the Thames and the Seine in France.

Embargo, an act by which a government prevents foreign ships from leaving port, especially following a declaration of war; but in recent times a term of grace is often allowed. Sometimes an embargo is laid upon a certain class of goods. During the Italo-Abyssinian War, for example, an embargo was placed on the despatch of munitions to Abyssinia, and a similar step was attempted in connection with the civil war which broke out in Spain in 1936.

Embassy, the residence of an Ambassador (q.v.), the house and its residents enjoying certain privileges over the nationals of the country.

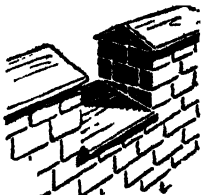
Ember Days, four annually recurring periods of three days each, appointed by the Roman and English Churches to be devoted to fasting and praying; they are the Wednesday, Friday and Saturday after the first Sunday in Lent, after Pentecost, after Sept. 14, and Dec. 13.

Embezzlement, the fraudulent mis- money or goods by an employee to his own use, when received by him for or on account of his employer. It is accounted a felony, and is punishable by penal servitude.

Embolism, a plug floating in the blood-stream and capable of causing a blocking of a blood-vessel. It can be either mechanical or infective, but one of the most common causes is the breaking off of a clot of blood from a thrombus. Embolism of the brain may lead to paralysis and apoplexy. Valvular disease of the heart, after a time, may cause the condition which is also often found in association with septic areas, especially in pyæmia, where the blood is infected by pus. Embolisms are most frequently associated with the after-effects of childbirth, with varicose veins and heart disease, and may end fatally.

Embracery, in law an attempt to jury by promises, entreaties, money, etc., to induce them to favour one of the disputing parties. The penalties are fine and imprisonment, and the juror so embraced is also liable.

Embrasure, an opening in a parapet for the purpose of allowing a gun to be fired through it. They are sometimes called *orenelles*. In architecture the term refers to the indent of a wall, and also to the play of a door window, so named from the embrasure in fortification.



EMBRASURE
(ORENELLE)

Embroidery,

a method of working devices on woven substances. It is an ancient art, and there are many Biblical references to it. Originally handwork, it is now worked by machinery, and is popular in England and European countries. The instruments used are a needle and a frame to stretch the material while working. Special embroidery stitching is cushion, crewel, stem and button-hole. Some valuable specimens are in the Victoria and Albert Museum.

Embryo, the scientific term for the young of an animal while yet in the initial stage of development in the womb; also applied to the plant in its rudimentary stage within the seed.

Embryology, the study of the ante-natal development of man and animals, or, more generally, of the early changes that take place in the fertilised ovum of animals and plants. The female gamete or egg-cell is normally fertilised by fusion with a male gamete or sperm-cell, and the ovum then begins to divide into a number of cells. Three main layers of tissue are formed in the vertebrate embryo: an outer layer or ectoderm, a middle layer or mesoderm and an inner layer or endoderm. The major portion of the adult organism is derived from the mesoderm, the endoderm lining the alimentary canal and the ectoderm giving rise to the skin, the nervous system and the lens of the eye. Where development of the embryo takes place outside the body of the mother, as in birds, the necessary nutriment is supplied in the form of yolk. In mammals, including man, the embryo is directly nourished within the maternal body via the blood.

Emden, the chief port of the province of Hanover, in Prussia, situated at the outlet of the R. Ems; is intersected by canals; shipbuilding is the chief industry. Pop. 31,000.

Emerald, a precious stone of great value, allied in composition to the beryl; is of a beautiful transparent green colour; the finest specimens are found in Colombia.

Emerson, Ralph Waldo, an American philosopher, thinker and poet, of English Puritan descent, born in Boston, where he started in life as a Unitarian preacher and pastor, an office he resigned in 1832 for literature, in which he found he would have freer and fuller scope to carry out his purpose as a spiritual teacher. In 1833 he paid a visit to England. On his return the year after, he married, and, settling down in Concord, began his career as a lecturer and man of letters. By his *Essays*, of which he published two series, one in 1841 and a second in 1844, he commended himself to the regard of all thinking men in both hemispheres. These embraced subjects one and all of spiritual interest, and revealed transcendent intellectual power. They were followed in 1850 by *Representative Men*, lectures delivered in Manchester on a second visit to England, and thereafter, at successive

periods, by *Society and Solitude*, *English Traits*, *The Conduct of Life*, *Letters and Social Aims*, besides a long array of poems. Speculatively, Carlyle and he were of the same school. (1803-1882).

Emery, a dull, bluish-black mineral of impure alumina, allied in composition to the sapphire, but containing a varying quantity of iron oxide; is found in large masses; is exceedingly hard, and largely used in polishing metals, plate-glass and precious stones.

Emetic, a substance which causes vomiting. They are employed, in cases of food irritation, biliousness, fever, ague. In cases of poisoning they should not be used if the poison is strongly irritant. Emetics used include warm water, salt water, mustard and water and ipecacuanha wine. The device of thrusting the fingers gently down the back of the throat is also frequently successful.

Emigrants, The (*Les Emigrés*), the aristocracy and of the partisans of the ancient régime who at the time of the Revolution, after the fall of the Bastille, fled for safety to foreign lands, congregating particularly in Coblenz, where they plotted for its overthrow, to the extent of leaguering with the foreigner against their country, with the result of confiscation of their lands and properties by the republic that was set up.

Emigration, movement of individuals from one country to another, usually from an overpopulated, highly developed country to a sparsely populated, undeveloped country, the movement which started on a large scale in the 19th Century from the Old World to America, Australia and South Africa. The U.S.A., alarmed at the influx of Europeans, has restricted every nation to an annual quota, while economic conditions in Canada, Australia and S. Africa in recent years have made it difficult for both British and non-British, and almost impossible for coloured people, to gain entry.

Attempts are made with moderate success to stimulate emigration by State assistance from overcrowded Britain to the undeveloped tracts of the Empire. Financial loans and reduced passages are arranged (though suspended during the world economic crisis) under these schemes, which are the outcome of the Empire Settlement Act of 1922. The body charged with the routine work of administering policy is the Oversea Settlement Department, Caxton House, Tothill Street, London, S.W. 1, under the auspices of the Dominions Office. In Feb. 1936 an Oversea Settlement Board was also set up to advise the Secretary of State for Dominion Affairs on specific proposals, for schemes of emigration within the Empire. The Chairman is the Under-Secretary of State. There is a Permanent Emigration Committee of the League of Nations, forming part of the International Labour Office, which publishes statistics of world emigration and concerns itself with the welfare of emigrants, as well as repatriation.

The peak of emigration from Great Britain was in 1913. The more stringent regulations limiting present-day emigration demand a high standard of health, character and capital resources, while improved conditions at home, including the various insurance schemes for unemployment, health, etc., rather tend to discourage emigration. Australia, however, is (1938) introducing health insurance legislation and otherwise enhancing opportunities for settlers.

Emin Pasha. See Schnitzer, Eduard.

Emir, a title bestowed on the descendants of Mohammed's daughter Fatima, the word denoting a "prince" or "ruler";

has lost this, its primary meaning. The emirs, of whom there are large numbers in Turkey, enjoy no privileges save the sole right to wear a green turban, the supposed favourite colour of Mohammed, though they hold a high social position. The title is also given to chieftains in N. Africa.

Emmet, Robert, a patriotic Irishman, born in Dublin; took part in an ill-planned Irish rebellion; was hanged for his share in an abortive attempt to seize Dublin Castle. (1778-1803).

Empedocles, a philosopher of Agrigento, in Sicily, "extolled in antiquity as a statesman and orator, as physicist, physician and poet, and even as prophet and worker of miracles," who flourished about the year 440 B.C. He conceived the universe as made up of "four eternal, self-subsistent, mutually undervivable, but divisible, primal material bodies, mingled and moulded by two moving forces, the uniting one of friendship and the disuniting one of strife."

Emperor, the title taken by the ruler of an empire. Originally Imperator, it meant full military power in the Roman Empire, but later developed into a high ruling title of sovereigns who had territory beyond their own country. The title is used by the British King, George VI. (Emperor of India), by the Emperor of Japan (the Imperial Son of Heaven), and has been assumed by the King of Italy with reference to Abyssinia. It was also the title of Haile Selassie (Emperor of Abyssinia).

Emperor Moth, a species of Lepidoptera, the *Satur-*

nai pavonia, a large moth, common in England. They are generally gray in colour, relieved by purple and orange. The wings bear eye-spots, and the larva is green with red and yellow spots.

Emphysema,

in medical science an abnormal inflation of a part of the body with air. It often occurs in bronchitis and asthma, and results in a degeneration of the lung tissues, rendering the breathing short and difficult. In serious cases surgical aid is necessary to free the accumulation of air.

Empire Day, a day, May 24, set aside for the celebration of Queen Victoria's birthday.

Empire Free Trade, a theory that the British Empire can become a self-sufficient economic unit; first advocated by Joseph Chamberlain in 1903. The idea was revived recently by Lord Beaverbrook, but the scheme does not commend itself to the Dominions, as conflicting with their economic nationalism, though some progress was made towards the ideal in 1932 under the Ottawa Agreement Act, and at other times when the Tariff system has been modified to give preferential treatment to the Dominions and Colonies.

Empire Marketing Board,

a body formed as an outcome of the Imperial Economic Committee of 1926 to foster trade with the Empire by promoting the marketing of Empire produce in the United Kingdom. Its chairman was the Secretary of State for Dominion Affairs. Its activities included the exhibition of posters, the distribution of leaflets to schools and newspaper advertisement. The Board was dissolved in 1933, its continued existence being rendered unnecessary by reason of the conclusion of inter-

imperial trade agreements at the Ottawa Conference, 1932, coupled with the passing of the Import Duties Act, 1932. There is now in existence a Colonial Marketing Board created for the purpose of improving the machinery for the marketing of British Colonial products.

Empires: the Roman, capital Rome, dated from the reign of Augustus, 27 B.C., to that of Theodosius, A.D. 395; of the East, or Byzantine Empire, capital Constantinople being part of the Roman Empire, dated from 395 to 1453; of the West, capital Rome, dated from 395 to 476; the Holy, or Second Empire of the West, founded by Charlemagne, dated from 800 to 901; the German, or Holy Roman, founded by Otto the Great in 962, ended by abdication of Francis II. of Austria in 1806, though from it sprang the Austrian Empire, 1804 to 1918 and the German Empire was restored under William I. in 1870 and ended in 1918; the French, founded by Napoleon I., dated from 1804 to 1815, and as established by Napoleon III. dates from 1852 to 1870; of India, founded in 1876 under the crown of England.

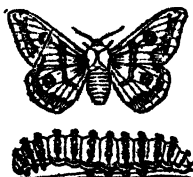
Empiricism, a philosophical term applied to the theory that all knowledge is derived from the senses and experience alone, to the rejection of the theory of Innate Ideas. Locke and Hume, in modern times, are the great representatives of the school that advocates this doctrine.

Employers' Liability Act, an Act of 1880 designed to provide for the eventuality of accidents to workmen with regard to compensation where the causes of personal injury were defect in condition of works or machinery, etc., negligence of a superintending employee, or of an employee in charge of railway workings, such as points, signals, etc. Compensation is not payable if the workman knew of the defect and failed to notify it to a superior servant of the employer. Compensation must not exceed 3 years' earnings, and notice of the injury must be given within 6 weeks, and the action begun within 6 months of the accident, or in the case of death, 12 months. Actions must be brought in a County Court. See also *Workmen's Compensation*.

Employment Exchanges, formerly called Labour Exchanges, and instituted as offices for the mobilisation of labour, under the Labour Exchanges Act of 1909. Their work is to collect information as to unemployed workers and the needs of employers and establish contact between the two.

The exchanges are administered by the Ministry of Labour in any locality where they are considered necessary. A large part of the work is, of course, registration. Expenses are met by Parliamentary grants, and the head office is at Queen Anne's Chambers, Westminster. There are over 1,200 employment exchanges in the country, with a clearing-office in each of the seven areas into which the country is divided for the purposes of organisation. The Unemployment Insurance Act of 1912 placed on the exchanges the task of payment in ordinary circumstances of benefits under the National Scheme of Unemployment Insurance.

The trades which appear to benefit most by these institutions are building, transport, metal, machine and implement industries, agriculture, textiles and general commerce, while the temporary Christmas staff of the Post Office is largely recruited through this medium. Vacancies filled by women workers include indoor domestic work, clothing industries, agriculture and the food and drink trades, while juvenile employment is also widely covered.



EMPEROR MOTH
(and Larva)

Empyema, a medical term signifying a diseased condition of the chest, in which pus accumulates in the pleura, cures of which are sometimes effected by drawing off the pus by means of tubes.

Empyrean, the highest heaven, or region of pure elemental whence everything of the nature of been conceived to emanate, whether phenomena of nature or the life of man.

Ems, (1) a river of NW. Germany, rises in Westphalia, and after a course of 205 m. discharges into Dollart Zee, an inlet of the North Sea; is navigable, and is joined to the Lippe by means of a canal, and similarly to Dortmund. (2) A celebrated German watering-place, on the Lahn, near Coblenz; its warm mineral springs were known to the Romans. Pop. 7,000.

Emu, a family of large birds (the Dromedary, *Emu*), of which there is only one living species (the *Dromæus nova-hollandia*), and even that, owing to constant hunting, is now practically extinct. It is a native of Australia, stands from 5 to 6 ft. high and is very fleet of foot. The nest is a shallow pit in the ground and its food is vegetables, seeds, fruits and roots. It is closely allied to and resembles the Cassowary, but lacks the horny helmet.



EMU

Enamel, a vitreous compound, easily fusible, and coloured in various tints by the admixture of different metallic oxides; is fused to the surface of metals for utility and ornament; was known to the European and Asiatic ancients, and has maintained its popularity to the present day. Various schools for the revival of the art of enamelling have been formed, of which the Byzantine, Rhenish and Limoges are the most noted.

Encaustic Painting, an ancient style of decorative art somewhat similar to enamelling. It consisted in overlaying the surface (e.g., of walls) with wax, then inlaying a coloured design, the whole being subsequently treated with heated wax and polished.

Enceladus, in Greek mythology, one of the hundred-armed giants that revolted against Zeus and who, as he fled and took refuge in Sicily, was transfixed by a thunderbolt and buried under Etna.

Encephalitis Lethargica, a disease popularly known as "sleepy sickness," apparently of recent origin, no cases having been known before 1917. It is probably due to some unidentified microbe. The symptoms (which vary according to the severity of the attack and which in mild cases may not be apparent at all) are wakefulness at night, drowsiness and double vision by day and weakness of movement of the arms and legs somewhat resembling "shaky palsy." It attacks children chiefly, but not exclusively, and has forced itself on to public notice on account of the inexplicable after-effects, which often include a complete change of character, the normal healthy child sometimes becoming thievish, destructive and otherwise unmanageable.

Encke, Johann Franz, a celebrated German astronomer, born at Hamburg; determined the orbit of the comet of 1803; calculated the time of the revolution of the comet which now bears his name, and which appeared in 1819; determined also the distance of the sun by the two transits of Venus in 1761 and 1769. (1791-1865).

Encyclical Letter, a letter addressed by the Pope to the bishops of the Church, condemnatory of prevailing errors or counselling them how to act concerning public questions of the day.

Encyclopedia, a name of Greek derivation, given to works which embrace within their pages a more or less complete account, in alphabetical order, of the whole field of human knowledge, or of some particular section of it. Attempts in this direction were made as far back as Aristotle's day, and various others have since been made from time to time, according as the circle of knowledge widened, but the earliest use of the word was in a German publication of 1541. Amongst famous encyclopedias which have appeared, mention may be made of the French *Encyclopédie* (q.v.); the *Encyclopædia Britannica*, Edinburgh (1768-1771); the German *Encyclopædie*, begun in 1813 by Ersch and Gruber; the *Grand Dictionnaire Universel du XIX^{ème} Siècle* (1865-1878) of Larousse; while the largest of all is the Chinese encyclopedia, in 5,020 vols., printed in Peking in 1726.

Encyclopédie, a French encyclopedia consisting of 28 vols., to which a supplement of 5 vols. was added; edited by d'Alembert and Diderot; contributed to by a number of the eminent savants of France, and issued in 1751-1777, it helped to feed, but did nothing to allay, or even moderate, the fire of the Revolution.

Endemic, a term applied to diseases of certain countries and localities, and which arise from strictly local causes, e.g., neighbouring swamps, bad sanitation, impure water, climate, etc.

Enderyb Land, a tract of land in the African quadrant, Antarctica, in the

Endocrine Glands, ductless glands of the equipment of the secretory organs of the body, and consisting of thyroid, parathyroid, pituitary, pancreas, suprarenal and part of the sex glands. They give off substances which affect physical growth and sex development. The various glands are closely interrelated, and recent research has shown that their action is intimately associated with psychological reactions in the human character, and that emotional conditions are therefore based on purely physical phenomena. There are various diseases associated with abnormal conditions of these glands, such as goitre, diabetes and abnormal blood pressure. Patent medicines offer extracts of endocrine gland secretion, but scientific research is by no means conclusive, and most theories concerning their scientific value are as yet hypothetical. Such medicines include pituitrin, thyroxin and epinephrin.

Endor, a place on the S. of Mount Tabor, in Palestine, where the sorceress lived who was consulted by Saul before the Battle of Gilboa, and who professed communication with the ghost of Samuel (1 Sam. xxviii. 7).

Endorsement, the writing of one's name on the back of a cheque or bill of exchange as a formal signification of approval or ratification. Special endorsement is made when the value is to be transferred on order. Endorsement in a general sense implies agreement.

Endowment Insurance, a particular form of insurance whereby in consideration of the payment of agreed premiums the insured person receives an agreed sum on a specified date, or, if death occur previously, the full sum assured is payable, immediately the claim is allowed, to his next of kin. If the policy is "with profits," the sum insured

is increased by an addition of interest, of recent years in the region of 2 per cent. annually, but actually depending on the "profits," which in their turn depend on the mortality rates experienced by the company, the expense rates and interest earned on funds.

Endymion, in Greek legend, a beautiful shepherd, whom Selene, according to one version of the story, carried off to Mount Latmus, in Caria, where, as she kissed him, he sank into eternal sleep.

Enema, a liquid solution, commonly of soap and water or oil, prepared for injection into the bowels through the rectum in order to relieve constipation and allied stoppages and empty the bowels before an operation. The term also refers to the instrument used.

Energy, in science, is defined as that which can perform mechanical work, work being done when a force acts upon a body in such a way as (a) to cause it to move if it is at rest, (b) to cause it to stop if it is in motion, (c) to alter its velocity if it is in motion. Energy is capable of assuming many forms, all of which are interconvertible; thus there is light energy, heat energy, electrical energy, kinetic energy (i.e., the energy possessed by a body in virtue of its motion), potential energy (i.e., the energy possessed by a body in virtue of its position) and chemical energy.

Energy and work are measured in various units—e.g., the erg, which is the work done by a force that produces a velocity of 1 cm. per sec. when it acts for 1 sec. upon a mass of 1 gm.; the foot-pound, or work done in raising a mass of 1 lb. through a vertical height of 1 ft.; and the kilogram-metre, or work done in raising a mass of 1 kg. (1,000 gm.) through a vertical height of 1 metre. It has been shown in recent years that matter may be converted into energy—e.g., by the mutual annihilation of positive and negative electrons.

Enfield, a town in Middlesex, 10 m. N.E. of London, has a celebrated Government rifle factory. Pop. 68,000.

Enfranchisement, the extension of political rights to peoples or classes of peoples; giving them the right of representation in the government.

Engadine, a noted Swiss valley in the canton of the Grisons, stretches about 65 m. between the ranges of the Rhetian Alps. It is divided into the Lower Engadine, wild and desolate, and the Upper Engadine, fertile and populous, and a favourite health resort. The river Inn flows through it, its waters collected here and there into lakes.

Engels, Friedrich, a Socialist, the friend of Karl Marx; an active propagandist of socialistic theories; author of several works on Socialism. (1820-1896).

Enghien, Louis de Bourbon, Duc d', an ill-fated French Royalist, born at Chantilly; joined the Royalists under his grandfather, Prince of Condé, and took part in the Rhine campaign against the Republicans; was suspected of being concerned in a Bourbon plot to assassinate the Emperor Napoleon; was seized in the neutral territory of Baden, brought to Vincennes, and, after an inconclusive and illegal trial, shot by Napoleon's orders. (1772-1804).

Engineering, in the narrower sense, and using machines or engines, but applied in its wider sense to the design, construction and maintenance of public works such as docks, irrigation schemes, embankments, railways and marine engineering, etc. There are four principal divisions of engineering: civil, electrical, mechanical and mining. (See Civil Engineer).

Electrical engineering is concerned with the

construction, installation and maintenance of electrical machinery and engines, such as power-stations, lighting, heating, tramways and railways, and machinery for the transmission of electrical energy, such as dynamos, accumulators, switch-boards, cables, etc., as well as telegraphy and wireless apparatus. In a sense electrical engineering is secondary to that of steam or mechanical engineering, since electricity is not a prime mover; the initial power, which the electrical engineer helps to transmit, must come from steam or internal-combustion engines, or from wind or water-power.

Mining engineering is the science of the building, erection and working of apparatus for establishing mines, the boring of the earth's surface, and the geological exploration and survey of mining areas with reference to metal-bearing ores.

Mechanical engineering is the most extensive branch of the profession, and includes the work of designing, constructing and operating steam-engines, oil-engines, gas-engines and petrol-engines and is thus, the basis of modern transport. The science embraces such subjects as the study of mechanics of the engine, boilers, fuels, turbine action and the internal-combustion engine, of which last the aeroplane engine is the most advanced form, and the engineer concerned requires to study additional problems. The engine, for example, has a very slight mounting and varying air-pressures and temperatures. The need for a minimum of weight combined with a maximum of energy, together with economy of fuel consumption, confront him with additional problems.

Agricultural engineering deals with the questions of mechanically propelled tractors, engines for driving pumps, dynamos for lighting, chaff- and root-cutting machinery, milk-separating and other dairying machinery. An engineer who gives advice as an expert on engineering work is called a "consulting engineer," and is generally one with great experience and expert knowledge of the particular problem.

To persons with an aptitude for mechanical and constructional work, and with a taste for mathematics and physics, engineering offers attractive facilities in the choice of a career. An intending student should undertake a two or three years' course of study at an engineering school, after preparation which can be obtained at a local trade school from the age of 14. At the age of 18 he may seek entrance to the preliminary examination of the Institutions of Civil, Automobile or Mechanical Engineers, but should have passed an examination nearly parallel to the London Matriculation of the University of London. Exemption is granted if he is a graduate of a university, or if he has obtained a higher certificate at the General Schools Examination. The range of subjects of examinations and a detailed syllabus may be obtained from the Institutes concerned.

Among the most prominent problems of modern engineering is the economical production of power, owing to the rapid substitution of mechanical power for most forms of manual labour, combined with shorter working periods, a world shortage of coal and oil and increasing world population. Hence the steam-engine is being superseded by the internal-combustion engine and by electricity. A feature of this advance is the adaptation of motor-engines to enable them to draw power from oil products obtained from coal.

Engineering Union, Amalgamated, the principal Trade Union of British engineering workers, formed in 1920 by the amalgamation of several previously existing unions, the principal being the Amalgamated Society of

Engineers, Corps of Royal, a branch of

from 1772, whose duties consist of the construction of fortifications, military railways, bridges, mines, etc., the manning and maintenance of searchlight units and military balloon service. Officers are trained at the Royal Military Academy, Woolwich, and the School of Military Engineering at Chatham.



BADGE OF ROYAL ENGINEERS

England, and most populated division of the island of Great Britain. It comprises along with Wales the southern portion. It is separated from the Continent on the E. and S. by the North Sea and English Channel, and from Ireland on the W. by St. George's Channel and the Irish Sea, while Scotland forms its northern boundary. Its greatest length N. and S. is 430 m., and greatest breadth 370 m. It is of an irregular triangular shape, has a long and very indented coastline (1,800 m.); is divided into 40 counties (with Wales 52); has numerous rivers with navigable estuaries, whose transit is facilitated by a network of railways, roads and canals.

It is mountainous in the N. The Pennine Range stretches down through the centre of the country as far as Derbyshire. There is a mountain system (the Cambrian system), also in Wales and high moorlands in Devonshire, Somerset and Cornwall. Otherwise the country consists of undulating plains 80 per cent. of the whole being of some agricultural value. Coal and iron are found in abundance, and copper, lead, zinc and tin in lesser quantities, but it is in the extent and variety of its industrial development that England is without an equal. The climate is mild and moist, and, owing to the equatorial drift current, popularly known as the Gulf Stream (q.v.) whose waters wash its western shores, very equable.

Under a limited monarchy and a widely embracing franchise, the people of England enjoy an unrivalled political freedom. Since Henry VIII.'s time, the national religion has been an established Protestantism, but all forms are tolerated. In 1896 education was made free. The name England is derived from Angle-land, or land of the Angles, a Teutonic people who, with kindred Saxons and Jutes, came over from the mainland in the 5th Century, and took possession of the island, driving Britons and Celts before them. Admixtures to the stock took place during the 11th Century through the Danish and Norman conquests. England annexed Wales in 1284, and was united with Scotland under one crown in 1603, and under one Parliament in 1707. Area (England and Wales) 58,300 sq. m. Pop. (England and Wales) 40,000,000.

English Channel, See Channel.

Engraving, a process of relief printing from a raised surface. A roller with pigment on it passes over the design, touching only the raised portion. Wood-engraving is typical of the process. Copper-plate engraving, called *intaglio*, consists of cutting the design into a flat surface. The plate is then inked and wiped, leaving the pigment in the recesses. The paper is pressed over the whole surface with soft backing. The tool used is a graver or burin. Etching requires the use of a mordant acid to eat into the plate. Dürer, Van Dyck, Hogarth and Whistler were famous in the art.

Engrossing, a practice in commerce of buying large quantities of a certain class of goods in order to control

the market price, and thus assume a large profit. At one time it was illegal, but by an Act in 1844 the operation was legally recognised.

Enlistment, the act of joining the regular armed forces. Until 1802 the system was conducted by private agents, who received a commission for each recruit. It is now controlled by the Adjutant General, and is regulated by the Enlistment Acts of 1871 and 1881. The recruit receives on demand a recruiting paper from one of the centres, and submits to a preliminary military examination by the recruiting officer. After a medical examination he must attest before a magistrate, take the oath of allegiance and finally be approved by the authorities. A false declaration constitutes a punishable offence. A recruit may buy himself out of the service during his first three months unless national conditions are unfavourable.

Ennerdale, lake of Cumberland, England, 3 m. long by $\frac{1}{2}$ m. wide. It serves as a reservoir for Whitehaven.

Ennis, the county town of Co. Clare, Ireland (Eire), 20 m. NW. of Limerick; there are ruins of an abbey. Pop. 5,500.

Enniscorthy, a market town of Co. Wexford, Ireland (Eire), 14 m. NW. of Wexford, an agricultural centre, with ruins of a Norman castle. Pop. 5,500.

Enniskillen, the county town of Fermanagh, Northern Ireland, on an isle in the river which joins Lower and Upper Loughs Erne; the scene of the defeat of James II.'s troops by those of William of Orange. Pop. 5,000.

Ennius, Quintus, an early Roman poet, the father of Roman epic poetry, born in Rudiae, Calabria; promoted the study of Greek literature in Rome; of his poems, dramatic and epic, only a few fragments are extant. (239-169 B.C.)

Enns, town of Upper Austria, near the junction of the Enns and Danube. Pop. 4,000.

Enoch, a godly man, who lived in antediluvian times among a godless race and whom the Lord in judgment removed from the earth to return Himself later with a flood in order to clear the world of the ungodly.

Enoch, The Book of, an apocryphal book, quoted from by Jude, discovered over a century ago, composed presumably about the 2nd Century, though subsequently enlarged and ascribed to Enoch. It professes to be a series of revelations made to the patriarch bearing upon the secrets of the material and spiritual universe and the course of Providence, and written down by him for the benefit of posterity.

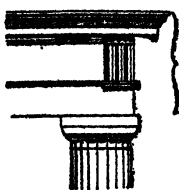
Enschede, town and railway junction of Netherlands in Overysel province, a centre of the cotton industry. Pop. 87,000.

Ensign, the flag flown on a vessel to indicate its nationality. The white ensign is flown by the Royal Navy and the Royal Yacht Squadron, the red by the merchant service and the blue by certain yacht clubs and the Royal Naval Reserve. The staff from which the flag is flown is the Ensign Staff. The term also refers to an obsolete rank in the Army corresponding to that of second lieutenant. It was this officer's former duty to carry the ensign of the regiment.

Ensilage, a process of storing crops such as hay, etc., while green, to serve as winter food for cattle. Formerly stored in a pit, the hay is now placed in an air-tight silo, constructed of brick or cement.

Entablature, a term in classic architecture applied to the

ornamental portion of a building which rests in horizontal position upon supporting columns; is subdivided into three parts, the lower portion being called the *architrave*, the middle portion the *frieze*, and the uppermost the *cornice*. The depth assigned to these parts varies in the different schools, but the whole entablature generally measures twice the diameter of the column.



ENTABLATURE

Entail, a term in law which came to be the practice of limiting the inheritance of estates to a certain restricted line of heirs. Attempts of the kind are of ancient date; but the system as understood now, involving the principle of primogeniture, owes its origin to the feudal system. Sometimes the succession was limited to the male issue, but this was by no means an invariable practice. In modern times the system has been, by a succession of Acts of Parliaments (notably the Cairns Act of 1882 and the Law of Property Act 1925), greatly modified, and greater powers given to the actual owner of alienating the estates to which he has succeeded, a process which is called "breaking the entail."

Entebbe, the administrative capital of Africa, on Lake Victoria.

Entente Cordiale, a close and friendly understanding between two or more countries, with common interests and needs, such as the alliance between England and France fostered by Edward VII.

Enteric Fever. See Typhoid Fever.

Enteritis, general term in medicine for inflammation of the small intestine, in mild cases known also as diarrhoea, which may be then the only symptom. It is common in the tropics, and is liable to become chronic in hot-weather conditions. The symptoms are pain in the abdomen, caused by inflation, a coated tongue and uncertain appetite.

Entertainments Duty, a tax on entertainments such as concerts, amusements, games and sports, etc., levied under the Finance Act of 1916. Exceptions include amusements where the proceeds are intended wholly for charity; educational functions, such as exhibitions, lectures, etc.; art exhibitions and entertainments where the price of admission does not exceed 6d.

Entomology, the branch of zoology which deals with the study of insect life, and divided into classification, anatomy and physiology, bionomics or life history and habits, embryology, cytology, ecology and paleo-entomology, or the study of fossilised insect forms. The science is represented in London by the Royal Entomological Society and professors and amateur students are admitted. The science has assumed an economic importance and much research into the diseases of animals and plants has been undertaken, the most important of which to humanity is the work of Sir Ronald Ross in identifying the mosquito as a malaria-carrying parasite. Other activities include the study of insect pests such as the boll-weevil and its destructive work in cotton plants.

Entre-Minho-e-Douro, most northerly province of Portugal, between the Douro

and Minho Rs. A mountainous district, well cultivated and thickly populated. Chief town, Oporto. Area 2,790 sq. m. Pop. 1,304,000.

Entre Rios, province of N.E. Argentina, between the Paraná and Uruguay Rs. Partly forest, partly marshlands, but largely prairie; cattle, sheep and horses are raised, cereals, vines and timber grown. Capital Paraná. Area, 30,240 sq. m. Pop. 680,000.

Enver Pasha, leader of the "Young Turks," born at Apana on the Black Sea. Helped revolution in Macedonia, 1908. Attaché in Berlin. Brought about assassination of War Minister, Nazim Pasha, 1913; became virtual ruler of Turkey. After Turkish collapse in World War went to Russia; fought for both sides alternately. He was killed leading an insurrection in Turkestan. (1881-1922).

Environment, a term of extensive use in biological science, especially employed to denote the external conditions which go to determine modifications in the development of organic life to the extent often of producing new species.

Enzymes, substances, very small quantities of which can bring about chemical change, e.g., *invertase*, found in yeast, which converts cane-sugar into glucose; *diastase*, which changes starch into glucose, and *pepsin*.

Eoanthropus Dawsoni. See Pilt-down Man.

Eocene, the geological strata laid down at the beginning of the Tertiary Period. This age is represented in England by the London clay and thin beds of sand and gravel. The fossils found indicate that this country then enjoyed a tropical climate. In Eocene times mammals multiplied and began to gain ascendancy, and great earth movements began.

Eon de Beaumont, Charles d', the "Chevalier d'Eon," a noted French diplomatist, born in Tonnerre, Burgundy; adopted a woman's dress for purposes of disguise; was ambassador at the English Court, but disgraced and recalled by Louis XVI., and condemned to wear feminine garb till the close of his life. (1728-1810).

Eos, the goddess of the dawn, the daughter of Hyperion, and the sister of Helios and Selene. See Aurora.

Epact, formerly used for finding Easter, is the age of the moon on Jan. 1 of any particular year.

Epaminondas, a famous Theban, defeated Sparta in the great victory of Leuctra, and during his lifetime raised Thebes to a position of dominant power; was slain in the Battle of Mantinea in 362 B.C., when again successfully engaging the Spartans. Blameless in his private life as he was heroic in the field, he figures as the great hero of Theban history. Born about 418 B.C.

Epée, Charles Michel, Abbé de P., a noted philanthropist, born at Versailles; took holy orders, but was divested of them on account of Jansenist views. Devoted his life to the instruction of deaf-mutes, for whom he founded an institute and invented a language of signs. (1712-1789).

Epéhy, town of France, in the dept. of Somme, 13 m. S. of Cambrai. It was captured by the British in 1917, lost March 1918 and recaptured Sept. 1918.

Épernay, town of France, on the Marne, the centre of the champagne industry. Frequently bombed during the World War, it was a German objective in the Second Battle of the Marne, 1918. Pop. 21,000.

Ephemera, known popularly as May flies, a class of insect, resembling dragon-flies, which live in the adult stages for only one day. The larva state, however, lasts in some species for three years. They are found by ponds and the banks of rivers in summer. The body is thin and the wings, of which there are two pairs (the hind pair much smaller than the other), filmy. They bear two or three thread-like tails at the rear of the abdomen.



Ephesians, The Epistle to the, a presumably circular letter of St. Paul to the Church at Ephesus, among other Churches in the East, written to show that the Gentile had a standing in Christ as well as the Jew, and that it was agreeable to the eternal purpose of God that the two should form one body in Him. It contains Paul's doctrine of the Church, and appears to have been written during his first imprisonment in Rome (61-63). It appears from the spirit that breathes in it and the similar thoughts and exhortations contained, to have been written at the same time as the Epistle to the Colossians.

Ephesus, a city of Asia Minor, originally an ancient Greek colony; under Roman domination it was a free city and included many Jews; was famous for its temple of Artemis (or Diana), one of the wonders of the world; was visited by Paul twice; was a centre of learning and the arts.

Ephod, a richly and emblematically embroidered vestment worn by the high-priest of the Jews, and consisting of two parts, one covering the breast and supporting the breastplate, and the other covering the back, these being clasped to the shoulders by two onyx stones with names inscribed on them, six on each, of the 12 tribes, and the whole bound round the waist with a girdle of gold, blue, purple, scarlet, and fine-twined linen. The word is also applied by some to an image covered with gold, the same being an object of worship (see Judges viii. 27).



EPHOD

Ephori (i.e., overseers), the name of five magistrates annually elected in ancient Sparta from among the people as a countercheck to the authority of the kings and the senate. They had originally to see to the execution of justice and the education of youth.

Ephraim, one of the 12 tribes of Israel, descended from Ephraim, the second son of Joseph by his wife Asenath; the one to which Joshua belonged, located in the centre of the land; powerful in the days of the Judges, the chief of the tribes that revolted under Jeroboam after the death of Solomon, and often gave name to the whole body of them.

Epic, a poem that treats of the events in the life of a nation or a race or the founder of one, agreeably to the passion inspiring it and in such form as to kindle and give the heroism thereof in the general thoughts, feelings and fests of a whole race; or compositions of this kind.

Engrossed, and *Odyssey* of Homer, the *Æneid* the *Divine Comedy* of Dante and the *Lost of Milton* are famous.

Epictetus, a celebrated Stoic philosopher of the 1st Century A.D., originally a slave; lived and taught at Rome but after the expulsion of the philosophers retired to Nicopolis, in Epirus; was lame, and lived in poverty; his conversations were collected by Arrian, and his philosophy in a short manual under the Greek name of *Enchiridion* of Epictetus, written, as is alleged, in utter obliviousness to the fact that "the end of man is an action, not a thought."

Epicureans, a sect of philosophers who derived their name from Epicurus, and who divided the empire of philosophy with the Stoics at the birth of Christ. They held that the chief end of man was happiness, that the business of philosophy was to guide him in the pursuit of it, and that it was only by experience that one could learn what would lead to it and what would not. They scouted the idea of reason as regulative of thought, and conscience as regulative of conduct, and maintained that our senses were our only guides in both. In a word, they denied that God had implanted in man an absolute rational and moral principle, and maintained that he had no other clue to the goal of his being but his experience in life, while the distinction of right and wrong was only a distinction of what was found conducive to happiness and what was not. They had no faith in or fear of a divine Being above man any more than of a divine principle within man, and they scorned the idea of another world with its awards, and concerned themselves only with this.

Epicurus, a Greek philosopher, born in Samos, Athens, of Athenian origin; settled at Athens in his thirty-sixth year, and founded a philosophical school there, where he taught a philosophy in opposition to that of the Stoics. Philosophy he defined as "an activity which realises a happy life through ideas and arguments," summing itself up "in ethics, which are to teach us how to attain a life of felicity." His system comprised "the three branches included in philosophy, viz., logic, physics and ethics," but he arranges them in reverse order, logic and physics being regarded only as the hand-maids of ethics; for he "limited logic to the investigation of the criterion of truth," and physics he valued as disillusioning the mind of "the superstitious fear that went to disturb happiness." He was a man of a most temperate and blameless life, and it is a rumour on him to charge him with summing up happiness as mere self-indulgence, though he regarded "virtue as having no value in itself, but only in so far as it offered us something—an agreeable life." (342-270 B.C.).

Epicyle, an expression used in the astronomy. The old belief that the celestial bodies moved in perfect circles round the earth was found to be inadequate to explain the varying position of the planets, a difficulty which led Ptolemy to invent his theory of epicycles, which was to the effect that each planet revolved round a centre of its own greater or less, but that all these centres themselves moved in procession round the earth, a theory which fell to pieces before the investigations of Kepler and Newton.

Epidaurus, a town of ancient Greece, in Argolis, on the eastern shore of the Peloponnese; was at one time an independent State and an active centre of trade but was chiefly noted for its famous temple of Æsculapius, to which people flocked to be cured of their diseases, ruins of magnificent theatre are still extant here.

Epidemic, a name given to infectious diseases which, arising suddenly in a community, rapidly spread through its members, often travelling from district to district, until often a whole country

affected. The theory of the transmission of disease by microbes has largely explained the spread of such scourges, but the part which atmospheric and other physical, and perhaps psychic, causes play in these disorders is still matter of debate, especially as regards epidemic mental diseases. See *Epidemic*.

Epiglottis, a covering of tissue which closes the larynx during swallowing. It is connected to the back of the tongue. It is yellow in colour and is elastic. A ligament leads from the epiglottis inside the larynx.

Epigoni (the Descendants), the name given to the sons of the Seven who perished before Thebes. They avenged the death of their fathers by razing Thebes to the ground. The war first and last has been made the subject of epic and tragic poems. *Æschylus* has a tragedy on the subject.

Epigram, in modern usage, is a neat, briefly couched in verse form, usually satiric, and reserving its sting to the last line. The Latin epigrammatists, especially *Marcial* and *Catullus*, were the first to give a satirical turn to the epigram, their predecessors the Greeks having employed it merely for purposes of epitaph and monumental inscriptions of a laudatory nature.

Epilepsy, a violent nervous affection, manifesting itself usually in sudden convulsive seizures and unconsciousness, followed by temporary stoppage of the breath and rigidity of the body; popularly known as "falling sickness"; attributed by the ancients to demoniacal possession. The milder form is known as "petit mal," the graver, "grand mal."

Epilogue, the closing passage or peroration of a speech in Greek oratory; now applied to a concluding comment of a drama recited before the curtain at the end of the play. It was a feature of Restoration plays, and is employed by writers of novels to-day either to point the moral of the story or to emphasise its theme.

Epimenides, a philosopher of Crete of the 6th Century B.C., of whom it is fabled that he fell asleep in a cave when a boy, and that he did not awake for 57 years, but it was to find himself endowed with all knowledge and wisdom. He was invited to Athens during a plague to purify the city, on which occasion he performed certain mysterious rites with the effect that the plague ceased. The story afforded Goethe a subject for a drama entitled *Das Epimenides Erwachen*.

Epimetheus (i.e., Afterthought), the brother of Prometheus (Forethought), who in spite of the warnings of the latter opened Pandora's box, and let loose a flood of evils on the earth, which oppress it to this day.

Épinal, the capital of the dept. of Vosges, in France, and a strong fortress in the French eastern system of defence; charmingly situated at the foot of the Vosges Mts., on the Moselle; is elegantly built, and has ruins of an old castle, surrounded by fine gardens, an old church and a fine library, etc.; there are industries in cotton, paper, weaving and printing. Pop. 30,000.

Pinay, Madame d', a French writer, unhappily married in her youth; became notorious for her illicit intimacy with Rousseau and Grimm; her *Mémoires et Correspondance* give a lively picture of her time. (1726-1783).

Epiphany, as observed in the Christian Church, is a festival held on the 12th day after Christmas, Jan. 6, also called in England Twelfth Night, in commemoration of the manifestation of Christ

to the Magi of the East; but up to the close of the 4th Century the festival also commemorated the incarnation of Christ as well as the divine manifestation at His baptism.

Epirus, Hellas, Dodona its capital, where there was an oracle, and Acheron, one of its rivers; in 1486 became part of the Ottoman Empire, but is now incorporated almost entirely in Greece, a small part being in Southern Albania.

Episcopacy, the name given to the form of Church government in which there are superior and inferior orders among the clergy, as between that of bishop and that of a presbyter; called also Prelacy.

Epistaxis, the medical term for nose-bleeding. See *Hæmorrhage*.

Epistle, in form a letter, though usually the term is applied to the less spontaneous type of letter, written for effect, and sometimes not merely for the instruction and benefit of the immediate recipient, but of posterity also. The most famous of all Epistles are those of St. Paul to the various churches (Colossians, Ephesians, etc.) and included in the Bible.

Epitaph, an inscription placed on a tombstone in commemoration of the dead interred below. The natural feeling which prompts such inscriptions has manifested itself among all civilised peoples and not a little of a nation's character may be read in them. The Greeks reserved epitaphs for their heroes, but amongst the Romans grew up the modern custom of marking the tombs of relatives with some simple inscription, many of their sepulchres being placed on the side of the public roads, a circumstance which explains the phrase, *Siste, viator*—"Stay, traveller"—found in old graveyards.

Epithalamium, a nuptial song, sung in honour of the newly wedded couple, particularly among the Greeks and Romans, of which Theocritus and Catullus have left notable examples, though the *Epithalamium* of Edmund Spenser is probably the finest specimen extant.

Epithelioma, or Trade Cancer, a common form of cancer of the skin, often associated with some chronic irritation, e.g., soot, paraffin, etc.

Epithelium, a tissue which clothes the body externally and internally; composed of cells held together by intercellular substance. Externally it forms the epidermis and internally lines the brain, alimentary and respiratory tracts.

Eponym, the term applied to a person to whom is mythically ascribed the origin of a country or people, or even of a place; thus Dorus was the eponymous ancestor of the ancient Dorians.

Epping Forest, as it now exists in Essex, is a remnant—5,600 acres—of the famous Epping or Waltham Forest, which once extended over all Essex, and which then served as a royal hunting-ground; is now a favourite pleasure-ground and valuable field for explorations of botanical and entomological collectors. The market town of Epping is to the N. Pop. 5,000.

Epsom, a market town in Surrey, Eng., land, skirting Banstead Downs, 15 m. SW. of London; formerly noted for its mineral springs, now associated with the famous Derby and other races. Pop. 27,000.

Epsom Salt, a white, crystalline, neutral sulphate heptahydrate, $MgSO_4 \cdot 7H_2O$. It was discovered in a spring at Epsom in 1695, and finds some application as a purgative. It is also obtained at Seidlitz and in America and is found in sea-water.

Epstein, Jacob, British sculptor. Born New York, he studied in Paris and came to London. He made busts of well-known people in highly original style, and aroused a storm of controversy with his unconventional "Rima" in Hyde Park in 1929 and subsequently with his "Day," "Night," and "Genesis." One of his latest sculptures is his "Consummation est," a colossal recumbent figure of Christ which could only be viewed from a ladder. He is also notable for his bronzes, chiefly of people. (1880-).



JACOB EPSTEIN

Equation, Chemical, indicates how the reaction, atoms concerned in a reaction are arranged before and after the reaction. Thus the equation $\text{NaOH} + \text{HCl} = \text{NaCl} + \text{H}_2\text{O}$ is interpreted as follows. NaOH is the formula for one molecule of sodium hydroxide (caustic soda), consisting of one atom of sodium, Na, one of hydrogen, H, and one of oxygen, O. Similarly HCl is the formula for one molecule of hydrochloric acid consisting of one atom of hydrogen, H, and one atom of chlorine, Cl. Sodium hydroxide and hydrochloric acid react together molecule for molecule and yield one molecule of sodium chloride, NaCl (common salt), and one molecule of water, H_2O . If the relative weights of the atoms (atomic weights) are known, a chemical equation reveals also the proportions by weight in which the substances react, and the weights of the products. When gases are involved in the reaction, the equation enables the reacting volumes also to be calculated, for the molecular weight in grams of all gases occupies 22.4 litres at 0°C . and 760 mm. (of mercury) pressure. An equation does not state the conditions under which the reaction it represents occurs.

Equator, an imaginary line encircling from the poles. It forms the dividing line between the N. and the S. hemispheres. On maps it is latitude 0° .

Esquerry, an officer who rides with the King or royal prince on State occasions, and on the staff of the King's Master of Horse. Formerly they were placed in charge of the Royal Stables.

Equilibrium, in chemistry, is the state in a mixture of substances when no apparent change takes place in the composition of the mixture. Thus water under ordinary conditions is an equilibrium mixture of H_2O molecules with a small proportion of hydroxyl ions, OH^- , and hydroxonium ions, H_3O^+ . In physics, a body is said to be in equilibrium when it is in a state of rest although acted upon by two or more forces, and three types of physical equilibrium are distinguished—viz., neutral, stable and unstable. In neutral equilibrium the equilibrium is not disturbed by any change in the position of the body—e.g., a uniform sphere on a level surface. In stable equilibrium a slight displacement of the body produces no great change of position, and if left to itself, the body regains its original state—e.g., one of those toys, weighted at the bottom, which cannot be overturned. In unstable equilibrium a slight displacement is sufficient to cause a complete change of position—e.g., a walking-stick balanced upright on the finger.

Equinoctial Points are the two points at which the celestial equator intersects the Ecliptic (q.v.), so called because the days and nights are of equal duration when the sun is at these points.

Equinoxes, the times at which the sun is at the Equinoctial Points (q.v.), viz., March 21 and Sept. 22, called respectively the vernal and the autumnal equinoxes in the northern hemisphere, but *vice versa* in the southern; at these times the sun is directly over the equator, and day and night are then of equal length over the globe.

Equites, The, a celebrated equestrian order in ancient Rome, supposed to have been instituted by Romulus and restricted to the better class of citizens. At first purely military, it was at length invested with the judicial functions of the Senate, and the power of farming out the public revenues; gradually lost these privileges and became defunct.

Equivalent, in chemistry, the number of units of weight of an element which will combine with or take the place of 8 of the same units of oxygen, or 1.008 of the same units of hydrogen.

Erasmus, *Desiderius*, a famous scholar and man of letters, born in

Rotterdam; illegitimate son of one Gerhard; conceived a disgust for monkish life during six years' residence in a monastery at Steyn; wandered through Europe and amassed stores of learning at various universities; visited Oxford in 1498, and formed a lifelong friendship with Sir Thomas More; was for some years professor of Divinity and Greek at Cambridge; edited the first Greek Testament; settled finally at Basel, whence he exercised a remarkable influence over European thought by the wit and tone of his writings, notably the *Praise of Folly*, the *Colloquia* and *Adagia*. He has been regarded as the precursor of the Reformation; aided the Reformation by his scholarship, though he kept aloof as a scholar from the popular movement of Luther. (1466-1536).



ERASMUS

Erastianism, the right of the State to override and overrule the decisions of the Church that happen to involve civil penalties. See *Erastus*.

Erastus, Thomas, an eminent physician, whose fame rests mainly on the attitude he assumed in the theological and ecclesiastical questions of the day. He defended Zwingli's view of the Eucharist as a merely symbolical ordinance, and denied the right of the Church to inflict civil penalties, or to exercise discipline—the power of the keys—that belonging, he maintained, to the province of the civil magistrate. (1524-1583).

Erato (i.e., the Lovely), the muse of iocative poetry and represented with a lyre in her left hand.

Erbium, a chemical metallic element belonging to the rare earth group. Symbol Er, atomic number 68, atomic weight 167.84.

Ercildoune, Thomas. See *Rhymer*.

Erckmann-Chatrian, the name Émile Erckmann (1822-1899) and Louis Chatrian (1826-1890), two French writers, both of Lorraine, published a number of successful novels mostly dealing with the republican and Napoleonic campaigns; *Doctor Mathews*, *The History of a Conspiracy of 1813* and *Waterloo* are the best known.

Erdgeist, the Spirit of the Earth, *Faust* as assiduously weaving at the Time-

Loom, night and day, in death as well as life, the earthly vesture of the Eternal, and thereby revealing the invisible to normal eyes.

Erebus, in Greek mythology, a region of utter darkness in the depths of Hades, into which no mortal ever penetrated, the proper abode of Pluto and his Queen with their train of attendants, such as the Erinyes, through which the spirits of the dead must pass on their way to Hades; equivalent to the valley of the shadow of death.

Erebus, Mount, an active volcano of South Victoria Land, on Ross I. off South Victoria Land. Alt. 12,370 ft.

Erechtheus, or **Erichthonius**, the mythical first King of Athens; favoured and protected from infancy by Athena, to whom accordingly he dedicated the city. He was worshipped afterwards as a god and the Erechtheum, a temple on the Acropolis was erected in his honour. It is fabled of him that when an infant he was committed by Athena in a chest to the care of Aegleus and Herse, under a strict charge not to pry into it. They could not restrain their curiosity, opened the chest, saw the child entwined with serpents, were seized with madness, and threw themselves down from the height of the Acropolis to perish at the foot.

Erfurt, a town in Saxony, on the Gera, 14 m. W. of Weimar, formerly capital of Thuringia, with many interesting buildings, amongst the number the 12th-Century Gothic cathedral, the monastery of St. Augustine (changed into an orphanage in 1819) in which Luther was a monk; the Academy of Sciences and the fine library; various textile factories and other industries flourish. Pop. 145,000.

Erg, the unit of work and energy in the metric system; the work done in moving 1 cm. against a force of 1 dyne. See **Energy**.

Ergot, a diseased state of grasses, etc., but a disease chiefly attacking rye, produced by a fungus developing on the seeds. The drug "ergot of rye" is obtained from a species of this fungus.

Eric, the name of several of the kings of Denmark, Sweden, and Norway, the most notorious being Eric XIV., King of Sweden, the son of the noble Swedish King Gustavus Vasa, who aspired to the hand of Elizabeth of England and challenged his rival Leicester to a duel; afterwards sought Mary of Scotland, but eventually married a peasant girl who had nursed him out of madness brought on by dissipation. Was deposed after a State trial instigated by his own brothers, and ultimately poisoned himself in prison eight years later. (1533-1577).

Ericaceae, a large natural order of plants, containing some 50 genera and 1,350 species. They are found all over the world except in desert areas and in hot, damp parts of the tropics. The four subdivisions of the family are the Rhododendroideae containing amongst other species the Rhododendrons; the Arbutoidae containing amongst others the Arbutus; the Vacculoidae; and the Ericoloidae containing the genus *Erica* (the typical genus), which includes the *E. cinerea* and *E. Tetralix*, respectively the fine-leaved and cross-leaved British heaths.

Ericht, Loch, lake of Scotland, in wild mountain scenery, partly in Inverness-shire, partly in Perthshire. The R. Erich drains it into Loch Rannoch.

Ericsson, John, a distinguished Swedish engineer, born in Länghanshyttan; went to England in 1828 and to United States of America in 1839, where he died; invented the screw propeller of steamships; built warships for the American navy, and amongst them the famous *Monitor*. His

numerous inventions mark a new era in naval and steamship construction. (1803-1889).

Eric the Red, a Norwegian chief who discovered Greenland in the 10th Century, and sent out expeditions to the coast of N. America.

Erie, a city of Pennsylvania, U.S.A., on Lake Erie, with a fine harbour. Its industries are numerous and important. Pop. 118,000.

Erie, or "Barge" Canal, from Buffalo to Erie, Albany, New York State, links Lake Erie with the Hudson R., thus providing communication between the Canadian lakes and the Atlantic Ocean; is 365 m. in length. It is a part of the New York State Improved Canal System.

Erie, Lake, the fourth in size among the giant lakes of N. America, lies between Lakes Huron and Ontario, on the Canadian border, is 240 m. long and varies from 30 to 60 m. in breadth; is very shallow, and difficult to navigate; icebound from December till about April.

Erigena, Johannes Scotus, a rationalistic scholar and thinker of the 9th Century, of Irish birth; taught at the Court of Charles the Bald in France, probably died in 877, though one story says that he was summoned by Alfred to Oxford in 877 and died Abbot of Malmesbury.

Erin, the ancient Celtic name of Ireland, being the dative case of the Gaelic word *Eriu*, and used still in poetry.

Erinyes, The (i.e., the roused-to-anger, otherwise in Greek the Kumenides, and in Latin, the Furies), the Greek goddesses of vengeance, were the daughters of Night, begotten of the blood of the wounded Uranus, and at length reckoned three in number, Alecto, Tisiphone and Megera. They were conceived of as haunting the wicked on earth and scourging them in hell. They were of the court of Pluto, and the executioners of his wrath.

Eris, the Greek goddess of strife or discord, sister of Mars, who, sowing the seeds thereof among the gods to begin with, threw the golden apple at the feast of Peleus and Thetis, and has since continued to sow discord among men.

Erith, an industrial centre of Kent, England, on the Thames, 12 m. E. of London, formerly a naval station. Pop. 33,000.

Eritrea, a colony belonging to Italy, extending from Cape Kasar 670 m. along the western shore of the Red Sea to a point in the Strait of Bab-el-Mandeb; bounded N. by Egypt, W. by Abyssinia, S. by French Somaliland. Massawah is the capital, Asmara the seat of government. The coastline is hot and unhealthy, at least for Europeans, but the highlands of the interior enjoy a more temperate climate. It was from here that one half of Italy's effort was directed which resulted in the capture of Adowa and finally of Addis Ababa, and the institution in 1936 of the new Italian Colony of Italian East Africa, which incorporates Eritrea. Area (Eritrea) 45,700 sq. m. Pop. 600,000.

Erivan, a fortified town in Transcaucasia, situated 30 m. NE. of Mount Ararat on an elevated plateau; was ceded to Russia in 1828 by Persia. Is now capital of the Armenian S.S.R.; has a hydro-electric station and is of increasing industrial importance. Pop. 111,500. An administrative district engaged in fruit culture and wine manufacture of the Armenian S.S.R. bears the same name.

Erlangen, a Bavarian town on the Regnitz; has a celebrated Protestant university, founded by Wilhelmina, sister of Frederick the Great; was a place of

refuge for the Huguenots in 1685; manufactures in gloves, mirrors and tobacco are carried on, and brewing. Pop. 32,000.

Erl-King, or *Erlkönig*, a Norse superstition fear which haunts and kills us even in the guardian embrace of paternal affection; is the subject of a ballad by Goethe.

Ermine, a valuable fur, being the winter coat of the Stoat (*q.v.*).

In summer the stoat has a reddish-brown coat. This in winter becomes white, though the tail remains black.



Erne, a river

of Ireland (Eire), flowing past Enniskillen, through Upper and Lower Lough Erne (in Co. Fermanagh) to empty into Donegal Bay at Ballyshannon.

Ernest Augustus, Duke of Cumberland and King of Hanover, fifth son of George III., born at Kew, educated at Göttingen. Served in campaigns, 1793-1794; lost left eye at Tourney. Made Duke, 1799. In St. James's Palace, 1810, he was nearly killed by a head-wound probably inflicted by his valet who was found dead. Married Frederica, daughter of the Duke of Mecklenburg-Strelitz, 1815. Succeeded to the throne of Hanover on death of William IV., 1837. His only son, George V. of Hanover, was blind. (1771-1851).

Ernie, Rowland Edmund Prothero, Baron, author and editor, born at Clifton-on-Teme, son of rector of Whippingham. Educated at Marlborough, and at Balliol College, Oxford. Editor, *Quarterly Review*, 1894-1899. M.P., Oxford University, 1914-1919. President Board of Agriculture, 1916-1919. Ennobled, 1919. Wrote biographies, and on agriculture. Edited Letters of Gibbon and Byron. (1852-1937).

Eros (in Latin, *Cupido*), the Greek god of love, the son of Aphrodite, and the youngest of the gods, though he figures in the cosmogony as one of the oldest of the gods, and as the uniting power in the life of the gods and the life of the universe; was represented at last as a wanton boy from whose wiles neither gods nor men were safe.

Eros, one of the asteroids or minor planets discovered at Berlin by Dr. Witt in 1898; approaches at times within 14 million miles of the earth; careful measurements of its orbit enable the distance of the earth from the sun to be determined with exactitude.

Erse, a name sometimes used for the Erse, Gaelic language (*q.v.*).

Erskine, Ebenezer, founder of the Secession Church of Scotland, born in Berwickshire; minister at Portmouk for 28 years; took part in the patronage dispute and was suspended (1733), when he formed at Gairney Bridge, near Kinross, the nucleus of the Secession Church. (1680-1754).

Erskine, Henry, a famous Scottish lawyer, second son of the Earl of Buchan, born in Edinburgh; called to the Bar and became Lord Advocate; a Whig in politics; brought about useful legal reforms. He was noted as a brilliant wit and orator. (1746-1817).

Erskine, Thomas, first Baron, a famous lawyer, youngest son of the Earl of Buchan, born in Edinburgh; spent his early years in the navy and afterwards joined the army; resigned in 1775 to enter upon the study of law; called to the Bar in 1778; a King's Counsel in 1783; created a Baron and Lord Chancellor in 1806; was engaged in all the famous trials of his time;

an unrivalled orator in the law courts; his speeches rank as masterpieces of forensic eloquence. (1730-1823).

Ervine, St. John Greer, playwright, novelist, born in Belfast; manager, Abbey Theatre, Dublin, 1915; author of *Jane Clegg*, a play based on his own novel of the same name. The *First Mrs. Fraser* and *Anthony and Anna*. Novels include *The Foolish Lovers* and *The Wayward Man*. Dramatic critic of *The Observer*. (1883-).

Erysipelas, known popularly as "St. Anthony's Fire" and "Rose," a febrile disease, due to the germ streptococcus and manifesting itself in acute inflammation of the skin, which becomes vividly scarlet and ultimately peels; confined chiefly to the head and face; is contagious and recurrent.

Erythema, a medical term used loosely to designate a diseased condition of the skin; characterised by a scarlet or dark-red rash or eruption, distinct from erysipelas. It is the first sign of dermatitis (inflammation of the skin).

Erzgebirge, a range of mountains lying between Saxony and Bohemia (Czechoslovakia) and separating the two; the highest peak is the Köhlberg, 4,052 ft.; is rich in various metallic ores, especially silver and lead.

Erzurum (*Erzerum*), a famous city in Asiatic Turkey, capital of a vilayet of the same name, 125 m. S.E. of Trebizond; situated on a fertile plain 6,300 ft. above sea-level; is an important entrepôt for commerce between Europe and Asia; is irregularly built, has a fortress, is famed for its iron and copper ware; fell into the hands of the Turks in 1517; figured as a military centre in many Turkish wars; was taken by the Russians in 1878; was a scene of Armenian massacres by the Turks in 1895; was captured by the Russians in 1916. Pop. (vilayet) 386,000; (town) 33,000.

Esau, the elder son of Isaac, who sold his birthright to his twin brother Jacob for a mess of red pottage; called Esau because he was born "red, all over like a hairy garment." He was a cunning hunter, led a predatory life, and was the forefather of the Edomites. A second time Jacob outwitted him when by craft he obtained his father's blessing.

Esbjerg, seaport and fishing town of Denmark, in Jutland, on the North Sea. It exports, mainly to Great Britain, bacon, eggs and dairy produce. Pop. 27,000.

Escalators, moving stairways, which have come into use in modern times in underground railways and lofty buildings in order to facilitate the movement of pedestrian traffic and to avoid congestion. They consist essentially of a continuous series of steps or small platforms on wheels drawn by chains round a continuous track which brings each step in turn to the point where passengers step on and carries each step then up or down to the point where passengers alight.

Escarpment, a term in geology for a side gradually sloping. Examples are the chalk escarpments of the South Downs and the Chiltern Hills.



Eschatology, the department of theology which treats of the so-called last things, such as death, the intermediate state, the millennium, the return of Christ, the resurrection, the judgment, and the end of the world.

Escheat, a legal process whereby tenure of land used to revert to the lord on the occasion of the tenant's death without heirs, intestate. In most cases it reverted to the King, as the King was regarded, with the exception of a very few properties which had been in the possession of one family since 1290, as the overlord in a feudal sense and as retaining a residual interest in it. Formerly escheat occurred after conviction of a capital crime in England. Escheat has been abolished in England.

Escorial, or **Escorial** (i.e., place of ashes), a huge granite pile, built in the form of a gridiron, 30 m. NW. from Madrid, and deemed at one time the eighth wonder of the world; was built in 1563-1584; was originally dedicated as a monastery to St. Lorenzo in recognition of the services which the Saint had rendered to Philip II. at the battle of St. Quentin, and used at length as a palace and burial-place of kings.

Escudo, the unit of Portuguese coinage; divided into 100 centavos.

Escutcheon, in heraldry, a shield bearing armorial bearings.

Esdraëlön, a flat and fertile valley in Galilee, called also the valley of Jezreel, which, with a maximum breadth of 9 m., extends in a NW. direction from the Jordan at Beth-shan to the Bay of Acre. Allenby gained a great victory over the Turks here in Sept. 1918.

Esdras, the name of two books of the 2nd Century B.C., containing the history of the rebuilding of the Temple and the restoration of its cultus; and the second, written probably between 81 and 96 A.D., a forecast of the deliverance of the Jews from oppression and the establishment of the Messianic kingdom. In the Vulgate the name Esdras I. is given to what is called the Book of Ezra in the Authorized Version; Esdras II. to the Book of Nehemiah and the Esdras I. and II. become Esdras III. and IV.

Esh, colliery village of Durham, England, 5 m. NW. of Durham. Here is a Roman Catholic college. Pop. 10,000.

Esher, urban district (with Thames Ditton and Long Ditton) of Surrey, England, 15 m. SW. of London. Near is Sandown Park race-course. Pop. 17,000.

Esher, **Reginald Elliot Brett**, second Viscount, succeeded first Viscount 1899. M.P. Peuryn and Falmouth, 1880-1883; became Constable of Windsor Castle. Published *Letters of Queen Victoria*. As member of commission on conduct of S. African War, inaugurated reconstitution of War office on its present lines. Some of the principal changes were the formation of the Army Council, the abolition of the office of Commander-in-Chief and the creation of the post and duties of the Chief of the Imperial General Staff. (1852-1930).

Esher, **William Elliot Brett**, first Viscount, count, judge, son of Rev. Joseph George Brett of Chelsea; Barrister, 1846; M.P. Helston, 1846-1848; Solicitor-General (knighted) and Justice of Common Pleas, 1883; Justice of Appeal, 1878; Master of the Rolls, 1883; Baron Esher, 1885; retired as Viscount, 1897. (1816-1899).

Esk, the name of several Scottish streams: (1) in Dumfriesshire, the Esk of young Lochinvar, has a course of 31 m. after its formation by the junction of the North and South Eaks, and flows into the Solway; (2) in Edinburgh, formed by the junction of the North and South Eaks, joins the Firth of Forth at Musselburgh; (3) in Angus (Forfar), the South Esk discharges into the North Sea at Montrose, and the North Esk also flows into the North Sea 4 m. N. of Montrose. There is a E. Esk in the N. Riding of Yorkshire, England, also, and one in Cumberland.

Eskimo, or **Esquimaux**, an aboriginal American Indian stock, in all not amounting to 40,000, thinly scattered along the northern seaboard of America and Asia and in many of the Arctic islands. Their physique, mode of living, religion and language are of peculiar ethnological interest. They are divided into tribes, each having its own territory, and these tribes in turn are subdivided into small communities, over each of which a chief presides. The social organisation is a simple tribal communism. Christianity has been introduced amongst the Eskimos of South Alaska and in the greater part of Labrador. In other parts the old religion still obtains, called Shamanism, a kind of fetish worship; much of their folk-lore has been gathered and printed. Fishing and seal-hunting are their chief employments. They are of good physique, but of primitive habits, most of their implements and weapons resembling those of neolithic man; their name is supposed to be an Indian derivative signifying "eaters of raw meat."

Eskimo Dog, a dog found amongst the Eskimo, about the size

of a pointer, wolf-like in appearance, with thick hair of a dark grey or black and white; half tamed, but strong and sagacious; invaluable for sledging.



ESKIMO DOG

Esksehir, (anc. Dory-

læum), town of Asiatic Turkey, a railway centro. It is capital of a vilayet of the same name. There are valuable deposits of meerschaum in the district. Pop. (vilayet) 183,000; (town) 47,000.

Esoteric (i.e., those within), a term coined possibly by Pythagoras and used to denote teaching intended only for the initiated, and intelligible only to them.

Espalier, a frame, usually of wood and especially fruit trees, are trained to grow. It affords protection to the fruit during winds when the fruit is liable to fall before it is ripe. Apple and pear trees are most commonly trained in this manner.

Esparto Grass (*Stipa tenacissima*), a grass native to N. Africa and Spain, and extensively used in writing-paper manufacture. It is grown in gardens in Great Britain for ornamental purposes. Another grass, *Lygum Spartum*, is also used in paper manufacture.

Esperanto, a universal language invented by Dr. Ludwik Zamenhof of Warsaw in 1887; with root-words selected from European languages, a simple grammar and syntax, and phonetic pronunciation, its knowledge is easily acquired.

Espionage, the practice of employing secrets and military dispositions of foreign countries. Such secret agents are extensively employed by most of the major countries, the service demanding great personal courage and ingenuity, perfection in the language of the country to which the agent is going, and the use of disguise, artifice, secret codes, etc. One of the most famous spies of modern times was Mata Hari, a Javanese woman who acted as a German spy in France during the World War, being caught and shot.

Espirito Santo, a small and swampy Brazilian, lying on the N. border of Rio de Janeiro; does some trade in timber, and is one of the chief coffee-producing states. Cotton and sugar are also produced. Area 12,308 sq. m. Pop. 334,000. Cap. Victoria.

Espiritu Santo, the largest of the islands of the New Hebrides belonging to Great Britain. Cannibalism is still practised on it.

Esquimaux, a seaport in British Columbia, Canada, on Vancouver I., and an important naval station, with naval yard and dry dock. Pop. 6,500.

Esquire, originally meant a shield-bearer, and was bestowed upon the two attendants of a knight, who were distinguished by silver spurs, and whose especial duty it was to look after their master's armour; now used widely as a courtesy title, though strictly only applicable to sons of peers and knights, those entitled to a coat-of-arms and certain holders of dignified offices (e.g., J.P.'s) and callings (e.g., barristers).

Essay, a literary composition, upon a subject of general interest consisting rather of comments than a reasoned treatise. The true essay deals with general subjects, and not specialised or scientific topics, its purpose being, not instruction, but moral reflection. It became popular after the 16th Century, especially in such publications as the *Spectator*, *Tatler* and *Rambler*, where such notable names as Addison, Steele, Samuel Johnson, Pope and Gay figure. Bacon's essays, however, were of the thesis character. Lamb is the supreme English essayist, charming and inimitably spontaneous. Goldsmith, Hazlitt—full of moralizing and brilliant in vocabulary—Macaulay, and Carlyle, pungent in criticism—are among other earlier English essayists. Emerson is the chief American essay-writer. In France, Montaigne's essays had a profound effect upon French literature, and Sainte-Beuve and Anatole France were masters of the essay. This form of literature is less generally popular to-day in England, though the work of Augustine Birrell, Froude, A. C. Benson, A. G. Gardiner, G. K. Chesterton, Robert Lynd, Hilario Belloc, E. V. Lucas, A. A. Milne and Ivor Brown affords intellectual delight to the reading public.

Essen, Prussia, 20 m. N.E. of Düsseldorf, the seat of the famous Krupp steel-works. Pop. 654,000.

Essence, a concentration of the virtues of a substance in a smaller mass—e.g., beef essence, coffee essence. In medicine it is a solution of essential oils in alcohol, while in philosophy it is that which constitutes the being of a thing or that which makes it what it is.

Essenes, a religious communistic fraternity, never very numerous, that grew up on the soil of Judea about the time of the Maccabees, and had establishments in Judea when Christ was on earth, as well as afterwards in the time of Josephus. They led an ascetic life, practised extreme ceremonial cleanliness, were rigorous in their observance of the Jewish law, and differed from the Pharisees in that they gave to the Pharisaic spirit a monastic expression. They represented Judaism in its purest essence, and in the spirit of their teaching came nearer Christianity than any other sect of the time.

Essential Oils, name given to those oils which are used as essences and perfumes. Many of them can be produced synthetically.

Essequibo, an important river in British Guiana, 620 m. long, navigable for 50 m. to small craft, flows northward into the Atlantic.

Essex, a county in the S.E. of England, between Suffolk on the N. and Kent in the S., faces the North Sea on the E.; is well watered with streams; has an undulating surface; is chiefly agricultural; brewing is an important industry, and the oyster fisheries of the Colne are noted; Chelmsford is the county town. Area 1,636 sq. m. Pop. 1,755,000.

Essex, Robert Devereux, second Earl of, a favourite of Queen Elizabeth,

born in Netherwood, Hereford; served in the Netherlands under Leicester, his stepfather; won the capricious fancy of Elizabeth; lost favour by marrying clandestinely the widow of Sir Philip Sidney, but was restored, and led a life of varying fortune, filling various important offices, till his final quarrel with the Queen and execution. (1557-1601).



ROBERT, SECOND EARL OF ESSEX

Essex, Robert Devereux, third Earl of, son of preceding; commander of the Parliamentary forces against Charles I.; the title died with him, but was conferred on the present family in 1661. (1691-1646).

Esslingen, an old historic and important manufacturing town in Württemberg, on the Neckar, 9 m. S.E. of Stuttgart; has a citadel and the Liebfrauen Church, which is a fine Gothic structure with a spire 246 ft.; is a noted hardware centre, and celebrated for its machinery; a good trade is done in textiles, fruit and sparkling wines.

Estate, in law, either property in land, called real estate, or personal property, which includes anything of a movable nature such as valuables, jewellery, securities, etc. The estate may be either in absolute ownership, for a life only, or held in trust for beneficiaries under a settlement by deed of gift or will. In bankruptcy the term is used to comprehend the total assets and liabilities of the bankrupt. Of a deceased person it refers to the total assets remaining at the time of death.

Estate Duty. See Death Duty.

Este, an ancient and illustrious Italian family from which, by an offshoot founded by Welf IV., who became Duke of Bavaria in the 11th Century, the Guelph Houses of Brunswick and Hanover, also called the Este-Guelphs, trace their descent. Of the Italian branch the most noted descendant was Alphonso I., a distinguished soldier and statesman and patron of art, whose second wife was the infamous Lucrezia Borgia. His son, Alphonso II., is remembered for his cruel treatment of Tasso, placing him in prison for seven years as a madman who dared to make love to one of the princesses.

Esterhazy de Galantha, the name of a powerful and famous Hungarian family holding the rank of Princes of the Empire from the 17th Century.

Esters, in organic chemistry, compounds of an acid and an alcohol, comparable to the metallic salts in inorganic chemistry which are compounds of an acid and a metallic element.

Esther, The Book of, a book of the Old Testament, which takes its name from the chief figure in the story related, an orphan Jewess and ward of her cousin Mordecai, who, from her beauty, was chosen for the royal harem and raised to be consort to the King. It is read through in the Jewish synagogues at the feast of Purim. It is observed that the name of God does not occur once in the book.

Eston, urban district of Yorkshire, England; land, in N. Riding, 4 m. S.E. of Middlesbrough. Cleveland ironstone is quarried and there are iron-foundries, blast-furnaces, etc. Pop. 31,000.

Estonia, a republic of Europe, on the Baltic Sea, S. of the Gulf of Finland. Latvia bounds it on the S. and Lake Peipus forms the greater part of the

Russian boundary. Formerly a part of the Russian Empire, it achieved independence in 1918. Government by Diet elected by proportional representation every year and with a President at the head elected every 5 years was established in 1934. A referendum in 1936 yielded a large majority in favour of replacing the Diet by Corporations and establishing a corporative system of government. Much of the land is forest, but about one-half arable, meadow and pasture land, and agriculture and dairy-farming are the chief industries. Butter and other dairy products and timber are the chief exports; also textiles, Estonia having near Narva, one of the largest cotton factories in Europe. The capital and chief port is Tallinn (Ger. Reval). There is a university at Tartu (Ger. Dorpat). Area 18,350 sq. m. Pop. (mainly Estonians, but including a few Russians) 1,126,000.

Estremadura, a coast province of Portugal, between Beira and Alentejo, watered by the Tagus; richly fertile in many parts, but sparsely cultivated; silk is an important and increasing industry; Lisbon is the chief city, and with Setubal monopolises the trade; salt, fruits, wine and oil are exported. Area 6,937 sq. m. Pop. 1,833,000. Also name of a district in Spain between Portugal and New Castile, now divided into the provinces of Badajoz and Caceres. Total area 16,118 sq. m. Pop. 1,260,000.

Estuary, the outlet of a river where it meets the sea. The estuary canalises the incoming tide of the sea, and in a narrow estuary, such as that of the Severn, the water at high tide may rise 60 ft.

Étaples, a town in the dept. of Pas-de-Calais, France, a popular seaside resort.

Etching, a form of engraving. Prints, zinc or copper, the etched lines of which have been corroded into the plate by acid. The metal plate is first coated with a wax amalgam, and the design is drawn on this soft ground with an etching-needle. The plate is then submerged in an acid bath, and the etched lines are thus bitten into the plate. The plate may be given more than one immersion for the sake of deeper lines, the lighter lines, sufficiently "bitten" at the first immersion, being previously "stopped out."

Eteocles, a son of Oedipus, King of Thebes, agreed on the banishment of his father to govern the State alternately with his brother Polynices, but, failing to keep his engagement, the latter appealed to his guardian, out of which there arose the War of the Seven against Thebes, which ended in the slaughter of the whole seven, upon which the brothers thought to end the strife in single combat, with the result that each fell by the sword of the other.

Ethane, a colourless, gaseous hydrocarbon, resembling methane in its properties, and forming a common constituent of the natural gas issuing from the earth in petroleum fields.

Ethelbert, a King of Kent, in whose reign Christianity was introduced by St. Augustine and a band of missionaries in 597; drew up the first Saxon law code. (552-616).

Etheldreda, St., a Saxon princess, whose name, shortened into St. Audrey, was given to a certain kind of lace, whence "tawdry." She took refuge from the married state in the monastery of St. Abb's Head, and afterwards founded a monastery in the Isle of Ely. (630-679).

Ethelfleda, "Lady of the Mercians," eldest daughter of Alfred the Great; married, c. 880, Ethelred, Earl of Mercia; after whose death, c. 913, she con-

tinued his wars against Scandinavians and Welsh in conjunction with her brother Edward the Elder. She fortified Chester and recaptured Stafford, Derby and Leicester. (d. 918).

Ethelred I., King of Saxon England (866-871), a predecessor and brother of Alfred; his reign was a long and unsuccessful struggle with the Danes. He fought six battles with them in 871, losing four, including Wilton, the last, but winning the Battle of Ashdown.

Ethelred II., the Unready (i.e., "without counsel"), a worthless King of Saxon England (979-1016), married Emma, daughter of Richard, Duke of Normandy (his second wife), a step which led in the end to the claim which issued in the Norman Conquest. During his reign the country suffered from invasions of the Northmen and after losing the Battle of Maldon in 991, then and in succeeding years he endeavoured to buy them off with money (Dane-geld). In 1002 he arranged the St. Brice's Day massacre of the Danes in England, which led eventually to the conquest of the country by Canute.

Ethelwulf, King of the West Saxons, afterwards of Kent; said to have been Bishop of Winchester; succeeded his father Egbert, 839, in kingship of Wessex. In his reign the Danes first wintered in the Isle of Sheppey. He defeated them at Ockley. He was succeeded in turn by four of his sons, his youngest son being Alfred the Great. (d. 858).

Ether, a volatile liquid prepared from the distillation of alcohol and sulphuric acid at high temperature; is colourless, and emits a sweet, penetrating odour; is highly combustible; a useful solvent, and an important anæsthetic.

Ether, The, non-material medium supposed to permeate the whole of space and to transmit the waves of light, radiant heat, and electromagnetic radiation. It is by no means certain that the ether (or æther) has a real existence; it was postulated because of the difficulty of imagining "waves" in the absence of a medium to undulate. There is, however, no doubt that so-called "empty" space has definite physical properties, and if so it cannot be truly empty. Hence, while expressing no opinion on the ultimate nature of the ether, physicists continue to use the conception on account of its convenience.

Etherege, Sir George, the originator of the kind of comedy "containing a vein of lively humour and witty dialogue which was afterwards displayed by Congreve and Farquhar"; has been called the "founder of the comedy of intrigue." He was the author of three clever plays, entitled *Love in a Tub*, *She Would if She Could* and *The Man of Mode*. (c. 1634-c. 1691).

Ethics, the science which treats of the distinction between right and wrong and of the moral sense by which they are discriminated.

Ethiopia, a term loosely used in ancient times to indicate the territory inhabited by black or dark-coloured people; latterly applied to an undefined tract of land stretching S. of Egypt to the Gulf of Aden, which constituted the kingdom of the Ethiopians, a people of Semitic origin and speaking a Semitic language called Ge'ez, who were successively conquered by the Egyptians, Persians and Romans; are known in the Bible; their first king is supposed to have been Menilehek, son of Solomon and the Queen of Sheba; their literature consists mostly of translations and collections of saws and riddles; the original language is no longer spoken, having been superseded by Amharic. See also Abyssinia.

Ethnology, a branch of anthropology, the science which treats of the human race as grouped in tribes or nations, but limits itself to tracing the origin and distribution of races, and investigating the physical and mental peculiarities and differences exhibited by men over all parts of the globe. One of the problems of the science is to decide between the monogenous and polyogenous theories of the origin of the race, and investigation inclines to favour the former view. The polyogenous argument, based on the diversity of languages, has been discarded, as, if valid, necessitating about a thousand different origins, while the monogenous position is strengthened by the ascertained facts that the different racial groups are fruitful amongst themselves, and present points of mental and physical similarity which accord well with this theory. Ethnologists now divide the human race into four main groups: the *Ethiopian or negro*, the *Mongolian or yellow*, the *American*, and the *Caucasian or white*.

Ethyl, in chemistry, a monad fatty hydrocarbon radical formula, C_2H_5 ; denoted by the symbol Eth or E. Its numerous compounds include ethyl-acetate, which is used as a stimulant, ethyl-alcohol, which has been detected in growing plants, as in the fruit of the parsnip, and also formed during the fermentation of dough; ethyl-oxalate, a colourless, oily liquid used in the preparation of tartaric acids; ethyl nitrate, used in making the liquor ethyl nitritus; ethyl chloride, obtained by passing hydrogen chloride into alcohol.

Ethylamine, a liquid resembling amoniacal properties. Formula $NH_2C_2H_5$; also called amido-ethane. It is obtained by distilling ethyl isocyanate with caustic potash. It is a powerful base, decomposing metallic salts. Forms a double salt with platonic chloride.

Ethyl Chloride, a liquid obtained with hydrochloric acid. It is used externally on the skin to produce a form of local anaesthesia (by freezing), and also as a general anæsthetic for very short operations.

Ethylene, a colourless gas forming a gas, to which it imparts a luminous flame. It is prepared by the removal of the elements of water from alcohol, and is used for various purposes—e.g., as an anæsthetic, as a source of ethane and for the artificial production of yellowness (to simulate ripeness) in unripe green fruits, such as oranges and grapefruit, which have to be transported over great distances and would otherwise arrive over-ripe. Formula C_2H_4 .

Etiology, an account of the causes of in medicine, the study of pathology. The causes of disease may be either: (a) predisposing or remote, (b) exciting or immediate, or (c) determining. Age and hereditary predisposition are important factors; while climate, hygienic conditions, and temperament are all considerations in practical medicine.

Etive, a sea-loch in Argyllshire, Scotland, is an inland extension of the Firth of Lorne, about 20 m. in length, and varying in breadth from 2 to 1 m., the mountain scenery along the shores being grandly picturesque. The river which bears the same name rises in Rannoch Moor, and joins the loch after a SW. course of 15 m. Both loch and river afford salmon-fishing.

Etna, a volcanic mountain on the E. coast of Sicily, 10,758 ft. high. A striking feature is the immense ravine, the Valle del Bove, spitting the eastern side of the mountain, and about 5 m. in diameter; on the flanks are many smaller cones. Etna

is celebrated for its many and destructive eruptions. Its observatory, built in 1880, at an elevation of 8,975 ft. above sea-level, is the highest inhabited dwelling in Europe.

Eton, a town in Buckinghamshire, Eng., land, on the Thames, opposite Windsor and W. of London; celebrated for its public school, Eton College, founded in 1440 by Henry VI.

Étretat, seaside resort of Normandy, France, in the dept. of Seine-Inférieure. Pop. 2,000.

Etruria, the ancient Roman name of a region in Italy, W. of the Apennines from the Tiber to the Mæra in the N.; inhabited by the Etruscans, a primitive people of Italy; at one time united in a confederation of twelve States but gradually absorbed by the growing Roman power. Its people were famous for their artistic work in iron and bronze. Many of the Etruscan cities contain interesting remains of their early civilised state; but their entire literature, supposed to have been extensive, has perished, and their language is only known through monumental inscriptions. Their religion was polytheistic, but embraced a belief in a future life. There is abundant evidence that they had attained to a high degree of civilisation. The status of women was high, the wife ranking with the husband. Their buildings still extant attest their skill as engineers and builders. Vases, mirrors and coins of fine workmanship have been found in their tombs, and jewellery which is scarcely rivalled; while the tombs themselves are remarkable for their furnishings of chairs, ornaments, decorations, etc., showing that they regarded these sanctuaries more as dwellings of departed spirits than as sepulchres of the dead.

Etruria, district of Staffordshire, England, part of Stoke-on-Trent, where Josiah Wedgwood established pottery works in 1769. It gives name to certain beds of marls and clays in the N. Midlands, useful for pottery making.

Ettrick, a Scottish river that rises in Selkirkshire and joins the Tweed, 3 m. below Selkirk; the Yarrow is its chief tributary. A forest of the same name once spread over all Selkirkshire and into the adjoining counties. The district is associated with some of the finest ballad and pastoral poetry of Scotland.

Ettrick Shepherd, James Hogg (q.v.).

Etty, William, a celebrated painter, born in York; rose from being a printer's apprentice to the position of a Royal Academician; famous as a colourist, concentrating especially on the beauty of Woman. "Youth at the Prow and Pleasure at the Helm" is one of his masterpieces. (1787-1849).

Etyymology, the science which treats of words and word-forms, tracing their history and growth through various languages ancient and modern.

Eubœa, or Negroponto, the largest of the Grecian Isles, skirts the mainland on the SE., to which it is connected by a bridge; it is about 80 m. in length; has fine quarries of marble, and formerly famous mines of iron and copper in the mountains; Chalcis is the chief town. In ancient Greek days it played an important part in history on account of its command of sea routes and of its corn and cattle. In 1830 it became a part of the independent Greek state. Pop. 154,600.

Eucaine, a synthetic drug also called ben-zamine, resembling cocaine in its effects, though less poisonous, and used as a local anæsthetic, especially for eye operations and extraction of teeth.

Eucalyptus, a genus of some 230 trees belonging to the order

Myrtaceae, and for the most part native to Australasia, where they are a characteristic part of the flora, though two or three species are found in India and Malaya and are cultivated elsewhere (e.g., Algeria and Italy) for commercial purposes. They are rapidly growing trees, some species reaching a height of 300 ft., with a circumference of from 30 to 40 ft., or even more. The timber of some species is valuable for building construction. A volatile oil (Eucalyptus oil) is secreted by (*E. Paniculata*) glands on the leaves. *E. globulus* is particularly valuable on this account. The oil is a valuable medicinal remedy, being efficacious in throat affections, influenza, bronchial catarrh, etc.



EUCALYPTUS

Eucharist, the Holy Communion, especially in one aspect—viz., the giving of thanks. The giving of thanks at the first Communion was evidently closely analogous to what is termed "grace before meat." It partly implied an acknowledgment of divine goodness in producing food, at the time represented by bread and wine, for sustenance; but as this was no ordinary feast, but one in which every act was symbolical, it chiefly denoted thanksgiving for the benefits derived from the approaching death of Christ, which the bread and wine prefigured.

Euchre, a card game, being a form of *écarté*, all cards between the seven and the ace being discarded, chiefly played in the U.S.A. The highest card is the knave of trumps, technically known as the right bower, and the next the knave of the same colour, called the left bower.

Eucrase, a transparent mineral, green, blue or white in colour, and of vitreous lustre except on the cleavage face where it is pearly; composed of silica, alumina, beryllium and sesquioxide of iron, found in Brazil and the Urala.

Euclid of Alexandria, a famous Greek geometrician, whose book of *Elements* held its place as an English school-book until recent years. The books which superseded it are based to a greater or less extent upon Euclid's work. He founded a school of mathematics in Alexandria, and flourished about 300 B.C.

Eudæmonism, the doctrine that the happiness is the aim and measure of virtue and the chief end and good of man, a doctrine held by Aristotle.

Eudiometer, any instrument for ascertaining the quantity of oxygen contained in a given bulk of aeriform fluid. The first eudiometer was devised by Priestley, the discoverer of oxygen, whose instrument was founded on the idea of subjecting a measured volume of air to a substance which would absorb the oxygen of the air. But Ure's and all modern instruments consist essentially of a graduated straight or U-shaped glass tube fitted at the top with platinum electrodes, and inverted over mercury.

Eugène, François, Prince of Savoy, a renowned general, born in Paris, and related by his mother to Cardinal Mazarin. He renounced his native land and entered the service of the Austrian Emperor Leopold; first gained distinction against the Turks, whose power in Hungary he crushed in the great victory of Peterwardein (1697); co-operated with Marlborough in the War of the

Spanish Succession, and shared the glories of his great victories, and again opposed the French in the cause of Poland. (1663-1736).

Eugenics, in modern biology, the application of the findings of the study of heredity to human beings, with the object of devising practicable schemes to improve the physical and mental qualities of future generations. As a study, eugenics was founded by Sir Francis Galton (1822-1911), cousin of Darwin and a famous anthropologist. Gregor Mendel advanced the science further by his researches into the transmission of hereditary physical characteristics (his "natural law of inheritance"). The Eugenics Society was formed in London to promote the study of national eugenics and publishes a quarterly magazine.

Eugénie, ex-Empress of the French, born in Granada, second daughter of Count Manuel Fernandez de Montijo and Marie Manuela Kirkpatrick of Closeburn, Dumfriesshire; married to Napoleon III. in 1853; had to leave France in 1870, and lived at Chislehurst, Kent. (1826-1920).

Eugenius IV., Pope born at Venice; his pontificate was marked by a schism created by proceedings in the Council of Basel towards the reform of the Church and the limitation of the papal authority, the issue of which was that he excommunicated the Council and the Council deposed him. (d. 1447).

Eugenol, or **Eugenic Acid**, an aromatic oil, obtained by shaking oil of cloves or oil of pimento with alcoholic potash. It is used in medicine as a cure for toothache.

Eulenspiegel (i.e., Owl-glass), the hero of a popular German tale, which relates no end of pranks, fortunes, and misfortunes of a wandering mechanic born in a village in Brunswick; he was buried in 1250 at Mölln, near Lübeck, where they still show his tombstone sculptured with an owl and a glass.

Eumenides (i.e., the Well-meaning), a name given to the Erinyes (q.v.) or Furies, from a dread of calling them by their true name.

Eunomius, an Arian divine, born in Cappadocia; head of a sect (the Eunomians) who maintained that the Father alone was God, that the Son was generated from Him, and the Spirit from the Son; was Bishop of Cyzicus, a post he resigned. (d. 341).

Eunuch, in the ancient world and, countries, later, in certain oriental countries, persons who had charge of the sleeping apartments of well-to-do households; though the term became applied particularly to one who had been castrated in order to serve as attendant in a harem. Eunuchs were usual adjuncts to an Eastern Court, and are frequently depicted on slabs of Nineveh. They often had great influence in high places and were renowned for their fidelity.

Eupatoria, a Russian town on the Crimean coast, 40 m. NW. of Simferopol; has a fine Tartar mosque, and does a large export trade in hides and cereals; during the Crimean War was an important military centre of the Allies.

Eupen-Malmédy, a district of Belgium, until 1919 in German Prussia, but then ceded under the Treaty of Versailles. In 1926 it was joined to the province of Liège. It is a rich dairy-farming district. S. of Aix-la-Chapelle. Eupen, the chief town of the district, is engaged in industry. Area (Eupen and Malmédy) 380 sq. m. Pop. (district) 62,000; (town) 12,500.

Euphemism, is in speech or writing the avoiding of an unpleasant or indecorous word or expression by the use of one which is less direct, and which

calls up a less disagreeable image in the mind. Thus for "he died" is substituted "he fell asleep," or "he is gathered to his fathers." So also the Greeks called the "Furies" the "Eumenides," "the benign goddesses."

Euphrasia, a genus of flowering plants of the order Scrophulariaceae, *E. officinalis* being Eye-Bright, a common British species. The flower is white or lilac and purple-veined, with yellow upper lip.



EYE-BRIGHT

Euphrates, a river in West Asia, formed by the junction of two Armenian streams; flows SE. to Kurna, where it is joined by the Tigris. The combined waters—named the Shat-el-Arab—flow into the Persian Gulf; is 1,700 m. long and navigable for 1,100 m. It was the scene of much fighting between Britain and Turkey during the World War.

Euphrosyne, the cheerful one, or life in the exuberance of joy, one of the three Graces. See *Graces*.

Euphuism, an affected bombastic style of language, so called from *Euphuus*, a work by John Lyly written in that style.

Eure, a dept. of France, in Normandy, so called from the R. Eure, which traverses it, largely engaged in agriculture and live-stock (particularly horse) raising. Area 2,330 sq. m. Pop. 306,000. Cap. Evreux.

Eure-et-Loir, a dept. of France lying directly S. of the preceding; chief rivers, the Eure in the N. and the Loir in the S.; engaged chiefly in agriculture but with some manufactures. Area 2,291 sq. m. Pop. 255,000. Cap. Chartres.

Eureka (i.e., I have found it), the exclamation of Archimedes on discovering how to test the purity of the gold in a crown. He discovered it, tradition says, when taking a bath.

Eurhythmics, essentially harmony in proportion, but the term specially denotes the Jacques-Dalcroze method of teaching music, through bodily interpretation.

Euripides, a famous Greek tragic dramatist, born in Salamis, of wealthy parents; first trained as an athlete, and then devoted himself to painting, and eventually to poetry. He brought out his first play at the age of 25, and is reputed to have written 80 plays, of which only 18 are extant, besides fragments of others. Of these plays the *Alcestes*, *Bacchæ*, *Iphigenia in Aulis*, *Electra* and *Medea* may be mentioned. He won the prize for tragedy five times; tinged with pessimism, he is nevertheless less severe than his great predecessors Sophocles and Aeschylus, surpassing them in tenderness and artistic expression, but falling short of them in strength and loftiness of dramatic conception. Sophocles, it is said, represented men as they ought to be, and Euripides as they are. (c. 480-406 B.C.).

Euroclydon, a north-easterly wind of which blows in the Mediterranean in early spring; later called Gregale. It is the wind which is described in Acts xxv. 14 as having caused St. Paul's shipwreck.

Europa, in Greek mythology, a maiden Phœnicia, whom Zeus, disguised as a white bull, carried off to Crete, where she became by him the mother of Minos, Rhadamanthus and Sarpedon.

Europe, the second smallest of the five continents into which the land surface of the globe is divided, is, geographically, a peninsula of Asia. Its area is about 3,750,000 sq. m., representing about one-fourteenth of the total land area of the globe. The natural line of demarcation between Europe and Asia is the Ural Mts., Caspian Sea and Caucasus, but neither political frontiers nor natural features are related to those boundaries. In the N. Europe is within the arctic zone, and in the S. it is separated from Africa by the Mediterranean Sea. In the NW. a continental shelf extends for over 100 m. W. of Ireland, where there is a steep drop in the bed of the Atlantic Ocean from about 100 fathoms to 1,000 fathoms. This continental shelf was at one time part of the land area of Europe, but with the exception of the British Isles it was submerged by what is now the North Sea.

The present land area may be divided into four structural divisions: (1) *North-West Region*, comprising the Highlands of N. Britain and Scotland and Scandinavia, also the lower plateau of Finland. The Highlands are ancient block formations, thrown up by upheavals of the earth's crust, worn and glaciated, while on their margins are the Lowlands of Holland, Denmark, S. Sweden and the N. German plain, alluvial areas resulting from the flow of the rivers northwards from the Highlands of (2) the *Central European Region*. This region includes the central plateaux of Spain and France, and the complex Highland systems of Central and S. Germany and Czechoslovakia, ancient block-plateau masses combined with folded mountains which have suffered denudation and then further upheaval by the earth's movement. It is this highland system which is rich in minerals.

(3) *The Russian Plain*, a vast area of ancient sedimentary rocks, bounded by the Urals, which structurally link up with the NW. Highlands.

(4) *A South Region*, comprising the folded mountain ranges; the Pyrenees, the Alps with the Apennines and Dalmatian Alps, and extending eastwards to include the Carpathians, Balkan Mts., and Caucasus. In the formation of these mountains depressions were formed by subsidence, these being now the Mediterranean Sea, and the plains of N. Italy and Hungary.

Europe is 3,370 m. across in its greatest length from Cape St. Vincent to the Urals; greatest breadth 2,400 m. from Nordkyn to Cape Matapan. Europe lies in the N. Temperate zone. Except in summer, westerly winds, bringing rain, prevail over the whole continent. In the W. conditions are oceanic; coast warmed by the Gulf Stream; winters mild; summers cool; rain sufficient for agriculture. Mediterranean region: winters mild; summers hot; rain insufficient for agriculture. The summer high-pressure conditions in the S. are due to the northerly movement of the pressure belts. Central Europe: winters cold, several months below freezing.

Europe is well supplied with rivers and lake systems. The main rivers rise in (1) the Valdai Hills—the Don, Dnieper and Volga, flowing SE. and S., and the Drina, flowing N.; and (2) the Alps—the Danube and Po, flowing SE., the Rhône, S., and the Rhine, NE. There is little natural vegetation remaining in Europe with the exception of the tundras in the N., the afforested mountain systems (coniferous, and towards the South deciduous), the forests of N. Russia, and in the SE. the steppes (grasslands) merging into semi-desert. Coal measures and iron deposits are distributed throughout Europe. Most important minerals are also mined, including precious metals (Urals, Germany, especially in Austria), but precious stones are rare.

There are three chief races among the people of Europe: (1) *Mediterranean Race*, short, dark complexion, long-headed, introduced megalithic culture into W. Europe in the New Stone Age, and akin to ancient Egyptians; found to-day especially in S. France, Spain, S. Italy; (2) *Nordic Race*, tall, fair, long-headed, emigrated to Europe from S. Russian steppes; inhabiting to-day Scandinavia, Denmark, N. Germany; (3) *Alpine Race*, broad-headed, medium tall, introduced an agricultural culture into Europe at the same time as the Mediterranean race; inhabiting the highlands of Central Europe, S. Germany, Central France, S. Belgium. The Slav races inhabiting Russia and the Balkans are akin to the Alpine race.

The present population of Europe is about 550,000,000. The chief languages are Aryan: Celtic, Teutonic, Slavonic and Romanic. Magyar and Basque are non-Aryan. Religion is predominantly Christian: Roman Catholics, Orthodox Catholics, and Protestants. There are 10,000,000 Jews and some 5,000,000 Mohammedans. Politically, Europe is divided into 35 self-governing States (including Kingdom of Iceland, Free City of Danzig and Vatican State).

Europium, a chemical metallic element belonging to the rare earth group. Symbol Eu, atomic number 63, atomic weight 152.0.

Eurydice. See *Orpheus*.

Eusebius Pamphili, a distinguished Christian writer, born in Palestine. Bishop of Caesarea in 313; headed the moderate Arians at the Council of Nicea, who shrank from disputing about a subject so sacred as the nature of the Trinity; wrote a history of the world to A.D. 328; his *Ecclesiastical History* is the first record of the Christian Church up to 324; also wrote a Life of Constantine, who held him in high favour. Many extracts of ancient writers no longer extant are found in the works of Eusebius (about 264-340).

Eustachio, *Bartolommeo*, an Italian physician of the 16th Century; settled at Rome, made several anatomical discoveries, among others those of the tube from the middle ear to the mouth, and a valve on the wall of the right auricle of the heart, both called *Eustachian* after him. (d. 1574).

Euterpe, the Muse of lyric poetry, represented in ancient works of art with a flute in her hand.

Euthanasia, a easy, painless death; or painless means. It is an offence against the criminal law to take it into one's own hands to relieve a patient, in however great pain, by taking his life, whether by painless means or not. Plato and More were advocates of induced euthanasia of aged folk.

Euxine, a Greek name for the Black Sea (q.v.).

Evander, an Arcadian, who is said to colony to Latium and settled in it 60 years before the Trojan War, and with whom Aeneas formed an alliance when he landed in Italy. He is credited with having introduced the civilising arts of Greece.

Evangelical, a term applied to all those forms of Christianity which regard the atonement of Christ, or His sacrifice on the Cross for sin, as the ground and central principle of the Christian faith.

Evangelical Alliance, of an alliance of all countries and denominations holding evangelical principles, founded in London (1846) to fight especially religious indifference and the power of the Pope.

Evangelist, a name given in the early Church to one whose office it was to persuade the ignorant and unbelieving into the fold of the Church.

Evans, Sir Arthur John, distinguished shire; conducted archaeological and ethnographical research in the Balkans and in Crete, in the latter country discovering the pre-Phoenician script; excavated the prehistoric palace of Knossos; was keeper of the Ashmolean Museum at Oxford (1884-1908), and is a member of numerous foreign antiquarian and learned societies. (1851-).

Evans, Edith Mary, English actress, born in London; first appearance, King's Hall, Covent Garden, 1912, in *Troilus and Cressida*. Has appeared in many plays, including Shakespeare's and Shaw's and revived Restoration Plays (in particular *The Way of the World*, 1924). (1888-).

Evans, Sir George de Lacy, an English general, born in Ireland; served in the Peninsular War; was present at Quatre-Bras and Waterloo; commanded the British Legion sent to assist Queen Isabella in Spain, and the second division of the army in the Crimea and the East; was for many years a member of Parliament. (1787-1870).

Evans, Mary Ann, the real name of *George Eliot* (q.v.).

Evaporation, the conversion of a liquid (or, less frequently, a solid) into a gas or vapour. If a liquid is introduced into the vacuum space (Torricellian vacuum) above the mercury in a barometer tube, the level of the mercury falls, owing to the fact that vaporisation of the liquid takes place. For the same liquid at the same temperature, the fall in level is always the same, supposing that there is sufficient of the liquid for some of it to remain unevaporised. The difference between the original and final heights of the mercury in the tube is known as the vapour pressure of the liquid at the temperature concerned.

With rise of temperature, the vapour pressure of a liquid rises, and when it reaches the value of the external pressure (c.p.), the pressure of the air when the liquid is heated in an open vessel) the liquid boils; thus, when the pressure of the air is 760 mm. of mercury, alcohol boils in an open vessel at 78.4° C., because at this temperature its vapour pressure becomes 760 mm. Many liquids, such as alcohol, water, ether and benzene, have appreciable vapour pressures even at ordinary temperatures; hence if these and similar liquids are left exposed to the air, they more or less quickly evaporate. Evaporation will obviously be hastened by heating; it is also accelerated by the passage of a current of air over the liquid, since the particles of vapour formed are more quickly removed from the neighbourhood, and so prevented from re-entering the liquid.

Evelyn, John, an English writer, born in Surrey; travelled in France and Italy during the Civil War, where he devoted much time to gardening and the study of trees; was author of a celebrated work entitled *Sylva* or *A Discourse of Forest Trees*, etc.; did much to improve horticulture and introduce exotics into this country; his *Diary* is full of interest, and justly famous for the fullness, variety and fidelity of its records. It was discovered in 1817 in an old clothes-basket. (1620-1706).



CRETAN STATUE
OF A GODDESS

Evening Primrose, (*Oenothera biennis*), a

flowering plant of the order *Onagraceae*. It is a biennial, bearing large pale-yellow flowers with a sweet scent. It opens at night and attracts the moths by which it is fertilised. Other species of *Oenothera*, also known as *Godetia*, are annuals and perennials and of different colouring.



EVENING
PRIMROSE

Everest, Mount, the highest mountain in the world; is one of the Himalayan peaks in Nepal, India; is 29,141 ft. above sea-level; named after Sir George Everest (1790-1866), a famous military engineer. A successful flight over the summit was made by the Houston Expedition in 1933, but no successful attempt to climb the mountain has yet been made, though many lives have been lost and a point within a few hundred feet of the top has been reached.

Evergreens, non-deciduous trees and shrubs which remain green throughout the year, the new leaves growing concurrently with the shedding of the old; includes all conifer trees (except larch), box, holly, yew, etc.

Eversley, a village in Hampshire, 13 m. N.W. of Basingstoke; the burial-place of Charles Kingsley, who for 31 years was rector of the parish.

Everton, a NE. suburb of Liverpool, Lancashire, famous for its toffees. Here is a Roman Catholic college. Has a famous football club at Goodison Park, which was founded in 1879 and was an original member of the Football League. The club won the F.A. Cup in 1906 and 1933, and has several times headed the League (1st Division).

Everyman, the title of a morality play of the 15th Century. The characters are Everyman, God, Death, Good Deeds, Knowledge, Beauty, Strength, etc. Everyman is summoned by Death, and all his friends forsake him, except Good Deeds.

Evesham, a town in Worcester, the scene of the battle in the Barons' War (1265) between Prince Edward (afterwards Edward I.) and Simon de Montfort; has remains of an 8th-Century Benedictine abbey. Pop. 8,800.

Eviction, or **Disseisin**, the legal process whereby a person is forcibly dispossessed of his holding of premises of which he is tenant. A landlord may recover possession against his tenant in a county court on the expiry of a notice to quit, or if six months' rent is in arrear if in the contract of tenancy there is a proviso for re-entry, and if there is not sufficient distress on the premises. In the case of a house protected under the Rent Restrictions Acts, the Courts require satisfaction on several essential points before they will grant an eviction order.

Evidence, proof—direct, circumstantial, oral or documentary—of allegations in issue between parties in an action at law. Evidence is customarily taken in court by oral examination of witnesses, but evidence irrelevant to the issue should not be admitted. Hearsay evidence is also not admitted, with certain exceptions. By the Criminal Evidence Act (1898) no person need incriminate himself, and although an accused person may give evidence on his own behalf, he is not compelled to do so. A husband or wife is not compelled to give evidence against the other spouse all he or she may do so; but there are

exceptions, as e.g. under the Criminal Law Amendment Act, the Vagrancy Act, etc., when the wife of the accused can be called as a witness for the prosecution. Real (lat. res, thing) evidence means any article used in connection with the subject of inquiry. Prima facie evidence means sufficient evidence to justify suspicion. "King's Evidence" is that given by an accused against an accomplice. A "leading question" means one which suggests the answer desired by Counsel, and such questions, therefore, may not be put to one's own witnesses; but any question may be put in cross-examination provided the matter arises out of the examination-in-chief, and also questions as to credit or character, when they are at issue or are relevant. Certain evidence is excluded in court nowadays on the grounds that it is contrary to public policy that it should be disclosed. Certain professional confidences—e.g., of doctors and lawyers—is sometimes treated as "privileged."

Evil Eye, a superstitious belief that of exercising a baneful influence on others, and even animals, by the glance of the eyes. The superstition is of ancient date, and is met with among almost all races, as it is among illiterate people and savages still. It was customary to wear amulets as protection against the evil eye.

Evolution, the theory that the several species of plants and animals on the globe were not created in their present form, but have all been evolved by modifications of structure from cruder forms under or coincident with change of environment, an idea which has been applied to everything organic in the spiritual as well as the natural world.

The theory of evolution as developed to-day dates from Darwin's *Origin of Species* (1859), and is based on the consideration of (1) the growth of new types and variations of type; (2) heredity, by which some variations are transmitted to subsequent generations; (3) the struggle for existence, (4) selection of those attributes best fitted for the struggle; (5) the tendency of like types to be isolated and to breed together. The forerunners (apart from the great German philosopher Hegel) of Darwin, were the 18th Century biologists, notably Linnaeus and Buffon, the former giving an elaborate account of plant-life, the latter of animal-life.

The post-Darwinian theories of evolution have sought to extend his principle of organic evolution to the inorganic, out of which it is asserted the former evolved. This evolutionary process was mechanistically explained by Spencer and others, but cosmic evolution has been given a less mechanistic explanation as "creative evolution" by Bergson or "emergent evolution" by Lloyd-Morgan. It is postulated that in all organic evolution a formative part has been played by something akin to the conscious mind of man, and out of which, indeed, the latter evolved. The method of evolution has long ago superseded the *a priori* in the writing of history; one of the most brilliant expositions of the method in this sphere was the work *Ancient Law* by Sir Henry Sumner Maine.

Evora, a city of Portugal beautifully situated in a fertile plain 70 m. E. of Lisbon, capital of an administrative district of the same name stretching from the coast to the Spanish frontier; once a stronghold, as the ramparts and a citadel show, and the seat of an archbishop; it abounds in Roman antiquities. Area (district) 2,860 sq. m. Pop. (administrative district) 180,000; (town) 18,000.

Evreux, capital of the dept. of Eure, on the Rhen, 67 m. NW. of Paris; is an elegant town; has a fine 11th-Century cathedral and an episcopal palace with an old

clock-tower. Interesting ruins have been excavated in the old town; is the seat of a bishop. There is some industrial activity, particularly in metal-founding. Pop. 19,300.

Ewald, Johannes, a Danish dramatist and lyricist, born in Copenhagen; served as a soldier in the German and Austrian armies; studied theology at Copenhagen; disappointed in love, he devoted himself to poetical composition; ranks as the founder of Danish tragedy, and is the author of some of the finest Danish lyrics. (1743-1781).

Ewell, village of W. Surrey, England, 1 m. N.E. of Epsom, with remains of Henry VIII.'s palace, Nonsuch. Pop. 8,000.

Ewing, Sir James Alfred, British scientist, professor of engineering at Tokyo, Dundee and Cambridge, and vice-chancellor of Edinburgh University. His researches were mainly in connection with physics, especially magnetism. His results are of great practical importance in the construction of dynamos, electric motors, etc.; took charge of the Government cypher department during the War. (1855-1935).

Excalibur, the magic sword of King Arthur, which only he could unsheathe and wield. When he was about to die he requested his knight, Sir Bedivere, to throw it into a lake close by, with some reluctance threw it, when a hand reached out to seize it, flourished it round three times, and then drew it under the water for good.

Excavation, the removal of earth from a site, either for archaeological or engineering purposes. In the latter application it refers particularly to an uncovered cutting or hollowing out of the earth, in contradistinction to tunnelling. Engineering excavation is usually carried out by means of machines, called excavators. The machine employed in most operations is very similar in structure to a crane. The jib, however, is capable of being brought into any required position, as, for instance, against a bank of earth. The pronged scoop cuts into the earth, and the load is then hoisted and deposited into lorries.



EXCAVATOR

Excess Profits Duty, a tax varying from 40 to 80 per cent., imposed in 1915, during the World War, on profits in excess by £200 or more of those made prior to 1914, the standard by which the excess profits were measured being the average of profits of any two of the three years preceding the War. Exemption was given to farmers and to people engaged in certain specified professions and employments. Though successful in producing money, the tax was not economic, as it encouraged wasteful expenditure by the taxpaying firm. It was abolished in 1921. In 1937 a new tax, called the National Defence Contribution, was introduced by Mr. Chamberlain to finance rearmament, and bore some resemblance to the old E.P.D. It was levied on the increase of profits in industry over £2,000 in any accounting year, and was not applicable to incomes from employment or professions.

Exchange, the receipt of a commodity against a payment, or in return for another commodity, of equal value. Barter as practised by commercially undeveloped peoples and as adopted by some nations during the post-War slump is one of the simplest and most primitive forms of exchange. Commercially, exchange now refers to the general exchange of goods between nations rather than between in-

dividuals. As such it denotes the method of settling debts between two countries, largely effected by means of Bills of Exchange.

Exchanges, Foreign, a comprehensive term for the various methods by which debts contracted between countries in the course of international trade are settled. Debts between merchants of different countries are assessed in terms of the currency of one country in relation to the currency of the other country, the relative values of the two currencies being reckoned from day to day. Settlement of debt can be made either by payment of bullion, by the transference of international securities, or by Bills of Exchange. The latter method is that most frequently employed.

The exchange value of currency and the market price of bills are affected by the amount of indebtedness. If this is large, the importing or debtor country has to pay more for the money of the creditor country, since as the indebtedness increases the demand for money to meet that indebtedness increases also. Foreign Exchanges have been seriously disturbed in recent years, in the first place by the disturbance to the normal flow of trade by the World War and by the readjustment to normal trading afterwards, secondly by the abnormal influence of huge indemnity and war debt payments, and finally by attempts to secure transitory trade advantages by means of deliberate currency depreciation. In England the machinery of the Exchange Equalisation Fund (established in 1933) has gone far to obviate difficulties through rapid fluctuations of exchanges.

Exchequer, the King's court of revenue, instituted either by William I. or Henry I. The name comes from the check cloth which covered the table at which the judges sat. By a method reminiscent of a game of chess, counters were moved on the squares, and represented value according to their position. This process was carried out between the representatives of the Exchequer and those who had to account for money received, the balance being struck according to the final position of the counters. The Chancellor of the Exchequer, as chief officer of the court, exercised both judicial and financial functions until 1873, when the former were abolished; and the work of exchequer as a court of common law was transferred to the King's Bench Division. The practical work of the Exchequer in dealing with the public revenue was made over to the Paymaster-General and the Treasury, the receipts being paid into the Bank of England. See also Chancellor of the Exchequer and Treasury.

Exchequer and Audit Department, a department of the British governmental administrative machinery under the control of the Comptroller and Auditor-General, and charged with the function of authorising issues from the Exchequer and auditing and reporting to the House of Commons on all Government expenditure. It was established in 1886.

Exchequer Bills, Government securities, said to have been invented by the Earl of Halifax, and first issued in 1686 in the reign of William III. They were issued for periods of five years, and at first in small sums at a variable rate of interest. They became the chief source of Government borrowing, issued in anticipation of taxes.

Excise, a duty charged on home-produced articles, usually levied on articles of stable consumption, such as beer and spirits, so that the estimated revenue can be relied upon. It is sometimes levied on certain commodities as a countervailing tax to a

Customs duty on imported goods of the same nature, when the latter tax is not imposed in order to protect the home-product. If a commodity is manufactured at home and abroad, a customs duty tends to keep out the foreign article. An excise duty by taxing the home product as well makes that particular commodity as full a source of revenue as possible. All licences come under the heading of excise, except that for motor vehicles. The excise duties yielded £104,000,000 in 1936-1937. The duties were first imposed by the Long Parliament in 1643 to raise funds for the civil war against Charles I. and levied on wine, beer, tobacco and other articles.

Excommunication, an ecclesiastical punishment inflicted upon heretics and offenders against the Church laws and violators of the moral code; was formulated in the Christian Church in the 2nd and 3rd Centuries. It varied in severity according to the degree of transgression, but in its severest application involved exclusion from the Eucharist, Christian burial, and the rights and privileges of the Church; formerly it had the support of the civil authority, but is now a purely spiritual penalty. There are passages in the New Testament (e.g., 1 Cor. v. 5) which imply some sort of physical punishment in the hope of spiritual regeneration. The right to excommunicate is not exercised by the Anglican Church.

Exe, a river rising in Exmoor and flowing through Somerset and Devon, entering the English Channel at Exmouth; is navigable for small vessels for about 8 m. from its mouth.

Execution in law refers to (a) the execution of capital punishment (q.v.). (b) The carrying out of judgments in civil actions, the usual process being by writ addressed to a sheriff or other officer of the Crown, who is authorised by the writ to recover the sum due from the debtor out of his "goods and chattels," plus interest at 4 per cent. and to pay such proceeds into Court to satisfy the judgment creditor. (See *Distraine*). (c) Execution of a deed denotes the act of sealing and delivering it. This means no more than signing it and adopting a wafer as one's seal, and getting the signature duly attested. (d) Execution of wills. See *Executor*.

Executive, a body appointed to administer the affairs of a country, a corporation, a company or a club. Politically, the Government executive is the supreme body, governing according to existing laws and initiating new laws. In an absolute monarchy the executive is the King, but his powers were usually vested in the King's Council, from which the modern executive has developed. The judicial functions which once belonged to the executive body have been separated from it, and under the English parliamentary system the executive is chosen from the legislature. In Great Britain the executive is the Cabinet, chosen by the Prime Minister from members of his own party. Its existence is dependent on a parliamentary majority.

Executor, in law, a person appointed under a will to carry out the wishes of a testator after his death. His duties may be limited or absolute. The appointment may be made by someone other than the deceased. Any person, except a lunatic, may act as executor. A corporation or a firm may be appointed; if the latter, the grant is made to the individual members of the firm. Once an executor accepts the duty, he cannot renounce executorship, but after probate the administration of the estate may be transferred to the Public Trustee under the Public Trustee Act of 1906 if the gross capital value of the estate is less than £1,000. Executors are liable for negligence in dealing

with the accounts, and may be held responsible for illegal acts of co-executors.

Exegesis, that branch of theology which deals with the interpretation of the Scriptures. It denotes not only the study of the text and its bearing on doctrine, but also embraces the whole science of elucidating the Scriptures. The term is Greek in origin, and Philo may be regarded as the father of exegetical work.

Exequatur, the instrument officially recognising a consul issued by the Government of the country to which he is accredited and authorising him to exercise his functions.

Exeter, the county town of Devon, England, on the Exe, about 9 m. from its mouth. A fine old town still partially walled, its chief glory is its small but very beautiful cathedral, Norman and Decorated in style. There is also an old Guildhall and a bishop's palace, and remains of a castle. It has a university college and a famous public school. Pop. 66,000.

Exhibition, a benefaction or endowment for the maintenance of scholars in the English Universities. Most of the Oxford and Cambridge colleges have such awards at their disposal. Similar grants are also made by other educational authorities—e.g. the Whitworth Exhibitions for engineering students.

Exhibitions. The holding of public exhibitions to encourage trade is essentially a development of the earlier half of the 19th Century, a number of such public shows taking place throughout the Continent, following various displays of applied art products in Paris and elsewhere, in the first two decades of the century. The first great international exhibition was the famous one held in the Crystal Palace in Hyde Park and opened by Queen Victoria in 1851, the property on its removal and re-erection in Sydenham becoming a national property, and remaining so until its total destruction by fire in 1936. The next great international exhibitions were in Vienna, 1863; Paris, 1878 and again in Paris in 1889—L'Exposition Universelle, the chief permanent feature of which was the Eiffel Tower; and in 1905, also in Paris, one of the largest ever held.

London's principal exhibitions of more recent years were those at Earl's Court 1884 and 1914; the Franco-British and Japanese-British at the White City, Shepherd's Bush, in 1908 and 1910 respectively; and the British Empire Exhibition opened at Wembley in 1924, which occupied a site of over 200 acres and comprised many highly ornamental buildings, especially the Indian pavilion, and a display on loan of valuable paintings. Other recent exhibitions have been a British Empire Exhibition at Buenos Aires, 1931; the World's Fair at Chicago, 1933; Johannesburg Exhibition, 1936, and the Glasgow Exhibition, 1938. Numerous exhibitions are also held by individual trades, or interests.

Exhumation, the removal of interred remains, human remains. In English law it is sacrilege and also a misdemeanour to disinter a corpse buried in consecrated ground, unless with lawful authority—as e.g. in cases of suspected foul play, when the Home Office grants an exhumation order, or a coroner during an inquest orders disinterment for medical investigation.

Exile, banishment from one's country by authority either in perpetuity or for a limited period; also the voluntary abandonment of one's country and removal to a foreign country for purposes of residence. Outlawry and transportation in the past involved exile. Magna Charta abolished outlawry of freemen otherwise than by the law of the land. Transportation of criminals was finally abolished in 1864.

Exmoor, an elevated stretch of vale and moorland in the SW. of Somerset, NE. of Devonshire; has an area of over 100 sq. m., 25 of which are covered with forest; Dunkery Beacon its chief height; red deer and a special breed of ponies are to be found there.

Exmouth, a noted seaside resort on the Devonshire coast, England, at the mouth of the Exe, 9 m. SE. of Exeter. Pop. 14,600.

Exmouth, Edward Pellew, Viscount, Cornish descent; entered navy, 1770; rose through combination of skill and bravery in many battles, and in particular in the bombardment of Algiers, to release Christian slaves in 1816. He was created Baron Exmouth in 1814; Viscount in 1816. (1757-1833).

Exodus (i.e., the Going Out), the second book of the Bible, being the book of the Old Testament which records the deliverance of the children of Israel from Egyptian bondage, and the institution of the moral and ceremonial laws for the nation; consists partly of history and partly of legislation.

Exogamy, a custom compelling a man to marry outside his tribe, clan or totem; the opposite of endogamy. The custom is widespread, especially in E. and Central Africa, among the "blackfellows" of Australia and the N. American Indians.

Exorcism, a conjuration by God or Christ, or some holy name, of some evil spirit to come out of a person. It was performed on a heathen as an idolater, and eventually on a child as born in sin prior to baptism. In the Roman Catholic Church, exorcism is still retained in the baptismal service.

Expansion (in physics), increase in length, area or volume of a body effected by rise of temperature, reduction of pressure or any other physical or chemical cause. The coefficient of linear expansion of a body is the increase in length divided by the original length—i.e., the "fractional increase" in length, per degree rise of temperature; and similarly the coefficient of cubical expansion is the fractional increase in volume per degree rise of temperature. Exceptions to the general rule that bodies expand by heat are copper oxide, vulcanised rubber, iron beyond red-heat. When its temperature is reduced to 40° F. (4° C.), water reaches its maximum density and also expands slightly. Change of form results from change of temperature in the case of all bodies that are not homogeneous.

Expectation of Life, in life insurance or life annuities, the number of years which, on the law of probability, a person of a given age or occupation may hope to live. This is remarkably certain as to masses of people, but very much otherwise as to individuals. Tables showing the expectation of life are used by Insurance Companies for the purpose of determining premiums for policies, whether maturing at a certain age or payable at death. The first reliable English tables were those published a century ago by W. Farr, the Deputy Registrar-General.

Expeditionary Force. In the British Army organisation, provision is made permanently for dispatching an expeditionary force for operations overseas. The British Expeditionary Force which went to France in Aug. 1914 comprised only four divisions of infantry and one cavalry division, together with artillery, reinforcements arriving the following month.

Explosives, substances which readily decompose under certain conditions, such as ignition or mechanical shock, immediately yielding large quantities of gas, to the expansive force of which the destructive properties of the explosive are

due. The oldest effective explosive is gunpowder, said to have been discovered by Roger Bacon in the 13th Century, and still extensively employed—e.g., in fireworks and sporting cartridges. It consists of potassium nitrate (nitre or saltpetre) 75 parts, sulphur (brimstone) 10 parts, and carbon (charcoal) 15 parts; the proportions may be varied within limits according to the purpose for which the powder is intended.

Among the more important modern explosives are nitroglycerine (properly glyceryl trinitrate), an oily liquid made by acting upon glycerine with a mixture of concentrated nitric and sulphuric acids; dynamite, which consists of nitroglycerine absorbed in a fine siliceous earth ("kieselguhr") or sawdust; ammonal, a mixture of ammonium nitrate and aluminium powder; lyddite or melinite (chemically known as picric acid or 2:4:6-trinitrophenol), made by acting upon carbolic acid (phenol) with concentrated nitric and sulphuric acids; and T.N.T. (trinitrotoluene), made by acting with a similar mixture of acids upon toluene, a liquid allied to benzene and found, like the latter, in coal-tar.

Probably the most violently explosive substance known is nitrogen trichloride, NCl₃, an oily liquid made by passing excess of chlorine into ammonia solution; this and similar substances are much too sensitive to be of any practical value, useful explosives being necessarily required to have a reasonable degree of stability. In view of this stability, explosives usually have to be fired by means of detonators, such as mercury fulminate, which are more easily exploded, and whose explosion provides the necessary flash or shock to fire the main explosive.

Exports, goods or produce sent out of a country. It is axiomatic in political economy that imports should be paid for by exports; and when the value of a country's total exports is below that of its total imports, it is said to have an adverse "balance of trade." Great Britain has for many years imported more goods than she has exported, and this has continued even since the return to a protective tariff; but in order to arrive at the true economic position, account must be taken of "invisible imports," such as interest on securities or on capital invested abroad, freight services, etc.

In the time of J. S. Mill it became accepted that the profit on a country's exports consisted in the difference between the price at which the goods were bought and carried and the price at which they were sold, thus discarding the old fallacy of looking solely to the profits of traders and ignoring the price to the consumer. The chief items of United Kingdom exports are articles wholly or mainly manufactured, the imports being chiefly food and raw material.

Extradition, the return of a criminal from a country where he has sought refuge to a country where he wanted for trial. Treaties to effect this have been signed between Great Britain and America in 1842 and with France in 1843, since which similar treaties have been signed with most countries. Anyone accused of a crime punishable with twelve months' imprisonment or more is returnable from one part of the British Dominions to another as a Fugitive Offender. The main Act of Parliament governing extradition from Great Britain is that of 1870, and only applies where an Extradition Treaty has been signed with another country.

Extra-Territoriality, or **Extraterritoriality**, the privilege given by international law to ambassadors and their families of being considered outside the territory, and therefore the jurisdiction, of the State to which they are sent. Similar privileges are or have been granted under Treaties by non-Christian

countries to citizens of Christian States resident in those countries. Thus European subjects resident in China were for long outside the Chinese Courts, and there were similar agreements or capitulations with Turkey for securing immunity to foreigners in that country or in its dependencies, including Egypt. (See also Capitulations.)

Extreme Unction, one of the sacraments of the Catholic Church; an ointment of consecrated or holy oil administered by a priest in the form of a cross to a sick person at the point of death, upon the eyes, ears, nose, mouth, hands and face, which is presumed to impart grace and strength against the last struggle.

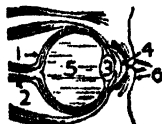
Eyam, a village of Derbyshire, England, 5 m. N. of Bakewell. It has a Runic cross and other antiquities. Three-quarters of its population perished during the Great Plague. Pop. 1,200.

Eyck, Jan van, a famous Flemish painter (c. 1389-1440), born in Maseyck; was instructed by his elder brother Hubert (c. 1370-1426), with whom he laboured at Bruges and Ghent; reputed to have been the first to employ oil colours, but the two were particularly noted for their skill in mixing colours. Their masterpieces are to be seen at Ghent, Bruges, Berlin, Paris and Antwerp, and in the National Gallery, London.

Eye, the organ of vision, and one of the most delicate parts of the bodily mechanism of nearly all living things. It is simple or compound, single or multiple, fixed or movable; it is sometimes deeply embedded in a bony socket, and sometimes projects from a sensitive and retractile horn. In general principles, however, the structure is similar. The eye system consists of the socket or orbit; the optic nerve; the globe or eyeball, with its contents; the external muscles which move it; the lachrymal or tear apparatus; the nerves and vessels which supply the parts and the mass of fatty and cellular substance which isolates and supports them.

The globe contains the parts directly concerned with vision, and consists of a sphere with three different coverings: the outer, or protective cornea and sclerotic, or tough fibre; the centre, partly muscular and partly a vascular pigment, the iris, and an inside nervous screen, the retina. Its firmness is due to the contained fluid matter with which the globe is filled. The pupil is a round hole in the middle of the iris, the coloured portion, and it is through this aperture that light enters as in the camera.

The optic nerve, having entered the interior of the eyeball, branches out into the fine membrane of the retina. The movements of the eyeball are controlled by six muscles, called recti and oblique. The eyelids which protect the eyeball consist of muscular fibre between a soft external skin and a smooth internal surface, and the action of closing them operates the lachrymal or tear-glands by which the surface of the eye is washed and irritating matter removed. The liquid is watery, containing a minute portion of salt ingredients in solution, and is called the aqueous humour. In the front portion of the eye is the crystalline lens, about one-sixth of an inch thick, of gelatinous substance, arranged onion like, in successive coats. It has the form and function of a double convex lens. The eyes of insects and some animals often consist of myriads of simple eyes grouped in one compound organ.



EYE

- (1) retina; (2) optic nerve; (3) lens; (4) cornea; (5) vitreous humour; (6) lower eyelid

The human eye is subject to a number of diseases, including in the very old occasional yellowing of the crystalline lens resulting in a lack of perception of blue. Faulty sight can take the form of astigmatism, myopia and hypermetropia.

Eyebright, a popular name for *Euphrasia* (q.v.), a British wild plant of the natural order Scrophulariaceae, so called on account of its former reputed as a cure for afflictions of the eye.

Eyemouth, fishing town of Berwickshire, shire, Scotland, 8 m. NW. of Berwick, with a good sheltered harbour. Pop. 2,300.

Eylau, a small town, 23 m. SE. of Königsberg, the scene of a great battle between Napoleon and the Russian and Prussian allies on February 8, 1807; the night was interrupted by darkness, under cover of which the allies retreated, having had the worst of the day.

Eyra (*Felis eyra*), a small wild weasel-like species of cat, reddish-brown in colour, found in S. America in thick forest areas.



EYRA

Eyre, Edward John, explorer and colonial governor, born in Yorkshire; emigrated to Australia in 1832; successfully explored the interior of SW. Australia in 1841; lieutenant-governor of New Zealand in 1846, governor of St. Vincent in 1854, and of Jamaica in 1862; recalled in 1865, and prosecuted for harsh treatment of natives, but was acquitted; his defence was championed by Carlyle, Ruskin and Kingsley; J. S. Mill supported the prosecution. (1815-1901).

Eyre, Lake, lake of S. Australia. With an area of 4,000 sq. m., in dry seasons it becomes a salt marsh.

Eyston, George Edward Thomas, Captain, British racing motorist and consulting engineer; an old Cambridge Rowing blue; served in the World War and was awarded the M.C.; after the War took to motor racing and secured the world's land speed record in Nov. 1937 with an average speed of 312.20 m.p.h. and again in Sept. 1938 at Bonneville Salt Flats, Utah, U.S.A., in his "Thunderbolt" at an average speed of 357.5 m.p.h. (1897-).

Ezekiel, a Hebrew prophet; a man of priestly descent, who was carried captive to Babylon 597 B.C., and was banished to Tel-abib, on the banks of the Chebar, where, with his family about him, he became the prophet of the captivity and the rallying centre of the Dispersion. Here he foretold the destruction of Jerusalem as a judgment on the nation, and comforted them with the promise of a new Jerusalem and a new Temple on their repentance and their return to the Lord. His prophecies (see the Book of Ezekiel in the Bible) arrange themselves in three groups—those denouncing judgment on Jerusalem, those denouncing judgment on the heathen, and those announcing the future glory of the nation.

Ezra, a Jewish scribe of priestly rank, and full of zeal for the law of the Lord and the restoration of Israel. He was a captive in Babylon before leading his fellow-exiles back to Jerusalem; author of a book of the Old Testament, which records two successive returns of the people from captivity and embraces a period ranging from 576 to 457 B.C., being a continuation of the book of Chronicles, its purpose being to relate the progress of the restored theocracy in Judah and Jerusalem, particularly as regards the restoration of the Temple and of the priesthood.

F

Faber, Frederick William, a Roman Catholic divine, and hymn-writer, born at Calverley, Yorkshire; at Oxford he won the Newdigate Prize in 1836; but under the influence of Newman joined the Church of Rome (1845). His fame chiefly rests on his fine hymns, *Pilgrims of the Night* being one of the most famous. (1814-1863).

Fabian, St., Pope from 236 to 251; martyred with St. Sebastian during the persecution of Decius.

Fabian Society, a Socialist organisation, founded in 1883, which "aims at the reorganisation of society by the emancipation of land and industrial capital from individual and class ownership, and vesting of them in the community for the general benefit"; has lecture-ships, and issues *Essays and Tracts*; Bernard Shaw, H. G. Wells and Sidney Webb (Lord Passfield), have been among its members; the name of the Society is derived from Quintus Fabius (Maximus Verrucosus), whose principle in war was wariness rather than violence.

Fabii, a celebrated family of ancient Rome. In 477 B.C. the Fabii, 308 in number, perished in combat with the Veii, leaving behind a single youth, Quintus, from whom descended subsequent generations of the name.

Fabius, Quintus (Maximus Verrucosus), a renowned Roman general, five times consul, twice censor and dictator in 221 B.C.; famous for his cautious generalship against Hannibal in the Second Punic War, harassing to the enemy, which won him the surname of "Cunctator," or delayer—whence the phrase "Fabian tactics." (303-203 B.C.).

Fabius, Quintus (Rullianus), a noted Roman general, five times consul and twice dictator; waged successful war against the Samnites in 323 B.C.

Fabius Pictor, the oldest prose-writer of Roman history. Only fragments now remain of his *Annals*, from which Livy and other writers drew some of their material. Lived about 225 B.C.

Fabliaux, a species of metrical tales of a light and satirical nature in vogue widely in France between the 12th and 14th Centuries; some of the stories may have been of Oriental origin, but they were infused with the French spirit of the times; La Fontaine, Boccaccio and Chaucer drew freely on them; they were marked by all the vivacity and perspicuity, if also lubricity, of their modern successors in the French novel, and comic drama.

Fabre, Jean Henri, French naturalist, was born at St. Léon, in Aveyron.

For a time a teacher in several French colleges, he eventually devoted himself to the study of insects, especially wasps, bees and spiders, whose habits and social life he described with remarkable minuteness in a number of widely popular books. (1823-1915).

Fabricius, Gaius, a Roman of the old school, distinguished for the simplicity of his manners and his incorruptible integrity; his name has become the synonym for a poor man who in public life deals honourably and does not enrich himself; was consul 282 B.C.



JEAN FABRE

Fabricius, or **Fabrizio**, Girolamo, a famous Italian anatomist, born in Aquapendente; became professor at Padua in 1562, where he gained a world-wide reputation as a teacher. Harvey declared that he got his first idea of the circulation of the blood from attending his lectures. (1537-1619).

Facciolati, Jacopo, Italian lexicographer, born at Torreglia; became professor of theology and logic at Padua; in collaboration with his pupil, Egidio Forcellini (1688-1768), began the compilation of a new Latin dictionary, which was completed and published after his death. This work has been the basis of all subsequent lexicons of the Latin language. (1682-1769).

Facial Angle, the angle formed by the angle formed by the drawing two lines, one from the nostrils to the ear, and the other from the front part of the upper jawbone to the most prominent part of the forehead. It is used by some anthropologists to indicate degrees of intelligence among members of the animal kingdom.

Factor, an agent employed to act in business on behalf of another person or concern. His usual duty is to receive consignments of goods, sell them and remit, either in money, bills or purchased goods, their value to his employer. He must preserve goods entrusted to him from damage. He is paid by factorage, or commission, and his function differs from that of a broker in that he has possession of the goods and his transactions are in his own name.

Factory Acts, came into being early in the 19th Century to regulate hours and conditions of labour. The first two Acts, those of 1802 and 1819, were directed chiefly against unhealthy conditions in cotton mills and glaring abuses of child labour. Numerous additional Acts, covering conditions in every kind of industry, were summarised in the Consolidating Acts of 1878 and 1901. Since then factory legislation has frequently been extended, and a new factory code came into operation in July 1938. This code (the Factories Act, 1937) controls in detail the conditions in which all factory work is done, and, for women and young persons, the maximum number of hours that they may work in any week and the maximum number of hours (overtime) in excess of the standard which they may work in any year. The hygienic requirements of the new code in regard to lighting, heating, ventilation, cleansing and so on are on the whole stricter than those of the older Acts. There are also many new and important requirements for safety.

Faculty, a branch of learning in a university. In former times the faculties were theology, law, medicine and art; to-day they comprise science, art, history, philosophy, etc. The term is also applied to some of the professions, and a group of professors is sometimes referred to as a faculty. The word is also used in church law, and means a licence, especially a marriage licence, authority for the granting of which is with the Court of Faculties of the Archbishop of Canterbury. An incumbent who wishes to make any alteration in a church must obtain a grant of Faculty by the Ordinary by applying to the bishop of the diocese.

Faed, John, a Scottish artist, son of a millwright, born in Kirkcaldy; was elected an A.R.S.A. in 1867, and R.S.A. in

1851; his paintings, such as the "Cottar's Saturday Night," are chiefly of humble Scottish life. (1819-1902).

Faed, Thomas, brother of the preceding, born in Kirkcubright; distinguished himself in his art studies at Edinburgh; went to London, where his pictures of Scottish life won him a foremost place among his contemporaries; was elected R.A. in 1864 and honorary member of the Vienna Royal Academy. (1826-1900).

Faenza, an old Italian cathedral town, 31 m. S.E. of Bologna; noted for its manufacture of majolica ware, known as "faience." Pop. 22,000.

Faërie Queene, the name of an allegorical poem by Edmund Spenser, in which twelve knights were, in twelve books, to represent as many virtues, described as issuing forth from the castle of Gloriana, Queen of England (Elizabeth), against certain impersonations of the vices and errors of the world. Such was the plan of the poem, but only six of the books were finished, and these contain the adventures of only six of the knights, representing severally Holiness, Temperance, Chastity, Friendship, Justice and Courtesy.

Fagus, a genus of trees of the natural species found in northern temperate regions, the principal species being *F. Sylvatica*, the beech tree native to Great Britain.

Fahrenheit, a

Gabriel Daniel, a celebrated German physicist, born in Danzig; spent much of his life in England, but finally settled in Holland; famous for his improvement of the thermometer by substituting quicksilver for spirits of wine and inventing a new scale, the freezing-point being 32° above zero and the boiling 212°. (1686-1736).

Faineants (i.e., the Do-nothings), the name given to the kings of France of the Merovingian line from 670 to 751, from Thierry III. to Childeric III., who were subject to their ministers, the mayors of the palace, who discharged all their functions.

Fainting, or *Syncope*, a loss of consciousness, less due to an insufficient supply of blood to the brain. The patient falls unless supported, and there is facial pallor, with a very feeble pulse and clamminess of the skin. The treatment of a fainting fit consists in laying the patient upon his back with his feet raised, loosening his clothing and giving him as much fresh air as possible by opening windows and doors. Smellingsalts may be applied to the nose, but brandy and other stimulants should never be administered so long as the patient is unconscious and unable to swallow.

Fair, a periodical meeting of buyers and sellers, originating in early times before town life, when people resorted to them to purchase goods required during the ensuing year. They were the principal markets until the 18th Century. In England they are diminishing in number and importance, and are now centres of open-air amusement at holiday festivals where coco-nut shies, swings, roundabouts and ingenious mechanical locomotion are provided. The famous annual fair at Nijni-Novgorod (Gorky) in Russia, now discontinued, used to attract visitors from all over the world and millions of pounds changed hands. To-day the fair is becoming merged more and more into the great industrial exhibition, such as that held in Paris in 1937 or Glasgow in 1938.



BEECH

Fairbairn, Andrew M., Scottish theologian born in Edinburgh; received the charge of the Evangelical Church at Bathgate, and subsequently studied in Berlin. In 1878 became Principal of the Airedale Congregational College at Bradford; was Muir Lecturer on Comparative Religions in Edinburgh University in 1881-1883, and Principal of Mansfield College, Oxford, in 1888-1909, author of *The Place of Christ in Modern Theology*, and several other scholarly works. (1838-1912).

Fairbanks, Douglas, American cinema actor. Born at Denver, Colorado, he started as a stage actor, but deserted the stage for the screen in 1915, soon making a name for himself for daring acrobatic feats in film work. He married Mary Pickford, the cinema star, in 1920, but was divorced, and in 1936 married Lady Ashley. (1883-).

Fairfax, Thomas, Lord, a distinguished Parliamentary general, nephew of Edward Fairfax (c. 1572-1635) of Denton, Yorks., the translator of Tasso; born at Denton; served in Holland, but in 1642 joined the Parliamentarians. After distinguishing himself at Marston Moor, he was appointed commander-in-chief of the New Model Army, and in 1645 routed the King at Naseby. Was superseded by Cromwell (1650) and retired into private life until Cromwell's death, when he supported the restoration of Charles II. to the English throne. (1612-1671).

Fair Head, or *Benmore*, a sheer promontory of columnar basalt, 636 ft. high, on the coast of Co. Antrim, Northern Ireland.

Fairies, imaginary supernatural beings of diminutive size, but of human shape, who are animated more or less by a spirit of mischief out of a certain loving regard for, or humorous interest in, the affairs of mankind, whether in the way of thwarting or helping. Belief in fairies, in one form or another, is found all over the world, but is strongest among primitive peoples. It is presumably as old as mankind itself, and in Christian communities is one of the surviving relics of paganism.

Fair Isle, a small island in the Shetland, lands, between the remainder of that group and the Orkneys. Fishing, sheep-rearing and knitting are carried on.

Fair Maid of Kent, the Countess of Salisbury, eventually wife of the Black Prince, so called from her beauty. (1328-1385).

Fair Maid of Norway, Margaret, daughter of Eric II. of Norway, and granddaughter of Alexander III. of Scotland; died on her way from Norway to succeed her grandfather on the throne of Scotland, an event which gave rise to a struggle for the crown by rival competitors. (1283-1290).

Fair Rosamond, Rosamond Clifford, the mistress of Henry II. According to the popular legend she was kept in a secret bower at Woodstock, in the heart of a labyrinth which only he could thread.

Faith, St., a virgin martyr who, in the 4th Century, was tortured on an iron bed and afterwards beheaded.

Faith Healing, the practice of curing bodily infirmities by faith in the Divine power alone, without the intervention of medicine. It is a form of mental suggestion, and can be traced back to long before Christian times. Several modern Christian sects incorporate a belief in faith healing among their tenets, taking as their example the miracles recorded in the Bible, and cases of miraculous healing are a common feature of "revival" movements. Religious pilgrimages, such as that to the shrine at Lourdes, and the practice of touching for the

King's Evil, which survived in England until the days of Queen Anne, are among many examples of the widespread belief in faith healing.

Faiyum, a fertile province of Upper Egypt, lies W. of the Nile, 65 m. from Cairo, is in reality a southern oasis in the Libyan desert, irrigated by means of a canal running through a narrow gorge to the Nile valley; its area is about 670 sq. m., a portion of which is occupied by a sheet of water, the Birket-el-Kerun (35 m. long), known to the ancients as Lake Moeris, by the shores of which stood one of the wonders of the world, the famous "Labyrinth." Also the name of a town in the province. Pop. (prov.) 554,000; (town) 63,000.

Fakenham, market town of Norfolk, Cromer, with a fine old church and a corn market. Pop. 3,000.

Fakir (*lit.* poor), a member of an order of monkish mendicants in India and adjoining countries who, from presumed religious motives, practice or affect lives of severe self-mortification. In many cases they are charlatans whose "holiness" is assumed for the purpose of preying upon the fears and reverence of the superstitious.

Falaba, fortified town of W. Africa in Sierra Leone, near the frontier of French Guinea, at a junction of trade routes. Pop. 6,000.

Falaise, Calvados, on the R. Ante, 22 m. SSE. of Caen; the birthplace of William the Conqueror. Pop. 7,000.

Falcon, the name of a genus of long-winged birds of prey belonging to the family Falconidae (which includes the Eagles and Hawks) distinguished by their habit of taking their quarry while it is in motion. They have great powers of flight, are muscularly very strong, and have keen sight. The species are numerous, and include the Peregrine Falcon, formerly abundant in Great Britain, the Merlin, Hobby and Kestrel.

Falconer, Hugh, British botanist and paleontologist, born in Forres, Elginshire; studied at Aberdeen and Edinburgh; joined the East India Company's medical service; made large collections of fossils and plants; became professor of Botany in Calcutta; was instrumental in introducing the cultivation of tea and cinchona into India, and discovered the asafetida plant; died in London. (1808-1865).

Falconer, William, Scottish poet, born in Edinburgh, the son of a barber; spent most of his life at sea; perished in the wreck of the frigate *Aurora*, of which he was purser; author of the well-known poem, *The Shipwreck*, inspired by his own experience of a wreck. (1732-1769).

Falconry, the practice of employing and capture of other birds on the wing, or sometimes of animals such as rabbits, hares, or in the East, where the sport probably originated, deer. It was a favourite pastime with all classes in the Middle Ages, but is seldom followed to-day. Hawks are trained as cyasses (*i.e.*, birds taken from the nest and reared in confinement) to attack their prey and return. Birds trained after capture are called passage hawks. The birds are hooded till the prey is sighted; after the kill they are recalled by the "lure" and re-hooded. **Shrikes** were often employed to reveal the presence of suitable prey, especially when herons were being hunted. *The Bats*



FALCON WEARING HOOD BEFORE RELEASE

of *St. Albans* (1481) is the earliest printed treatise on hawking in English.

Faldstool, the name of the folding stool, without arms used by a bishop when not installed in the throne of his own cathedral. Also the name of the small desk with kneeling-stool used by Anglican clergy especially when reading the litany.

Falernian Wine, a wine produced originally in Falernum, a mountain in Italy; often referred to in the *Odes* of Horace, in whose time the region of N. Campania in which it was produced was called Falernus Ager.

Faliero, Marino, a Venetian doge, clergyman, vated to that position from the army, in which he had served with distinction, having routed the Hungarians at Zara in 1346. Owing to an affront, he joined a conspiracy against the patricians, but was betrayed and condemned to death; is the subject of celebrated dramas by Byron and Swinburne. (1279-1355).

Falkenhayn, Erich von, German general; born at Burg Belchau, Thorn; entered Prussian army, 1880; served in the China expedition, 1900-1903; became a lieutenant-general, 1913, and Prussian War Minister, 1913-1915; succeeded von Moltke, 1914, as chief of the general staff; directed offensives against Russia and Serbia, 1915-1916; advised Verdun attack, which failed; surrendered Eastern command and office of chief-of-staff to Hindenburg, July 1916; subsequently commanded in Rumania and Caucasus. (1861-1922).

Falkirk, a town in Stirlingshire, Scotland, 26 m. NW. of Edinburgh, noted for its cattle-markets and the iron-works in its neighbourhood. Its port is Grangemouth, 3 m. to the NE. Wallace was defeated here in 1298 by Edward I., as were the British forces by the Young Pretender in 1746. Pop. 37,000.

Falkland, a royal burgh in Wiltshire, England, 10 m. SW. of Chipar. The ancient palace of the Stuart kings, here, rich in historical associations, was restored by the Marquis of Bute in 1888. Pop. 800.

Falkland, Lucius Cary, Viscount, soldier, scholar and statesman, son of Sir Henry Cary, Viscount Falkland; entered the service of the new Dutch Republic, but soon returned to England and settled at Great Tew, Oxfordshire, where he indulged his studious tastes; after joining Essex's expedition into Scotland, he sat in Parliament, and in 1612 became Secretary of State; suspicious of Charles's weakness and duplicity, he as much distrusted the Parliamentary movement, and fell at Newbury fighting for the king. (1610-1643).

Falkland Islands, a group of islands, 240 m. E. of Tierra del Fuego, forming a British Crown Colony; discovered in 1592 by Davis; annexed by France in 1764, but later purchased by Spain and finally ceded to Great Britain in 1771, by whom they were occupied in 1833 and used as a convict settlement until 1852; besides E. and W. Falkland there are upwards of 100 small islands, mostly barren; wheat and flax are raised, and whale and seal oil is exported, but sheep-farming is the main industry. The chief town is Stanley, in E. Falkland. Pop. 2,400.

Falkland Islands, Battle of the, fought on Dec. 8, 1914, in the early stages of the World War. A strong British squadron, under Vice-Admiral Sturdee, sent out to seek the five German cruisers under Admiral von Spee which had destroyed Admiral Craddock's squadron near Coronel, sighted them off the Falklands; in the ensuing action the *Scharnhorst*, flying von

Spee's flag, the *Gneissau*, the *Leipzig* and the *Nürnberg* were sunk. The *Dresden* escaped, but was destroyed the following March. British casualties were only 6 killed, but the Germans lost 2,000 men.

Fallacy, an error which arises from some neglect of the correct laws of reasoning and the study of which is a prominent part of the science of logic. Fallacies are generally divided into two classes, material and logical. The former are due to a misconception of the subject, commonly caused by prejudice or inaccurate observation, while the latter, known as the syllogism, arise from error or carelessness in expression or from a violation of the established rules of argument.

Fallopius, Gabriello, Italian anatomist, born at Modena; professor of Anatomy at Pisa and at Padua; the Fallopiian tubes which connect the ovaries with the uterus, first accurately described by him, are called after his name, as also is the duct which transmits the facial nerve after it leaves the auditory nerve. (1523-1562).

Fallow, land in which no seed is sown for a year, in order that the soil may be left exposed to the disintegrating action of the atmosphere and thereby partly recover its fertility. Rotation of crops and scientific manuring have largely superseded fallowing in recent times.

Fallow Deer (*Cervus dama* or *Dama dama*), the name of a member of the deer family native to S. Europe, N. Africa, Asia Minor, etc., and kept and bred in English parks. Its hide bears white spots in the summer, though it is a uniform lightish brown in winter.

Fall River, a city of Massachusetts, U.S.A., the centre of the cotton-manufacturing industry. Pop. 115,000.

Falmouth, a seaport of Cornwall, England, on the estuary of the Fal, 18 m. N.E. of the Lizard; its harbour, one of the finest in Great Britain, has repairing yards and two graving-docks. St. Mawes Castle and Pendennis Castle date from Tudor days. Fishing is actively engaged in, and there are exports of copper, granite and china clay. Pop. 13,000.

False Pretences, or the obtaining by a false representation by words, writing or conduct of a past or existing fact, is a misdemeanour. To secure a conviction the prosecution must prove that the property was obtained by means of the false pretence, and also the intent to defraud. Obtaining money or goods on the promise of some future act or conduct that is not intended to be kept does not by itself constitute false pretences.

Falsetto, an Italian term, signifying a false, or artificial voice. It is produced by contracting the ligaments of the glottis, the voice being thus raised about an octave higher.

Falster, the name of a Danish island in the Baltic Sea, S. of See, very fertile. Pop. 50,000.

Famagusta, seaport of Cyprus, on the E. coast, the ancient Arsinoe. Its walls, fine Gothic cathedral (used as a mosque) and remains of a castle are notable. A railway connects the town with Nicosia. Pop. 8,000.

Familists, or The Brotherhood of Love, a sect founded in Holland by Hendrick Nicolaes (d. c. 1580), which affected to love all men as brothers and dispensed with dogma and ceremony. Introduced into England about 1552, the teaching still had adherents a century-and-a-half later.

Family, the social unit of a father, mother and their children. The earliest

family unit was based on relationship to the mother—viz., matriarchy—still seen in the Nayar of Malabar, among whom fatherhood is restricted simply to procreation. With this may be compared the Tibetan polyandric custom, where a woman lives with a number of brothers, each of them her husband, while the eldest has the authority of a father. The relative numbers of women and men affected family relationships. Polygamy is a natural phenomenon where women outnumber men, and this state exists to-day in Ashanti and Australian aboriginal tribes. A true patriarchal unit was the Roman family. By this time women had acquired a lower status than men, and fatherhood took to itself a certain dignity, the wife being included among her husband's property. He was the final arbiter in family affairs. In civilised countries to-day the family is based upon monogamy, one husband and one wife.

Famine, a shortage of food resources whereby the inhabitants of a district are threatened with starvation. The condition is caused usually by drought, floods or destructive storms, while crop diseases, invasion by pests, such as the locust, and adverse economic conditions following war are other contributory causes. Formerly, famine inevitably followed a series of droughts, but modern transport and scientific irrigation have done much to minimise the danger. Famine is especially prone to occur in primitive or only partially-developed countries such as China and India, both of which have been repeatedly ravaged by famine of the severest kind.

Fan, a light hand implement used to cause the face.

There are two kinds: the folding and non-folding. The latter, frequently made of feathers or a screen of parchment or fabric, were known to the ancients, especially in Egypt, India, China and the Near East, and were commonly used as religious or ceremonial emblems; when of large size, they were usually fixed on a pole. Folding fans were invented by the Japanese in the 7th Century and occupy an important place among their customs and culture. They became popular in Italy and Spain in the 16th Century; and Paris soon took a lead in their manufacture, carrying them to the highest pitch of artistic perfection in the reign of Louis XIV.

Fanariots, the descendants of the Greeks of noble birth who remained in Constantinople after its capture by Mohammed II. in 1453, so called from Fanar, the quarter which they inhabited; they rose at one time to great influence in Turkish affairs.

Fandango, a lively and popular Spanish dance, especially in favour among the Andalusians; is in 3-4 or 6-8 time, and is usually danced to the accompaniment of guitars and castanets.

Fanning Island, British Island of the Gilbert and Ellice Island Colony; it is a cable station; guano and mother-of-pearl are produced. Area 15 sq. m. Pop. (with Washington I.) 390.

Fans, an aboriginal tribe dwelling between the Gaboon and Ogowe Rrs., in western equatorial Africa; they are skilful workers in linen and pottery, brave and intelligent and of good physique, but are addicted to cannibalism and fetish-worship.



HEAD OF AN
ANCIENT EGYPTIAN
FAN

Fanshawe, Sir Richard, diplomatist and poet, born at Ware Park, Hertford; entered the Inner Temple, and after a Continental tour became attached to the English embassy at Madrid; sided with the Royalists on the outbreak of the Civil War; was captured at the Battle of Worcester, but escaped and shared the exile of Charles II.; on the Restoration negotiated Charles's marriage with Catharine of Braganza and became ambassador at the courts of Spain and Portugal; translated Camoens' *Lusiad* and other romantic and classical poetry. (1608-1666).

Fantasia, a musical composition which does not follow the regular divisions of musical form, but is reminiscent of an improvisation which the word "fantasia" formerly implied; also, a selection of popular tunes from an opera, etc., incorporated into a continuous instrumental piece.

Fantis, an African tribe of the Gold Coast, enemies of their conquerors, the Ashantis; fought on the side of the British in the Ashanti War (1873-1874), but although of strong physique, proved cowardly allies.

Farad, the unit of electrical capacity named after Faraday; a condenser has a capacity of one farad when a charge of one coulomb increases its potential by one volt; the microfarad is the millionth part of a farad.

Faraday, Michael, a British chemist and physicist, born at Newington Butts, near London, of poor parents; received a meagre education, and at 13 was apprenticed to a bookbinder, but devoted his evenings to chemical and electrical studies, and became a student under Sir H. Davy, who, quick to detect his ability, installed him as his assistant; in 1827 he succeeded Davy as lecturer at the Royal Institution, and became professor of Chemistry in 1833; was pensioned in 1835, and in 1858 was allotted a residence at Hampton Court; in chemistry he made many notable discoveries, e.g., the liquefaction of chlorine, while in electricity and magnetism his achievements cover the entire field of these sciences, and are of the first importance. (1791-1867).

Farce, a form of drama consisting of an absurd kind of comedy. Originally the farce was a religious play in which the ecclesiastical Latin tongue was "stuffed" with interpolations in the common language (Latin, "farcire," to stuff).

Farcy, a form of glanders, a serious contagious disease affecting horses, asses and mules. The term is usually restricted to glanders of the skin, and is characterised by the occurrence of "farcy buds," or hard, prominent swellings.

Fareham, a market town of Hampshire, England, 5 m. NW. of Portsmouth. A flourishing seaport in the Middle Ages, it now has manufactures of bricks, tiles, rope and leather. Pop. 11,500.

Farewell, Cape, southernmost point of Greenland, on a small island, 1,000 ft. in altitude. Swift currents and drifting ice make navigation dangerous.

Farinaceous Foods, those starch, such as the potato, peas and beans and the cereals, such as wheat, barley and rice. Dried foodstuffs in the same class are tapioca, sago and arrowroot. Maize contains most starch of the grain foods, and though it is not popular as a staple food, it is used in the form of cornflour. These foods have a dietetic value, supplying heat and energy without forming flesh, unless taken immoderately.

Faringdon, a market town of Berkshire, shire, England, 17 m. SW. of Oxford, the centre for a rich agricultural district; it has a fine old church. Pop. 3,000.

Farm, a tract of land, used for pasturage, or tillage (see Agriculture), together with buildings usually comprising a farm-house, dwellings for the labourers and out-buildings such as barns, stables, byres, sheds and pigsties. The farmer is either the owner of the land or the tenant, and in European farms rent is often paid in the form of a proportion of the produce. The rights of a farm-tenant are embodied in the Agricultural Holdings Act of 1923. A prominent feature of the most modern farms is the extensive use of machinery, often electrically operated, for such tasks as milking, haymaking and the cutting, grinding and crushing of food for livestock. Motor power, too, has largely superseded horses for transport and tillage.

Farman, Henri, French airman. Started

to cycle and motor

racing. In 1907 he

took up flying, and

won several prizes

for record flights.

During the World

War he co-operated

with his brother

Maurice in produc-

ing airplanes for the

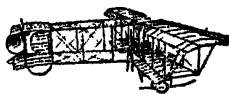
French and British

armies. One of the

most pioneers in the

development of airplanes,

especially biplanes. (1874-



EARLY FARMAN
BIPLANE

Farnborough, urban district of Hampshire, shire, England, 2½ m. N. of Aldershot. In the neighbourhood are an R.A.F. aerodrome and part of Aldershot camp, and at Farnborough Hill is the mausoleum of Napoleon III., the Prince Imperial, and Empress Eugénie, who dwelt here. Pop. 16,000.

Farne, or **Ferne Isles**, The, also called the Staples, a group of 17 islets 2 m. off the N.E. coast of Northumberland, many of which are mere rocks visible only at low water. They are marked by two lighthouses, and are associated with a heroic rescue by Grace Darling in 1838; on House Isle are the ruins of a Benedictine priory.

Farnese, the surname of a noble family celebrated in Italian history. The Farnese Palace at Rome, a magnificent example of Renaissance architecture, was largely the creation of Michelangelo; it now houses the French embassy.

Farnese, Alessandro, attained the papal chair as Paul III. in 1534; the excommunication of Henry VIII. of England, the founding of the Order of Jesuits (1540), and the convocation of the Council of Trent (1542), mark his term of office. (1468-1549).

Farnese, Pietro Luigi, a natural son of Pope Paul III., who bestowed honours and estates on him, including the duchy of Parma; he was assassinated in 1547 after a life of debauchery, and is remembered chiefly for the prominent but unenviable part he plays in Benvenuto Cellini's *Autobiography*.

Farnham, a market town of Surrey, England, 10 m. W. of Guildford; the birthplace of William Cobbett, whose grave is here. It has an ancient castle. Pop. 16,000.

Farnol, John Jeffery, novelist, was born in Birmingham, entered an engineering shop, married at 20 and went to America; scene-painter, Astor Theater, New York; wrote fiction, at first for English and American magazines. Author also of popular novels including *The Broad Highway*, *The Amateur Gentleman*, *Chronicles of the Imp*, *Believe the Smith*. (1875-).

Farnworth, urban district of Lancashire, England, 2½ m. SW. of Bolton. Cotton-spinning is carried on and there are collieries, ironworks and brick-works. Pop. 22,000.

Faro, a card game popular in America, and usually played for stakes. During the Louis XIV. period in France it was prominent among card games, and the pack contained a picture of King Pharaoh, hence the word Faro.

Faroe Islands (i.e., sheep islands), a group of 22 islands of basaltic formation, about 200 m. NW. of the Shetlands; originally Norwegian, they now belong to Denmark; agriculture is limited, and fishing and sheep-farming chiefly engage the natives; there is an export trade in wool, fish and wild-fowl feathers. The people, who still speak their old Norse dialect, although Danish is the language of the schools and law courts, are Lutherans, and enjoy a measure of self-government. They send a representative to the Danish Rigsdag. Area 540 sq. m. Pop. 25,700.

Farouk, King of Egypt, succeeded his father, King Fuad on the latter's death in 1936. (1920-).

Farquhar, George, comic dramatist, born in Londonderry; early famous for his wit, of which he soon gave abundant proof in his dramas, *Love and a Bottle* being his first, and *The Beaux' Stratagem* his last, written on his deathbed; died young; he commenced life on the stage, but threw up the profession in consequence of having accidentally wounded a brother actor while feigning. (1678-1707).

Farr, William, statistician, born in Kenley, Shropshire; studied medicine, and used in London; obtained a post in Registrar-General's office, and rose to be head of the statistical department; issued various statistical compilations of great value for purposes of insurance. (1807-1883).

Farragut, David Glasgow, a famous American admiral, of Spanish extraction, born at Knoxville, Tennessee; entered the navy as a boy; rose to be captain in 1855, and at the outbreak of the Civil War attached himself to the Union; distinguished himself by his daring capture of New Orleans; in 1862 was created rear-admiral, and two years later gained a signal victory over the Confederate fleet at Mobile Bay; was raised to the rank of admiral in 1866, being the first man to hold this position in the American navy. (1801-1870).

Farrar, Frederick William, a celebrated divine and educationist, born at Bombay; graduated with distinction at King's College, London, and at Cambridge; was ordained in 1854, and became headmaster of Marlborough College; was for some years a select preacher to Cambridge University, and held successively the offices of honorary chaplain and chaplain-in-ordinary to the Queen; became Canon of Westminster, Rector of St. Margaret's, archdeacon, chaplain to the House of Commons, and Dean of Canterbury; his many works include the school-plays *Eric*, or *Little by Little*, and *St. Winifred's*, philological essays, and *Lives of Christ* and *St. Paul*, besides the *Early Days of Christianity*, and several volumes of sermons. (1831-1903).

Farren, Elizabeth (Countess of Derby), actress, daughter of a surgeon and apothecary of Cork who spelt his name Farran and took to the stage. She acted from childhood; first London appearance, Haymarket, 1777, as Miss Hardcastle in Goldsmith's *She Stoops to Conquer*. One of her greatest performances was as Lady Townly in Vanbrugh's *Provoked Husband*. She married, in 1797, the twelfth Earl of Derby. (c. 1750-1829).

Farriery, the process of shoeing horses; a horse's hoofs are composed of a brittle, horny substance which requires protection from the effects of hard wear and certain climatic conditions. The hoof is first pared

level and a shoe fitted while it is red hot and fixed with a minimum of short, thick nails. The art is important, as a badly fitting shoe will result in injury to the horse.

Farthing, the smallest English copper coin, four of which equal in value the penny, and in circulation since 1672. Actually they are made of bronze, and until 1897 were a bright golden colour when new, but confusion with half-sovereigns led to their being darkened before issue.

Farthingale, a loop-shaped frame of wood or whale bone from which hung the voluminous skirt worn by women during the 17th Century. From it the crinoline developed. The hoop, the last remains of the farthingale, went out of fashion during the reign of George IV.

Fascies, a bundle of rods bound round the hectors before the Roman magistrates in symbol of their authority at once to scourge and decapitate. The same symbol has been adopted, and is used as the emblem of the Fascist Party in modern Italy.

Fascism, "the doctrine by which the State is centred in one person who is the complete master." This definition was once used by Benito Mussolini (q.v.), founder of the movement in Italy. In 1919 the nucleus of the Fascist party appeared in Milan, called the Fascio di Combattimento (Union of Combat). Their emblem was an axe, representing authority—i.e., the State—and a bundle of rods, such as was carried by the hectors of the Roman Empire, to imply union, while the Fascist arm salute was also derived from early Roman history. The uniform shirt was inspired by Garibaldi (q.v.) but the colour became black, since the original red had become associated with communism. By 1922 Mussolini had overcome communist opposition and the King called upon him to form a Government.

Fascism is intensely nationalist, the State is to be the only true expression of the individual. Opponents were punished or compelled to escape abroad and Parliament was displaced by the Fascist Grand Council. The people were organised into Syndicates or Guilds, which replaced the former trades unions. Strikes and lock-outs were declared illegal, and all disputes were to be settled by an Adjudicating Board, whose legal organisations were declared in 1932 to be authorised "to carry out the will, not of the membership, but of the State, which makes use of the organisation."

Great changes were made. Agriculture was fostered in order to help Italy become self-sufficient, and a treaty was made with the Pope whereby greater harmony resulted between Church and State. Unemployment was attacked by a great public works scheme and new roads, electrification of railways and land drainage were undertaken.

Economically Fascism may be called State-controlled capitalism, since the State reserves the right to intervene in the process of distribution, and limit the employment of the means of production, in the public interest, and though private ownership is allowed, it is liable to be superseded by the State in individual cases where it is not being administered to a maximum of efficiency. The banks, too, while under the virtual control of their own bankers, are responsible to the State, and are not free to operate without State approval. The economic nationalism of Fascist Italy is seen in its attempts to secure greater colonising development. Its ambition is the growth of a great Italian empire and the conquest of Abyssinia is one step towards it.

Fashoda, town on the Upper Nile occupied in July, 1898, by a French force under Major Marchand. The British demanded their evacuation, and the incident nearly resulted in war before diplomatic exchanges led to the retirement of the French in December.

Fasti, the name given to days among the Romans on which it was lawful to transact business before the prætor; also the name of books among the Romans containing calendars of times, seasons and events.

Fasting, the act of abstaining either completely or partially from food and drink, usually practised as a part of religious observance. Many religious penances include partial fasting. Catholics, for example, eat no meat on a Friday and during Lent (q.v.) luxury foods such as sugar, etc., are given up. The practice is an ancient one, and was common during the Assyrian and Greek periods. The Day of Atonement is observed amongst the Jews by fasting. Fasting is also practised by Mohammedans (during the month of Ramadan) and in other religions. Fasting is also sometimes recommended by practitioners in the cure of certain gastric ailments.

Fastnet, a rocky islet off the S. coast of Co. Cork, Ireland (Elre), with a lighthouse.

Fastolf, Sir John, a distinguished soldier of Henry V.'s reign, who with Sir John Oldcastle shares the doubtful honour of being the prototype of Shakespeare's Falstaff, but unlike the dramatist's creation, was a courageous soldier, and won distinction at Agincourt and at the "Battle of the Herrings." After engaging with less success in the struggle against Joan of Arc, he returned to England and spent his closing years in retirement at Norfolk, his birthplace. (1378-1459).

Fatalism, a doctrine in philosophy, and prominent in the Mohammedan faith, that man is the subject of his destiny and to struggle against it is futile. Various forms of fatalism appear in the philosophy of Spinoza, Hegel and Herbert Spencer.

Fata Morgana, a mirage occasionally observed in the Strait of Messina, in which, from refraction in the atmosphere, images of objects, such as men, houses, trees, etc., are seen from the coast under or over the surface of the water. Literally, in Italian, the words mean Fairy Morgana, the reference being to a lady of Arthurian legend who was the pupil of the wizard Merlin.

Fates, *The*, in the Greek mythology, the three goddesses who presided over the destinies of individuals—Clotho, Lachesis and Atropos. Of these three sisters, Clotho the youngest held the distaff, while Lachesis spun the thread of human life and destiny, and Atropos with a pair of scissors cut the thread of life.

Father, in English law, the natural guardian and custodian of his children and responsible person for their maintenance. He may be deprived of the custody on a divorce or on the application of the mother if it appears to the courts in the interests of the child to do so.

Fathers of the Church, the early teachers of Christianity and founders of the Christian Church, consisting of five *Apostolic Fathers*—Clement of Rome, Barnabas, Hermes, Ignatius and Polycarp, and of nine in addition called *Primitive Fathers*—Justin, Theophilus of Antioch, Irenæus, Clement of Alexandria, Cyprian of Carthage, Origen, Gregory Thaumaturgus, Dionysius of Alexandria, and Tertullian. The dis-

tinctive title of *Apostolic Fathers* was bestowed upon the immediate friends and disciples of the Apostles, while the *patristic* period proper may be said to commence with the 2nd Century, but no definite date can be assigned as marking its termination, some closing it with the deaths of Gregory the Great (604) and John of Damascus (c. 750), while Catholic writers bring it down as far as the Council of Trent (1545-1563). Discarded among Protestants, the Fathers are regarded by Catholics as decisive in authority on points of faith, but only when they exhibit a unanimity of opinion.

Fathom, a measure of 6 ft. used in originally an Anglo-Saxon term for the distance stretched by a man's extended arms; is sometimes used in mining operations.

Fatigue, a term in physiology denoting loss of functional energy due to muscular strain. In this condition the cells of the muscles exude waste which poisons the system. Recovery follows a period of rest. Metals also suffer from a condition called fatigue. A piston-rod, for example, is constantly in a state of strain due to alternate tension and compression, and the accumulated result will lead to the rod-breaking. Similarly an axle reaches breaking-point as the result of the innumerable shocks it suffers, though each one is less than its immediate ability to withstand.

Fatima, (1) the favourite daughter of Mohammed, one of the perfect women of Islamic tradition. (2) the last of Bluebeard's wives, and the only one who escaped being murdered by him.

Fatimides, a Mohammedan dynasty of caliphs and ruled N. Africa and Egypt, and later Syria and Palestine, between the 10th and 12th Centuries inclusive; they derived their name from the claim (now discredited) of their founder, Obaidallah al-Mahdi, to be descended from Fatima, daughter of Mohammed and wife of Ali; they were finally expelled by Saladin in 1169.

Fats, compounds known chemically as glyceryl esters of fatty acids; when split up by treatment with superheated steam they yield glycerol (glycerine) and the acid—e.g., stearic acid, palmitic acid, oleic acid. One molecule of glycerol can react with either one, two or three molecules of a fatty acid, and the esters so formed are differentiated by such names as monostearin (glyceryl monostearate), distearin (glyceryl distearate) and tristearin (glyceryl tristearate); the tri-compounds are the commonest, and the most important of them are tristearin, tripalmitin and triolein.

Fats are essential constituents of food, and have many industrial applications—e.g., in soap-making (see Soap). Oils of a vegetable and animal origin resemble fats in being composed of carbon, hydrogen and oxygen, and in general structure, but differ from them in containing comparatively less hydrogen. They can, however, be easily converted into fats by gently heating them in a current of hydrogen in the presence of nickel shavings as a catalyst; this process is known as the hardening or hydrogenation of oils, and is extensively practised on the commercial scale for making artificial lard, etc., particularly when the market price of fats is high.

Faucit, Helena Saville, a famous English actress; made her debut in London (1836), and soon won a foremost place amongst English actresses by her powerful and refined representations of Shakespeare's heroines under the management of Macready; she retired from the stage in 1861 after her marriage with Theodore Martin; in 1885 she published studies on *Some of Shakespeare's Female Characters*. (1817-1898).

Fault, a term in geology applied to an interruption in certain of the strata of rocks of the earth's crust, or to the result of a fracture of the strata when the strata on one side is pushed up or has sunk; the resulting ridge being planed away by denudation.



FAULTS (GEOLOGICAL)

They result from continuous strain in the crust of the earth, and occur in the sedimentary or stratified rocks.

Fauna, a term used by naturalists to denote the representatives of the animal kingdom found in a particular district. Terrestrial fauna is that of the earth, and marine fauna that of the sea.

Fauns, divinities of the woods and fields of flocks, among the Romans, and guardians of flocks.

Faunus, a god, grandson of Saturn, who figures in the early history of Latium, first as the god of fields and shepherds, and secondly as an oracular divinity and founder of the native religion, afterwards identified with the Greek Pan.

Faure, François Félix, President of the French Republic, born in Paris; carried on business in Touraine as a tanner, but afterwards settled in Havre and became a wealthy shipowner. He served with distinction as a volunteer in the Franco-German War; entered the Assembly in 1881, where he held office in various Cabinets; was elected President in 1895. (1841-1899).

Faust, Johannes. See *Fust*.

Faust, or Doctor Faustus, a reputed professor of the black art, a native of Germany, who flourished at the end of the 15th Century and the beginning of the 16th Century, and who is alleged to have made a compact with the devil to give up to him body and soul in the end, provided he endowed him for a term of years with power to miraculously fulfil all his wishes. Under this compact the devil provided him with a familiar spirit, called Mephistopheles, attended by whom he traversed the world, enjoying life and working wonders, till, the term of the compact having expired, the devil appeared and carried him off amid display of horrors to the abode of penal fire. This myth, which has been subjected to manifold literary treatment, has received its most significant rendering at the hands of Goethe, such as to supersede and eclipse every other attempt to unfold its meaning. It is presented by him in the form of a drama, in two parts of five acts each, published in 1808 and 1832 respectively. Marlowe treated the theme in *Dr. Faustus* and Gounod did a celebrated operatic version.

Faustina, Annia Galeria, called Faustina, Senior, wife of Antoninus Pius, died three years after her husband became emperor. (104-141).

Faustina, Annia, Junior, wife of the Emperor Marcus Aurelius, daughter of the preceding. Both she and her mother are represented by some historians as profligate and unfaithful, and quite unworthy of the affection lavishly bestowed upon them by their husbands and the institutions for poor girls (called *Faustulinæ*) founded in their honour. (c. 130-175).

Favart, Charles Simon, French dramatist and composer of operas, born in Paris, where he became director of the Opéra Comique. During a temporary absence from Paris he established his Comedy Company in the camp of Marshal Saxe during the Flanders campaign. His memoirs and correspondence give a bright picture of theatrical life in Paris during the 18th Century. (1710-1792).

Faversham, a riverport of Kent, England, an ancient town with remains of an abbey founded by Stephen. It has oyster-fisheries, powder-mills and breweries, and trades in coal, timber, fruit and hops. Pop. 10,000.

Favre, Jules Claude Gabriel, a French Lyons; called to the Paris Bar in 1830; a strong Republican, he joined the Revolutions of 1830 and 1848; held office as Minister of the Interior in the New Republic, and, disapproving of the *coup d'état*, resumed practice at the Bar; defended the Italian conspirator Orsini and in 1870, on the dissolution of the Empire, became Minister of Foreign Affairs; mistakes in his negotiations with Bismarck led to his resignation and resumption of his legal practice. (1809-1880).

Fawcett, Henry, statesman and Political economist, born at Salisbury. Though blind, it was his early ambition to enter the arena of politics, and he devoted himself to the study of political economy, of which he became professor at Cambridge. Entering Parliament, he became Postmaster-General under Gladstone in 1880. He wrote and published works on Political Economy. (1833-1884).

Fawcett, Dame Millicent Garrett, G.B.E. feminist pioneer, daughter of Newson Garrett, merchant, of Aldborough, Suffolk, and sister of Elizabeth Garrett Anderson. In 1867 married Henry Fawcett and began her campaign for women's suffrage which culminated in 1918 in the Representation of the People Act giving voting rights to some six million women. After the South African War she was sent out to report on concentration camps, concerning which there had been much criticism. After the Great War she was made a D.B.E., and a G.B.E. in 1925. (1847-1929).

Fawkes, Guy, a notorious English conspirator, born of a respected Yorkshire family; having spent a slender patrimony, he joined the Spanish army in Flanders; was converted to the Catholic faith; and on his return to England allied himself with the conspirators of the Gunpowder Plot (q.v.), and was arrested in the cellars of the House of Commons when on the point of firing the explosive; was tried and executed. (1670-1606).

Fayal, (q.v.) a small island among the Azores, and belonging to Portugal; Horta, with an excellent bay, is its chief town.

Fayolle, Marie Émile, Marshal of France, born at Le Puy, an artillery officer who had retired as brigadier-general before the outbreak of the World War, but was recalled and made a divisional commander and later an army commander. Was sent with French forces to the help of Italy after the Italian reverse at Caporetto, 1917. Afterwards played a prominent part on the Western front. Created Marshal in 1921. (1852-1928).

Feast, Jewish, of Dedication, a feast in commemoration of the purification of the Temple and the rebuilding of the altar by Judas Maccabeus in 164 B.C., after profanation of them by the Syrians; of the Passover, a festival in April on the anniversary of the exodus from Egypt, which lasted eight days, the first and the last days of solemn religious assembly; of Pentecost, a feast celebrated on the fiftieth day after the second of the Passover, in commemoration of the giving of the law on Mount Sinai; both this feast and the Passover were celebrated in connection with harvest, what was presented in one in the form of a sheaf being in the other presented as a loaf of bread; of Purim, a feast in commemoration of the preservation of the Jews from the wholesale threatened

massacre of the race in Persia at the instigation of Haman; of *Tavernacles*, a festival of eight days in memory of the wandering tent-life of the people in the wilderness, observed by the people dwelling in bowers made of branches erected on the streets or the roofs of the houses; it was the Feast of Ingathering as well.

Feathers, an epidermic structure forming the covering of birds, consisting of a long, central shaft branching from which are a series of barbs. The axis is in two parts: the base, a quill, which is a hollow, horny tube partly inserted in the skin; and the upper portion, the tapering shaft.

Featherstone, a colliery town of in the W. Riding, 2 m. SW. of Pontefract. Pop. 15,000.

Featherweight, in racing, the lightest weight allowed under the rules to be carried by a horse in a handicap. In boxing a featherweight must not be over 9 stone in weight.

Febrifuge, a drug or cooling drink taken for the purpose of driving out or allaying fevers, the more common effect of which is to increase perspiration and so reduce the temperature. Quinine, salicylic acid and antipyrin are typical febrifuges or "antipyretics."

February, the second month of the year, was added along with January to the end of the original Roman year of 10 months by Numa; derived its name from a festival offered annually on the 16th day to Februs, an ancient Italian god of the nether world; was assigned its present position in the calendar by Julius Caesar, who also introduced the intercalary day for leap-year.

Fécamp, a seaport and fishing town in the dept. of Seine-Inférieure, 25 m. NE. of Havre; has a fine Gothic Benedictine church, a harbour and lighthouse; exports the celebrated Benedictine liqueurs. Pop. 17,000.

Fechner, Gustav Theodor, physiologist and psychophysicist, born in Gross-Särchen, in Lower Lusatia; became professor of Physics in Leipzig, but afterwards devoted himself to psychology; laid the foundations of the science of psychophysics in his *Elements of Psychophysics*; wrote besides on the theory of colour and galvanism, as well as poems and essays. (1801-1887).

Federalist, a name in the United States for a supporter of the Union and its integrity as such; a party which was formed in 1788, but dissolved in 1820; has been since applied to a supporter of the integrity of the Union against the South in the late Civil War.

Federal Reserve System, introduced in U.S.A. by Congress in 1913 by way of reforming American finances and freeing the banking world there from Wall Street's control. Under the system there are some 12 Federal Reserve banks vested with powers in their several areas, somewhat analogous to those possessed in England by the Bank of England. Every national bank is compelled to join the system. Each of the regional banks has large Government deposits; each issues paper currency.

Federation, a union of States where the members retain autonomy in certain specified matters, but matters of common interest (e.g., foreign relations) are absolutely under the control of a Federal Government. It is not a loose combination from which any member can withdraw at will, nor is it a union in which local autonomy is subordinated to an overshadowing central government. Canada was the first free autonomous federation within the British Empire acknowledging common allegiance

to the Crown. The Union of South Africa also is a federation, but the ordinances of the constituent provinces are subject to the veto of the Central Government. A Confederation, as opposed to a federation, insists on the individual independence of each State or society in the common union, and denies the supremacy of the common or Central Government. of the loose German Confederation established at the Vienna Congress in 1815. The American Civil War, indeed, was fought not merely on the slavery issue, but also on the greater question whether the Union should be that of confederate or federated States. See also Confederation.

Federation of British Industries ("F.B.I."), a voluntary association of manufacturers and producers for the promotion of their several and mutual interests and for the encouragement and development generally of British manufactures. It was established in 1916 and incorporated in 1921. It publishes most useful economic supplements, a "business barometer" and lists of British manufacturers. It keeps a vigilant eye on all changes in customs imposts or duties and fiscal changes, whether in England or abroad. Headquarters are in Westminster.

Feisal, King of Iraq, was born at Taif, Ibn Ali, first King of the Hejaz; educated at Constantinople. In 1910 assisted the Turks in quelling tribes of Asir; in 1913 became deputy for Jeddah in the Turkish Parliament. Escaped from Damascus, 1916, and assumed command of rebels at Medina. With the assistance of T. E. Lawrence, he prepared the way for the British army in Palestine and Syria. Proclaimed King of Syria, 1920; but deposed by the French. The British Government in 1921 made him King of Iraq. (1885-1933).



KING FEISAL

Felix, the name of five Popes: F. I., St. Felix, Pope from 269 to 274, said to have been a victim of the persecution of Aurelius; F. II., Pope from 356 to 357, the first antipope, having been elected in place of the deposed Liberius who had declined to join in the persecution of Athanasius, was banished on the restoration of Liberius; F. III., Pope from 483 to 493, during his term of office the first schism between the Eastern and Western Churches took place; F. IV., Pope from 526 to 530, was appointed by Theodoric in face of the determined opposition of both people and clergy; F. V., Pope from 1439 to 1449.

Felix, Antonius, a Roman procurator of Judea in the time of Claudius and Nero; is referred to in Acts xxiii. and xxiv. as having examined the Apostle Paul and listened to his doctrines; was vicious in his habits, and formed an adulterous union with Drusilla, said by Tacitus to have been the granddaughter of Antony and Cleopatra; was recalled in A.D. 62.

Felixstowe, a popular seaside resort of Suffolk, England, 12 m. SE. of Ipswich, with a naval wireless station and an H.A.F. seaplane station. Pop. 12,000.

Fell, John, a celebrated English divine; Royalist in sympathy, he continued throughout the puritan ascendancy loyal to the English Church, and on the Restoration became Dean of Christ Church, Oxford, and a royal chaplain; was a good and charitable man, and a patron of learning; in 1676 was raised to the bishopric of Oxford; was the object of the well-known epigram, "I do not like thee, Dr. Fell. The reason why I cannot tell." (1625-1696).

Fellah, the name applied contemptuously by the Turks to the agricultural labourer of Egypt. The Fellahin (pl. of Fellah) comprise about three-fourths of the population. They are of good physique, and capable of much toil, but are, despite their intelligence and sobriety, lazy and immoral. Girls marry young and the children grow up amidst the squalor of their mud-built villages. Their food is of the poorest, and scarcely ever includes meat. Tobacco is their only luxury.

Felling, a colliery town of Durham, England, a SE. suburb of Gateshead. Pop. 27,000.

Fellowship, a collegiate term for a status in many universities which entitles the holder (a Fellow) to a share in their revenues, and in some cases to certain privileges as regards apartments and meals in the college, as also to a certain share in the government. Formerly Fellowships were usually life appointments, but are now generally for a prescribed number of years, or are held during a term of special research. The old restrictions of celibacy and religious conformity have been relaxed.

Felo-de-Se, or **Self-murder**, in English law the crime which a man at the age of discretion and of a sound mind commits when he takes away his life.

Felony, originally a crime which involved a total forfeiture of lands or goods or both, to which capital or other punishment might be superadded, according to the degree of guilt. To-day a felony is generally defined as one of the more serious crimes, as opposed to a misdemeanour, which is one of the less serious. Forfeiture of goods and lands is no longer a part of the punishment, and capital punishment is only retained for a very few felonies. One difference in the procedure for trying a felony and a misdemeanour is that a person charged with a felony has a right to challenge, without stating a reason, any member of the jury (up to a total of 20). The tendency of modern legislation is to make new crimes misdemeanours; beyond this, and the fact that in the early days of common law a crime was usually a felony, no rough and ready rule can be laid down for distinguishing between felonies and misdemeanours.

Felsite, a name sometimes given by geologists to a group of acid volcanic rocks, more often termed rhyolites. They are composed of a crypto-crystalline aggregate of felspar and quartz in which porphyritic crystals are often embedded.

Felspars, a group of minerals abundant in most igneous rocks. The most common varieties are orthoclase (a silicate of potash and alumina) and plagioclase (a silicate of alumina and soda or lime).

Felstead, or **Felsted**, village of Essex, England, 3 m. SE. of Dunmow, with a famous public school. Pop. 2,000.

Felt, a fabric manufactured by matting together ("felting") wool, hair and fur by steam-heated rollers or pressers. The process ensures the retention by the mixture of air particles within its texture, and thus gives to felt its heat-insulating quality. It is widely used for protecting hot-water pipes against frost. Asphalted felt is employed in roof construction. For hat manufacture other materials are also used, including silk and vegetable fibres.

Feltham, an urban district of Middlesex, England, 4 m. E. of Staines, with nursery and market gardens. Pop. 16,000.

Felton, John, an ex-army officer, who, on account of a grievance, assassinated the Duke of Buckingham at Portsmouth in 1698. He was hanged at Tyburn.

Felucca, a small, long, narrow and very fast type of vessel used in the

Mediterranean and on the Nile. They are undecked, and are propelled by oars or lateen sails. They are used in the Mediterranean for coasting voyages and as fishing vessels, though less extensively than formerly.

Feminism, belief in or advocacy of the influence of women in spheres conventionally reserved to men, or, more briefly, the movement for the equality of the sexes. The movement for extending the franchise to women in England had its intellectual origin in the writings of John Stuart Mill. But the great practical difficulty to emancipation lay in women's legal disabilities in the matter of acquiring their own property, a difficulty which was to a great extent removed by the Married Women's Property Act, 1882.

Legislation for extending the franchise to women always passed the Commons from 1886 until 1911, but until that year was always vetoed in the Lords. Agitation by "suffragettes," coupled with the provocative writings of dramatists and publicists, forced the subject into the forefront of politics. After the work done by women during the Great War it became difficult to withhold the franchise from them, and in 1918 a Bill granting limited franchise was passed—the full equality in this respect being attained in 1928.

Fencing, the act or art of using a sword, or foil in attack or defence.

Its development began after the disappearance of armour and the advent of firearms or, in other words, when swords replaced lances and battle-axes for personal combat. But in these earlier days the

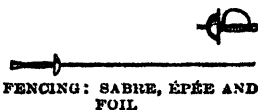
German, Italian and Spanish schools of swordsmanship were devoted rather to the use of the two-handed sword and poignard, and modern fencing begins properly with the use of the rapier as taught by Italian masters, though the sword and heavy buckler were considered more gentlemanly in England for a long time, and fencing with the rapier was not well established until the early 17th Century.

Fencing as a modern sport, or recreation, may be divided into fencing with foils, with épées and with sabres. Foils and épées are used for thrusting only. The sabre has a cutting edge also. The foil has a straight, flexible steel blade tipped with a round button. Points are only counted for a hit on the target, a square on the front of the body (excluding the arms), and only when the hit is made according to certain rules. The épée is a heavier weapon, with a guard for the hand, and usually ending in a tiny four-pronged button to mark the hits. Points are counted for hits on any part of the body, including the wrist and foot. Masks and padded clothes are used as a protection for the body.

Fénelon, François de Salignac de la Motte, a famous French prelate and writer, born in the Château de Fénelon, in the province of Périgord; at the age of 15 came to Paris, and, having already displayed a remarkable gift for preaching, entered the Plessis College, and



FELUCCA



FENCING: SABRE, ÉPÉE AND FOIL

four years later, joined the Seminary of St. Sulpice, where he took holy orders in 1875. His directorship of a seminary for female converts to Catholicism brought him into prominence, and gave occasion to his well-known treatise *De l'Éducation des Filles*. In 1885, after the revocation of the Edict of Nantes, he conducted a mission for the conversion of the Huguenots of Saintonge and Poitou, and four years later Louis XIV. appointed him tutor to his grandson, the Duke of Burgundy, an appointment which led to his writing his *Fables, Dialogues of the Dead, Télémaque, and History of the Ancient Philosophers*. In 1894 he became abbot of St. Valéry and in the following year Archbishop of Cambrai. Soon after this ensued his celebrated controversy with Bossuet (*q.v.*) regarding the doctrines of Quietism (*q.v.*), a dispute which brought him into disfavour with the king and provoked the Pope's condemnation of his *Explication des Maximes des Saints sur la Vie intérieure*. The rest of his life was spent in the service of his people, to whom he endeared himself. His works are extensive, and deal with subjects historical and literary, as well as philosophical and theological. (1651-1715).

Feng Yu-Hsiang, China's "Christian general." Impressed by the Christian missionaries' devotion to Christianity in 1903 while a private in the army. After the Great War he became prominent as one of the warring generals, the virtual ruler of Mukden and for a time of Peking as well. (1880-).

Fenians, an Irish political organisation of the 19th Century having for its object the overthrow of English rule in Ireland and the establishment of a republic there. The movement was initiated in the United States soon after the great famine in Ireland of 1846-1847, which, together with the harsh exactions of the landlords, compelled many Irishmen to emigrate from their island with a deeply-rooted sense of injustice and hatred of the English. The Fenians organised themselves as far as possible on the model of a republic, having a senate at the head, a president called the "head-centre," and various "circles" established in many parts of the U.S.A. They collected funds and engaged in military drill, and sent agents to Ireland and England. An invasion of Canada in 1866 and a rising in Ireland in 1867 proved abortive, as also the attack on Clerkenwell Prison in the same year. Another attempt on Canada in 1870 and the formation of the "Skirmishing Fund" for the use of the "Dynamitards" and the institution of the "Clan-na-Gael" leading to the "Invincibles," and the Phoenix Park murders (1882) were later manifestations of this movement. The Home Rule Land League, and Sinn Féin movements superseded the Fenian. The name was taken from an ancient military organisation called the Fianna Eirinn, said to have been instituted in Ireland in 300 B.C.

Fennec (*Canis*, or *Vulpes*, *Zerda*), a pretty little fox-like animal, about 10 inches long, with a tail of half that length. Has light fawn fur, large cheeks, sharp, foxy snout, and tremendous erect ears. It is indigenous to N. Africa and the Sahara. The name is Moorish.



FENNEC

Fennel, the name of several species of plants, including *Foeniculum officinale* of the natural order Umbelliferae.

It is a fragrant garden plant bearing small yellow flowers, finely-divided leaves and laterally compressed seeds. The leaves are sometimes used in cookery, and the seeds as a carminative. The seeds of fennel-flower (*Nigella sativa*), an annual of the buttercup (*Ranunculaceae*) family, are used in Palestine and Egypt for flavouring curries. The pith of Giant Fennel (*Ferula Communis*), another umbelliferous plant, is used in Mediterranean regions as tinder.

Fenny Stratford, a market town of Buckinghamshire, England. St. Martin's day is here celebrated by salvoes from six little cannons (Fenny Poppers). Pop. 4,600.

Fens, The, the district extending north and east from Cambridge to Lincoln, England, large areas being below the level of the Wash. The country has been well drained, and tracts are under cultivation; is famous for its wild-fowl and fishing. Among its famous cathedrals and churches are those of Peterborough, Crowland and Ely.

Fenton, former urban district of Staffordshire, England. Since 1910 a part of the borough of Stoke-on-Trent. Earthenware is made. Pop. 27,000.

Fenton, Elijah, English poet; born at Sholton, Staffordshire; collaborated with Pope in translating the *Odyssey*. (1683-1730).

Ferdinand, Tsar of Bulgaria. He took formation of the Balkan Alliance against Turkey in 1912, and was largely responsible for the second Balkan War of 1913. Soon after the opening of hostilities he brought his country into the World War on the side of the Central Powers, and in 1918 he abdicated in favour of his son Boris. (1861-).

Ferdinand the Catholic, V. of Castile, II. of Aragon and Sicily, and III. of Naples, born in Sos, in Aragon, married Isabella of Castile in 1469, a step by which these ancient kingdoms were united under one sovereign power. Their joint reign is one of the most glorious in the annals of Spanish history, and in their hands Spain quickly took rank amongst the chief European powers. In 1492 Columbus discovered America, and the same year saw the Jews expelled from Spain and the Moorish power crushed by the fall of Granada. In 1500-1501 Ferdinand joined the French in the conquest of Naples, and three years later managed to secure the kingdom to himself, while by the conquest of Navarre in 1512 the entire Spanish peninsula came under his sway. He was a shrewd and adroit ruler, whose undoubted abilities, both as administrator and general, were somewhat marred by an unscrupulous cunning. (1452-1516).

Ferdinand I., German Emperor (1556-1564), born in Alcala, in Spain, son of Philip I., married Anna, a Bohemian princess, in 1521; was elected King of the Romans (1531), added Bohemia and Hungary to his domains. (1503-1564).

Ferdinand II., German Emperor (1619-1637), grandson of the preceding and son of Charles, younger brother of Maximilian II., born at Graz; his detestation of the Protestants, early instilled into him by his mother and the Jesuits, under whom he was educated, was the ruling passion of his life, and involved the empire in constant warfare during his reign. An attempt on the part of Bohemia, restless under religious and political grievances, to break away from his rule, brought about the Thirty Years' War. By ruthless persecutions he re-established Catholicism in Bohemia, and reduced the country to subjection; but the war spread into Hungary and Germany, where Ferdinand found himself opposed by a confederacy of the Protestant States of Lower Saxony and Denmark.

the Protestant cause being in the end successfully sustained by the Swedish hero, Gustavus Adolphus who had opposed to him the imperial generals Tilly and Wallenstein. His reign is regarded as one of disaster, bloodshed, and desolation to his empire, and his connivance at the assassination of Wallenstein will be for ever remembered to his discredit. (1578-1637).

Ferdinand III., German Emperor (1637-1657), son of the preceding, born at Graz; more tolerant in his views, would gladly have brought the war to a close, but found himself compelled to face the Swedes reinforced by the French. In 1648 the desolating struggle was terminated by the Peace of Westphalia. The rest of his reign passed in tranquillity. (1608-1657).

Ferdinand, King of Rumania. He succeeded to the throne in 1914, and it was largely due to his influence that Rumania threw in her lot with the Allies in 1916. He refused to sign a treaty forced on his country after the collapse of the army, and was exiled. He returned in 1918 and reformed Rumania on democratic lines. He married Marie, a granddaughter of Queen Victoria in 1892. (1865-1927).

Ferdinand I., King of the Two Sicilies, third son of Charles III. of Spain, succeeded his father on the Neapolitan throne (1759), married Maria Carolina, daughter of Maria Theresa; joined the Allies in the struggle against Napoleon, and in 1806 was driven from his throne by the French but was reinstated at the Congress of Vienna. In 1816 he constituted his two States (Sicily and Naples) into the kingdom of the Two Sicilies, and in the last four years of his reign ruled, with the aid of Austria, as a despot. (1751-1825).

Ferdinand II., King of the Two Sicilies, grandson of the preceding and son of Francis I. After the death of his first wife, a daughter of Victor Emmanuel I., King of Sardinia, he married the Austrian princess Maria Theresa, and fell under the influence of Austria during the rest of his reign. In 1848 he was compelled to grant constitutional rights to his people, but was distrusted, and an insurrection broke out in Sicily. With merciless severity he crushed the revolt, and by his savage bombardment of the cities won the epithet "Bomba." A reign of terror ensued, and in 1861 Europe was startled by the revelations of cruel injustice contained in Gladstone's famous Neapolitan letters. (1810-1869).

Ferdinand VII., King of Spain, son of Charles IV. He appealed to Napoleon in 1807 to support the King, his father, and himself; but his letter was discovered, and his accomplices exiled. The following year the French entered Spain, and Charles abdicated in favour of his son Ferdinand; but soon after, under Napoleon's influence, the crown was surrendered to the French, and Joseph Bonaparte became king. In 1813 Ferdinand was reinstated, but found himself immediately met by a demand of his people for a more liberal representative government. The remaining years of his reign were spent in an internecine struggle against these claims, in which he had French support under Louis XVIII. (1784-1833).

Ferdinand III., Grand-duke of Tuscany, born at Florence; succeeded to the government of Tuscany in 1790; introduced many wise measures of reform, which brought peace and prosperity to his State; reluctantly joined the coalition against Napoleon in 1793, but two years later entered into friendly relations with France, and in 1801, in order to save his State being merged in the Cisalpine Republic, undertook to make

payment of an annual subsidy. Later he formed an alliance with Austria, and was by Napoleon driven from his possessions, which were, however, restored to him in 1814 by the Peace of Paris. (1769-1824).

Ferghana, district in Uzbekistan, a Central Asian republic of the U.S.S.R., named from the Ferghana mountain range, which traverses it; cotton and silk are manufactured; the inhabitants are Uzbeks. Area 60,000 sq. m. Pop. 600,000.

Ferguson, Robert, a notorious plotter, who took part in Monmouth's invasion in 1685 and was prominent in the various plots against Charles II. and James II., but after the Revolution turned Jacobite; published a history of the Revolution in 1706. (c. 1637-1714).

Fergusson, Sir Charles, seventh Baronet, British general, born at Edinburgh and educated at Eton and Sandhurst. Joined the Grenadier Guards 1883 and the Egyptian army in 1895, doing active service in the Sudan where he was severely wounded. In the World War he commanded the 5th Division and later the 2nd and 17th Army Corps; was military governor of the occupied German territory subsequently. He was Governor-General and Commander-in-Chief of New Zealand, 1924-1930. (1865-).

Fergusson, James, a writer on the history and art of architecture, born in Ayr; went to India as an indigo-planter, but afterwards gave himself up to the study of the rock-temples; his *History of Architecture*, in 4 vols. is a standard work. (1808-1886).

Fergusson, Robert, a Scottish poet, his first poems appeared in Ruddiman's *Weekly Magazine*, and brought him a popularity which proved his ruin; some years of unrestrained dissipation ended in religious melancholia, which finally settled down into an incurable insanity. His poems, collected in 1773, have abundant energy, wit and fluency, but lack the passion and tenderness of those of Burns. He was, however, held in high honour by Burns, who regarded him as "his elder brother in the Muses." (1750-1774).

Ferishta, Mohammed Kasim, a Persian historian, born at Astrabad, on the Black Sea; went at an early age, accompanied by his father, to India, where his life was spent in the service, first of Murtaza Nizam Shah, in Ahmednagar, and afterwards at the Court of the Prince of Bijapur. His famous *History of the Rise of the Mohammedan Power in India*, finished in 1609, the writing of which occupied him for 20 years, is still a standard work, and has been translated into English. (c. 1570-1611).

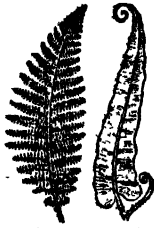
Fermanagh, a county in the SW. Ireland, of a hilly surface, especially in the W.; is well wooded, and produces indifferent crops of oats, flax and potatoes; some iron, and quantities of limestone, are found in it. The Upper and Lower Loughs Erne form a waterway through its centre; chief town, Enniskillen. Area 635 sq. m. Pop. 54,500.

Fermat, Pierre de, a French mathematician, born near Montauban; made important discoveries in the properties of numbers, and with his friend Pascal invented a calculus of probabilities. (1601-1665).

Fermentation, the process of ob-carbohydrates. The enzymes present in yeast convert sugar first into glucose and then into alcohol and carbon dioxide. Beer is produced by the action of the diastase in the grain which hydrolyses the starch to maltose (malt-sugar), which is then fermented with the added glucose. In the case of wines the sugars of the fruit are fermented by the bloom-

Fern, the popular name applied in common to all the cryptogamic (flowerless) plants of the class

Pteridophyta, of which there are many genera and many species, herbaceous and arborescent, true ferns and fern-like plants. They reproduce from spores, the spores or germ-cells of the fern being liberated from the *sporangia* to germinate in moist earth. Each cell divides and forms an aggregate of little cells, laid flat like a leafy scale, called the *prothallus*. Under the prothallus small reproductive organs, the *antheridia* (male) and *archegonia* (female), are formed, and only when fertilisation has taken place can the germ-cell develop into a grown fern.



FERN: LADY-FERN (left) AND HART'S TONGUE

Fernandez, John, a 15th-Century Portuguese traveller who visited Central Africa on a mission for Henry the Navigator; he is said to have been the first European to travel inland from the African coast.

Fernandez, Juan (John), a Spanish navigator, discovered the islands off the coast of Chile that bear his name. (d. in 1602). On the island of Juan Fernandez belonging to Chile, Alexander Selkirk (the original of Robinson Crusoe) had his adventures.

Fernando Po, a mountainous island, with an abrupt and rocky coast, in the Bight of Biafra, W. Africa. The volcano, Mount Clarence (9,300 ft.), rises in the N. The island is covered with luxuriant vegetation, and yields maize and yams, some coffee, palm oil and wine, though the chief export is coffee; is inhabited by the Bubi, a Bantu tribe, and is the chief of the Spanish Guinea Isles. Pop. 20,900. Chief town Santa Isabel.

Ferney (Ferney-Voltaire), a village in the dept. of Ain, France, 4 m. from Geneva, where Voltaire lived (1758-1778). Pop. 1,300.

Ferns, a town in Co. Wexford, Ireland and was once seat of a bishop. Pop. 1,600.

Ferozepore, the chief town of the district of the same name in the Punjab, India, a few miles S. of the Sutlej; is strongly fortified, and contains a large arsenal. The present town was laid out by Lord Lawrence. Pop. 64,600. **Ferozepore District**, lies along the S. bank of the Sutlej; came into the possession of the British in 1835; cereals, cotton, sugar and tobacco are cultivated.

Ferrara, a fortified and walled Italian city, capital of the province of the name, situated on a low and marshy plain between the dividing branches of the Po, 30 m. from the Adriatic. It has many fine ecclesiastical buildings and a free University founded in 1264 with a large and valuable library, but only a handful of students; a fine old Gothic castle, the residence of the Este, still stands. It was the birth-place of Savonarola, and the sometime dwelling-place of Tasso and Ariosto; once prosperous, it has now fallen into decay. Pop. (prov.) 350,000; (city) 119,000.

Ferrara, a broadsword bearing the name of Andrea Ferrara, one of the Italian family famous in the 16th and 17th Centuries for the quality of their swords.

Ferrari, Giuseppe, Italian painter and sculptor, born at Valdagno, in Piedmont; many of his paintings and frescoes are to be found in the Lombard galleries, and principally in Milan. His work is character-

ised by bold and accurate drawing, inventiveness and strong colouring. (1484-1516).

Ferrari, Paolo, Italian dramatist, born at Modena; produced his first play at the age of 25. His numerous works, chiefly comedies, and all marked by a fresh and piquant style, are the finest product of the modern Italian drama. (1822-1889).

Ferret (*Futorius felleus*), carnivorous animal of the family Mustelidae,

very like the polecat, of which it is sometimes described as a domesticated variety; originally a native of Africa, brought to Europe in Roman times. It is used



FERRET

in catching rabbits and rats. The colour of the fur is white or yellowish, eyes pink, average length 14 in.

Ferrier, Sir David, Scottish physician and neurologist, born at Aberdeen, wrote on the brain, and founded the journal called *Brain*. F.R.S., 1876. Knighted, 1911. (1843-1928).

Ferrier, Susan Edmonstone, a Scottish novelist, born in Edinburgh, where her life was chiefly spent, her father being Clerk in the Court of Session, and a colleague of Sir Walter Scott; her novels *Marriage*, *The Inheritance*, *Destiny*, etc., are rich in humour and faithful as pictures of Scottish life and character. (1782-1854).

Ferrocyanides (and **Ferricyanides**), complex cyanides of iron with another metal, e.g., potassium or sodium. Potassium ferrocyanide is a yellow crystalline solid ("yellow prussiate of potash") of the formula $K_4Fe(CN)_6$; it has several minor industrial and analytical uses—e.g., in the preparation of Prussian blue (obtained as a blue precipitate on adding it to a solution of ferric chloride) and in calico-printing. Potassium ferricyanide is an orange-red, crystalline solid ("red prussiate of potash") of the formula $K_3Fe(CN)_6$; it has few applications, but is used in making blue-prints, and both the ferrocyanide and ferricyanide are used in analysis as a test for iron (ferrous and ferric) salts. Unlike the simple cyanides of potassium and sodium, the ferrocyanides and ferricyanides are comparatively non-poisonous.

Ferrol, a strongly fortified seaport in Galicia, Spain, 12 m. NE. of Coruña, on a narrow inlet of the sea which forms a splendid harbourage, narrow at the entrance and capacious within, and defended by two forts. It possesses one of the largest Spanish naval arsenals; manufactures linen and cotton, and exports corn, brandy and sardines. Pop. 30,500.

Ferry, a privilege granted by the Crown, by prescription presuming such a grant, or by Act of Parliament. The person operating a ferry is under certain obligations to the public, and in return possesses the monopoly of the ferry existing for a recognised volume of traffic. He cannot claim compensation against any other form of competition (e.g., the building of a bridge). He is not held in any way to be the owner of the water over which the ferry is operated. If he carries goods, he is subject to the liabilities of the common carrier.

Ferry, Jules François Camille, a distinguished French statesman, born in Saint Die, in the Vosges; offered uncompromising opposition to the party of Louis Napoleon; as a member of the Corps Législatif he opposed the war with Prussia, but as central mayor of Paris rendered signal service during the siege by the Germans; as Minister

of Public Instruction in 1879 was instrumental in bringing about the expulsion of clerical influence. As Prime Minister in 1880 and again in 1883-1885 he inaugurated a spirited colonial policy, which involved France in war in Madagascar, and brought about his own downfall. (1832-1893).

Ferryhill, a town in Co. Durham, England, 6 m. S. of Durham, with ironworks. Coal-mining is carried on in the district. Pop. 10,400.

Fertilisation, the natural process of the male and female germ-cells become fused and result in the production of a new organism of the same species. In plants, pollination takes place when the pollen-grain extends into a tube, which is lowered through the stigma and style to the ovary and unites with the ovule. Fertilisation follows if the male cell or spermatoplasm fuses with the egg-cell or ooplasm of the ovule.

Fertilisers. It is seldom that cultivated land is naturally rich enough to yield the maximum attainable crop. Hence arises the need for fertilisers, particularly to supply the full desirable quantity of nitrates and phosphates. Well-rotted farmyard manure is an ideal fertiliser, but insufficient of it is available, and chemistry has therefore been called upon to manufacture artificial fertilisers. Of these, the most important are: (1) nitrates and other nitrogenous compounds, and (2) phosphates.

Sodium nitrate or *nitrate of soda*, NaNO_3 , occurs naturally in vast deposits as Chile saltpetre or *caliche* in the Atacama desert of S. America, whence several million tons are exported annually. But the cost of carriage and the danger of interruption of supplies in times of war have led most manufacturing countries to prepare sodium nitrate from the nitrogen of the atmosphere.

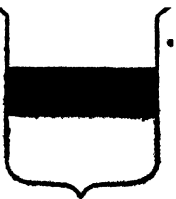
Ammonium sulphate is another widely used nitrogenous fertiliser. This is obtained to some extent as a by-product in the manufacture of coal-gas, but the major portion is now prepared by neutralising synthetic ammonia with sulphuric acid. *Ammonium nitrate* is prepared in a similar way from ammonia and nitric acid. *Nitro-chalk* is a mixture of ammonium nitrate and calcium carbonate. Calcium cyanamide (popularly "cyanamide") is a substance of the formula CaCN_2 , made by strongly heating calcium carbide in nitrogen.

Among phosphatic fertilisers the chief is *superphosphate of lime*, a mixture of gypsum (calcium sulphate dihydrate) and calcium hydrogen phosphate; it is soluble in water, and therefore available to plants, whilst phosphorite is not. *Double superphosphate* is similar to superphosphate, but contains no gypsum; its phosphorus content is thus much greater. *Basic slag* is a phosphatic fertiliser obtained as a by-product in the manufacture of steel. Potassium sulphate (K_2SO_4) and other potassium salts are used to supply deficiencies of potash in soil.

Fesse, or **Fess**, term in heraldry for one of the ordinaries, being a horizontal band across the field or surface of a shield. The fesse point is at the centre of the shield.

Festubert,

Battle of, British attack in the World War launched over a frontage of 4 miles on May 9, 1915. It centred on the village of Festubert, but failed to achieve any spectacular results (in spite of the gallant conduct of Canadian troops) owing to a shortage of



FESSE

shells for the preliminary bombardment. The defeat led to the overthrow of the Government, the formation of the first Coalition Government with Asquith as Prime Minister, and to the creation of the Ministry of Munitions.

Festus, Porcius, Roman procurator of Judea, c. A.D. 58-62, successor to Felix (q.v.). Paul—left captive by Felix—when examined at Caesarea by Festus, appealed to Caesar. Before Paul sailed for Rome, Festus, in an interview whereat Herod Agrippa II. was present, said Paul was amazed with much learning. (Acts xxiv. 27-xv. 30).

Fetichism, fetich, an object superstitiously invested with divine or demoniac power, and as such regarded with awe and worshipped; the word is from the Portuguese *feticio*, magic.

Fettes College, a school near Edinburgh, founded by Sir William Fettes (1750-1836), who left funds to accumulate for the purpose. It was opened in 1870; it accommodates about 250 boys.

Feuchtwanger, Lion, German Jewish author. Born in Munich and educated there and in Berlin, he first came before public notice with his *Jew Süss*, a book which told graphically of 18th Century Germany, and had a phenomenal sale in 1927 all over the world; later he wrote *The Ugly Duchess*. (1884-).

Feudalism, or the Feudal system, that system which prevailed in Europe during the Middle Ages and in England from the Norman Conquest, by which vassals held their lands from the lord-superior on condition of military service when required.

Feuillans, a reformed brotherhood of 1577 by Jean de la Barrière, abbot of the Cistercian monastery at Feuillans, in Langue-doc. The movement thus organised was a protest against the laxity which had crept into the Church, and probably received some stimulus from the Reformation, which was then in progress. The Feuillans settled in a convent in the Rue St. Honoré, Paris, which in after years became the meeting-place of a revolutionary club, which took the name of Feuillans. Founded in 1790 by Lafayette, La Rochefoucauld, etc., the club was composed of members of the respectable propertied classes, whose views were more moderate than those of the Jacobins. They could not hold out against the flood of revolutionary violence, and on March 28, 1791, a mob burst into their place of meeting and dispersed them.

Feuillet, Octave, a celebrated French novelist, born in Saint-Lô, in La Manche; started his literary career as one of Dumas' assistants, but made his first independent success in the *Revue des Deux Mondes* by a series of tales, romances, etc., begun in 1848. In 1862 he was elected a member of the Academy, and later became librarian to Louis Napoleon. His novels, of which *Le Roman d'un Jeune Homme Pauvre* and *Sibylle* are the most noted, are graceful in style, and reveal considerable dramatic force, but often lapse into sentimentality. (1821-1890).

Fever, a symptom of various disorders (e.g., the acute infective fevers, due to bacterial infection, which include enteric, erysipelas, meningitis, diphtheria, scarlet fever, smallpox, measles, chickenpox, mumps, whooping cough) characterised by a rise in the bodily temperature. Malignant fever is that, like yellow fever, in which the blood deteriorates. Intermittent fevers or agues recur at definite intervals. At the onset an attack of cold shivering or "rigor" causes the temperature to rise, while heat is further

kept in by the contraction of the blood-vessels, making the skin feel cold. A period follows of dry heat, thirst, lassitude and nervous derangement. Baths and wet-packs are useful in lowering temperature. Among antipyretic drugs quinine is valuable. Fever passes either gradually (*lysis*), or suddenly (*crisis*), as in pneumonia, accompanied by profuse perspiration.

Feverfew (*Chrysanthemum Parthenium*), a plant of the natural order Compositae, native to Europe, and so named from its supposed properties as a febrifuge. It has much-indentured leaves, and bears small white flowers.

Fez, the largest city in Morocco, of which it is the second capital; is surrounded by walls and prettily situated in the valley of the Sebou, a stream which flows through its centre and falls into the Atlantic 100 m. to the E. It has been for many centuries one of the most important of the sacred cities of Islam; has many fine mosques, the Sultan's palace, and an important university; is yet a busy commercial centre, although signs of decay appear all over the city, and it carries on an active caravan trade with Central Africa. Pop. 144,000.

Fez, a Turkish head-dress, a stiff, round, brimless cap, usually red, the colour of a dye manufactured from berries at Fez in Morocco.

Fezzan, an Italian province lying to the S. of Libya, to which it is politically united; in character partakes of the desert region to which it belongs, being almost wholly composed of barren sandy plateaux, with here and there an oasis in the low valleys, where some attempt at cultivation is made. It is sparsely populated. Murzuk is the chief town.

Ffestiniog, a town in Merionethshire, Wales, situated in a slate quarrying district. Pop. 9,100.

Fiacre, a hackney carriage, originated in France in the 17th Century; was named after the Hôtel St. Fiacre in Paris which itself was named after St. Fiacre, the son of King Eugène IV. of Scotland, who died a hermit in France, A.D. 670.

Fiars, an expression in Scottish law given to the prices of grain which are determined by the respective sheriffs in the various counties assisted by juries. The Court for "striking the fiars" is held towards the end of February in accordance with Acts of Sederunt of the Court of Session. The prices fixed are used in the settling of contracts where no prices have been determined, e.g., in fixing stipends of ministers of the Church of Scotland, and are found useful in other ways.

Fiat (Latin meaning "let it be done"), a decree, especially an order or warrant made out by a judge or other public officer allowing certain legal proceedings to take

place, a thread-like substance which is a component part of animal or vegetable tissue. Organically, fibres are part of the substance which constitutes muscle, brain and nerve tissue. The term also refers to the thread prepared from fibrous material, either of vegetable origin (e.g., cotton, jute, etc.), animal (wool and silk), or mineral (asbestos). Fibres prepared synthetically include artificial silk and filaments of spun glass.

Fibula, a long, thin bone in the leg, on the outer side of the shin-bone, and stretching from knee to ankle. The lower extremity forms a bony projection pro-

tecting the ankle-joint. Fibula is also the name given to a brooch or buckle and clasp, such as those which were worn in very early days.

Fichte, Johann Gottlieb, a celebrated German philosopher, born in Upper Lusatia; a man of an intensely thoughtful and noble nature; studied theology at Jena, and afterwards philosophy; became a disciple of Kant, and paid homage to him personally at Königsberg; was appointed professor of Philosophy at Jena, where he enthusiastically preached a system which broke away from Kant, and which he published in his *Wissenschaftslehre* and his *System der Sittenlehre*; obliged to resign his chair at Jena on a charge of atheism, he removed to Berlin, where he rose into favour by his famous *Address to the Germans* against the tyranny of Napoleon, and after a professorate in Erlangen became head of the New University, and had for colleagues such men as Wolf, Humboldt, Schleiermacher, and Noander. He fell a victim to the War of Independence which followed, dying of fever caught through his wife and her nursing of patients in the hospitals, which were crowded with the wounded. Besides his more esoteric philosophical works, he was the author of four of a popular cast, viz., *The Destiny of Man*, *The Nature of the Scholar*, *The Characteristics of the Present Age* and *The Way to the Blessed Life*. (1762-1814).

Fichtelgebirge, a mountain chain called from its having once been covered with pines, Fichtel meaning a pine. In its valleys rise tributaries of the Elbe, Rhine and Danube. Considerable quantities of iron, copper and lead are found, which give rise to a smelting industry. The climate is cold and damp and does not attract much tourist traffic.

Ficino, Marsilio, an eminent Italian Platonist, born in Florence; in 1463 became president of a Platonic school, founded by Cosimo de' Medici, where he spent many years spreading the doctrines of Plato and ancient philosophy generally; entered the Church in 1473, and under the patronage of Lorenzo de' Medici was appointed to the canonry of Florence Cathedral. His interest in classical studies helped considerably to further the Renaissance. (1433-1499).

Fiction, Legal, a term of pleading which survived in English law from Roman, where it was probably the earliest agency whereby law was made to square with society; means that the plaintiff makes a fictitious averment which the defendant is compelled to accept, the court allowing the case to go forward on the fictitious basis which brings it within the provision. The classic instance of a legal fiction in English law was that which was used in actions relating to title to land when, in order to secure a speedier process, the fiction of an ejectment suit was imported into the case the parties to the suit being two imaginary individuals named "John Doe" and "Richard Roe." Legal fictions are now comparatively rarely used except, however, in company law and practice.

Fidei Defensor (Latin for "Defender of the Faith"), title given by the Pope to King Henry VIII. of England in 1521, in return for his services in writing a book in defence of the Catholic doctrine of the Sacraments; still borne by English rulers, and appears as "Fid. Def." or "F.D." in inscriptions on coins.

Fides, the Roman goddess of fidelity, or steadfast adherence to promises and engagements. Numa built a shrine for her worship and instituted a festival in her honour. In later times a temple containing a statue of her dressed in white adorned the temple of Jupiter, on the Capitol at Rome.



FEVERFEW

Fief, a term used in feudal times for property held in fee from a superior—i.e., in return for services rendered. The words fee and feu (Scottish) are derived from it.

Field, Cyrus West, brother of the following, born at Stockbridge, Massachusetts; was first a successful paper manufacturer, but, turning his attention to submarine telegraphy, was instrumental in establishing cable communication between England and America, and founded the Atlantic Telegraph Company in 1856; afterwards interested himself in developing the overhead railway in New York. (1819-1892).

Field, David Dudley, an eminent American jurist, born at Haddam, Connecticut; for 57 years a prominent member of the New York Bar, during which time he drew up, under Government directions, political, civil and penal codes; interested himself in international law, and laboured to bring about an international agreement whereby disputes might be settled by arbitration and war done away with. (1805-1894).

Field, Nathaniel, playwright, one of the First Folio Shakespeare, named in the First Folio Shakespeare, was born at Cripplegate. Acted in Jonson's *Cynthia's Revels*, 1600; in *The Poetaster*, 1601; in the title-part of Chapman's *Bussy d'Ambois*, 1606. Author of *A Woman's a Weathercock* and *Amends for Ladies*. Collaborated with Massinger in *The Fatal Dowry*. (1587-1633).

Fieldfare (*Turdus pilaris*), a bird of the Thrush family found in most parts of Britain in winter and spring; brownish, with bluish-grey head; its note is harsh, and it feeds on insects, worms and berries.

Field-Glass, an optical instrument composed of two small parallel telescopes, used by naturalists and in the Army, Navy, etc., for viewing distant objects. A variety, the prismatic field-glass, has extensible arms which enable it to be used at various angles and in several positions.

Fielding, Henry, a famous novelist, "the father of the English novel," born at Sharpham Park, Glastonbury, son of General Edmund Fielding and a cousin of Lady Mary Wortley Montagu; was educated at Eton and at Leyden, where he graduated in 1728; led for some years a dissipated life in London, and achieved some celebrity by the production of a series of comedies and farces, now sunk into oblivion. In 1735 he married Miss Charlotte Cradock, and after a brief experiment as a theatre lessee studied law at the Middle Temple, and was called to the Bar.

Literature was, however, his main pursuit, and in 1742 he came to the front with *Joseph Andrews*, a burlesque on Richardson's *Pamela*, in which his powers as a novelist first showed themselves. In 1743 followed three volumes of *Miscellanies*, including *Jonathan Wild*.

After his wife's death he turned again to law, but in 1745 we find him once more engaged in literature as editor of the *True Patriot* and afterwards of the *Jacobite's Journal*. Tom Jones, his masterpiece, appeared in 1749, and three years later *Amelia*. Journalism and his duties as a justice of the peace occupied him till 1754, when ill-health forced him abroad to Lisbon, where he died and was buried. His books are not always found a reliable reading by present-day readers. (1707-1754).

Field-Marshal, the highest rank in the British army, the rank being the baton which is carried and the emblem of crossed batons on the uniform. It was first conferred on the Duke of Argyll and the Earl of Orkney by George II. in 1736. The rank is conferred as an honour

occasionally on members of other royal families, those so distinguished at present being the Emperor of Japan and Alfonso of Spain. The King of England as head of the army holds the rank. There are 11 others.

Field-mouse, the name of several species of rodents of the

family Muridae (rats and mice), widely distributed throughout the world, and resembling in general characteristics other species of the same family, field-voles, etc. The best known species is the Common English Field-mouse (*Mus agrestis*).



Field of the Cloth of Gold,

a plain near Guisnes, where Henry VIII. had an interview with Francis I. of France in June, 1520; so called from the magnificence displayed on the occasion on the part of both sovereigns and their retinue.

Fields, Gracie, English variety actress, born at Rochdale. Real name originally Stansfield; married Archie Pitt (Selling). Began as vocalist in a Rochdale cinema, 1906. First London appearance, 1915, at the old Middlesex Music Hall, in a revue, *Fes, I Think So*, brought from Manchester. Began film career, 1931. C.B.E., 1938. (1898-).

Fiery Cross, The, a war symbol in the shape of a burning stick dipped in animal blood, formerly sent from village to village among the Highland clans as a call to arms.

Fiery Serpent, a plague sent by Israelites when they grumbled in the wilderness. Many people were bitten and died. Those who looked on the brazen serpent made by Moses lived. (Numbers xxi, 6-9).

Fiesole, a small town in Italy 3 m. from Florence, Florence, in beautiful surroundings, with many villas of rich Florentines; the convent of the painter Fra Angelico was here.

Fife, maritime county in the E. of Scotland, jutting out into the North Sea, washed by the Firths of Tay and Forth on the N. and S. respectively; has for the most part a broken and hilly surface, but is extensively cultivated, while the "How of Fife," watered by the Eden, is a fertile valley, richly wooded; valuable coal deposits are worked in the S. and W.; includes the towns of Kirkcaldy, St. Andrews, Cupar, Kincardine and Dunfermline. Area 505 sq. m. Pop. 278,000.

Fife, a flute-like musical instrument, used mainly in Army bands, to accompany the drum, pitched one octave higher than the flute, and having generally a single key.

Fife, Duke of, Alexander William George James Duff, born in Edinburgh; son of James Duff, Earl of Fife in Irish peerage; styled Viscount Macduff from 1857; Liberal M.P., Elgin and Nairn, 1874-1879; succeeded to Earldom, 1879; Earl in U.K. peerage, 1885; in 1889 married Louise, eldest daughter of the Prince of Wales (who became Edward VII), and was made Duke; died at Apsan. (1849-1912). By special provision, the title descended to his daughter, the Princess Alexandra Victoria Alberta Edwina Louise. (1891-).

Fifth-Monarchy Men, a party of extreme levelling tendencies, who, towards the close of the Protectorate, maintained that Jesus Christ was about to reappear on the earth to establish a fifth monarchy that would supersede the four preceding—the Assyrian, the Persian, the Macedonian and the Roman. Some of them conspired to murder Cromwell, but were detected and imprisoned till he died.

Fig, a fruit-tree of the genus *Ficus*, order Moraceae, grown in warm climates. The fruit is round or oblong, differently coloured according to the species, of which there are a great number, including the pipal-tree (*F. religiosa*), the bayam (*F. indica*), and the india-rubber tree (*F. elastica*). The species especially cultivated for the fruit is the *F. carica*, the fruit being usually dried and boxed for market.



FIG

Figaro, a name given by the French dramatist Beaumarchais to a cunning and intriguing barber who figures in his *Barbier de Séville* and his *Mariage de Figaro*, and who has since become the type of all such characters. Several operas have been written on these comedies, notably by Mozart and Rossini. The name has been adopted by a well-known French newspaper.

Fiji, a group of islands in the S. Pacific Ocean, between 15° and 22° S. lat. and 176° E. and 178° W. long.; sighted by Tasman in 1643, though first discovered, properly speaking, by Cook in 1769; first came into prominence in 1858, when the sovereignty was offered to England and declined, but in 1874 were made a crown colony. They number over 200 islands, of which some 80 are inhabited, Viti Levu and Vanua Levu being the largest; Suva is the capital; sugar, bananas, vanilla, tea and coffee are cultivated. The islanders are Melaneans mingled with Polynesians and of medium height and dark skinned. Area 7,000 sq. m.; Pop. 200,000.

Filbert, an oval nut, the fruit of the tree cultivated *Corylus* or hazel; the kernel is sweet to the taste, being oily and farinaceous.

File, surface, the serratures being cut upon the blade, either single or criss-cross, by means of a chisel or by machinery; (2) an orderly succession, especially a regimented line of soldiers; (3) an orderly collection of papers, etc., arranged for easy reference.

Filey, a seaside resort and fishing town, 7½ m. S.E. of Scarborough, E. Riding of Yorkshire, England. The shore is protected by Filey Brigg, forming a natural breakwater. Pop. 4,000.

Filibuster, a name given to buccaneers who infested the Spanish-American coasts or those of the West Indies, but more especially used to designate the followers of Lopez in his Cuban expedition in 1851, and those of Walker in Nicaragua in 1855; a name now given to any lawless adventurers who attempt to take forcible possession of a foreign country.

Filigree, a name given to a species of fashioned out of fine metallic (usually gold or silver) wire into lace-like patterns; the art was skillfully practised by the Etruscans and Egyptians, and in Central Asia and India, and was popular in Victorian times.

Filioque Controversy,

a controversy as to whether the Holy Spirit proceeded from the Father and the Son or from the Father only, the Western Church maintaining the former and the Eastern the latter.

Filipino, a native of the Philippine Is., especially a member of the Christianised races of Malay stock, generally with some admixture of Spanish blood.

Fillan, St., a name borne by two Scottish saints: (1) the son of a Munster prince of the 8th Century, first abbot of the monastery on the Holy Loch in Argyll, and afterwards laboured at Strathallan, Perthshire; (2) or Paelan, known as "the leper," had his church at the end of Loch Earn, Perthshire; a healing well and chair are associated with his name.

Filter, a device for straining a liquid in order to separate from it any solids it may contain. Paper and mickel gauze filters are used in chemistry, or substances may be filtered through a funnel, the neck of which is plugged with cotton-wool. See also Filtration.

Filtration, the operation of removing in which they are suspended by passing the liquid through a material of which the pores are smaller than the particles; pouring tea through a tea-strainer is a crude example of filtration. Filtration is often employed to free water and other liquids from bacteria; thus the Chamberland, Doulton, Berkefeld and Maassen filters are made of special clay or earthen, so that the pores in them are smaller than even the smallest bacteria visible under the microscope. It should be remarked that viruses exist capable of passing any practicable filter yet made, so that filtered water is not necessarily safe to drink.

Finance Acts, the annual Taxing Act to embody the provisions of the Budget proposed by the Chancellor of the Exchequer. Each proposal for an alteration of taxation contained in the Finance Bill is carried as a resolution before the Bill becomes law. The Finance Act is followed by the Appropriation Act, by which money is allotted from the consolidated Fund to the service of the year. The Finance Act, as a money bill, cannot be rejected by the House of Lords.

Finch, a passerine bird of the family Fringillidae, of which there are some 600 species, 40 native to Great Britain. Notable are the Crossbills, the Hawfinch, Greenfinch, Bullfinch, Chaffinch and Linnet. They are song-birds, and feed mostly on berries and seeds.



BULLFINCH

Finch, *Heneage*, first Earl of Nottingham. Lord Chancellor of England, called to the Bar in 1645; at the Restoration was appointed Solicitor-General, and took an active part in prosecuting the regicides; in 1670 he became Attorney-General, and in 1675 Lord Chancellor (1621-1682).

Finchley, municipal borough of Middlesex, sex, England, 7 m. N. of London, of which it is a residential suburb. There is but little left of the common, once famous as a resort of highwaymen, and where Jack Sheppard, one of the most notorious, was captured in 1734. Pop. 59,800.

Findhorn, a river of Inverness-shire, Nahta and Moray to the Moray Firth.

Findon, a fishing village of Kingsdown-shire, Scotland, from which Findon or Finnian haddocks take their name.

Fine Arts, from the French *beaux arts*, covering all human activities devoted to the creation of beauty, and including painting, poetry, architecture, sculpture, and dancing, with the minor arts, such as goldsmith's work, and the decorative arts, derived from them.

Finedon, a village in Northamptonshire, England, 3½ m. from Wellingborough, of which it now forms part; manufactures boots and shoes; agriculture and stone quarrying are carried on in the district. Pop. 4,100.

Fingal, or *Fiona*, hero of Gaelic mythology, represented by Ossian (q.v.) to have ruled over the kingdom of Morven in the West Highlands; is identical with Finn McCool or McCumhall, famous in Irish legend.

Fingal's Cave, a remarkable cave of (q.v.) on the coast of the Isle of Staffa; and the name of a song-cycle by Mendelssohn.

Finger-prints, impressions of the ridges of the skin on the ball of the fingers. Since their formation does not change throughout life, and the finger prints of no two persons are the same, they are invaluable for identification, especially in criminal investigation, and the finger-prints of all convicted persons are filed for reference. Classification is by the number of ridges and by characteristics known as whorls and composite whorls, loops and arches, and deltas. It is the combination of these characteristics which determines identification.

Finisterre, or *Finistère*, (French for "land's end"), the most westerly department of France, washed on the N. by the English Channel, and on the S. and W. by the Atlantic; has a rugged and broken coastline, but inland presents a picturesque appearance, with tree-clad hills and fertile valleys. The climate is damp, and there is a good deal of marshy land; mines of silver, lead, etc., are wrought, and quarries of marble and granite. Fishing is largely engaged in; and the manufacture of linen, canvas and pottery, are important industries, while large quantities of grain are raised. Area 2,730 sq. m. Pop. 757,000.

Finisterre, or *Finistère*, Cape, in NW. naval engagements between the French and Britain.

Finland, a republic on the gulfs of Finland and Bothnia, ceded by the Swedes to Russia in 1809, and since the Great War independent. The coastline is deeply indented, and fringed with small islands; the interior, chiefly elevated plateau, consists largely of forest land, and is well furnished with lakes, many of which are united by canals, one connecting Lake Saima with the Gulf of Finland. Various cereals (barley, oats, rye, etc.) are grown, and there is a varied and valuable fauna; fishing is an extensive industry; timber, dairy produce, paper pulp, matches, etc., are exported. The people are mainly Lutherans; there are three universities, and education is highly advanced; Finnish and Swedish are the two languages of the country. There is an excellent Saga literature, and the beginnings of a modern literature. The Finns came under the dominion of the Swedes in the 12th and 13th Centuries, and were Christianised by them. Capital, Helsinki. Area 134,500 sq. m. Pop. 3,800,000.

Finnmark, province of Norway, in the extreme N., with a rocky and indented coast and a barren and mountainous interior; fishing the main industry of the inhabitants, who are chiefly Lapps. Pop. 63,000.

Finnpe, the native inhabitants of Finland, and formerly of parts of Sweden and Norway; probably a Ural-Altaic people; their language is allied to Estonian and Hungarian.

Finsbury, metropolitan borough of London, adjoining the City to the N.; includes Clerkenwell; industries are watchmaking, jewellery, furniture, printing, etc. Area 399 acres. Pop. 65,000.

Finsen, *Niels Ryberg*, physician, born in Faroe Isles; was one of the first to experiment with light rays in the treatment of certain diseases, such as smallpox and lupus; the Finsen lamp is named after him; was awarded the Nobel Prize for medicine in 1903. (1860-1904).

Fiords, deep indentations forming inlets of the sea, especially on the coast of Norway, overlooked by high mountains and precipitous cliffs.

Fir, a general name for various species of coniferous trees of the genus *Abies*, characterised by rounded needle-shaped leaves and by bearing cones. The silver fir (*Abies pectinata*) and the balsam fir (*Abies balsamea*) are notable species. The name fir is often used also for other trees of the genus *Pinus*, such as the Scotch fir.

Fir-bolg, in Irish tradition a race of early inhabitants of Ireland, of the pre-Celtic population. See also *Ossian*.

Firdausi, or *Firdusi*, the pseudonym of Abu'l Kasim Mansur, great poet of Persia, born near Tus, in Khorasan; flourished in the 10th Century A.C.; spent 30 years in writing the *Shah Namah* (*Book of Kings*), a national epic, but having been cheated out of the reward promised by Sultan Mahmud, he gave vent to bitter satire against his royal master and fled the court; for some time he led a wandering life, till at length he returned to die at his birthplace.

Fire, was probably first made known to man by some natural conflagration, such as one caused by lightning, or the lava of a volcano. Fires from such sources were probably kept continuously burning before the art of making fire by friction was discovered. Among savage tribes in many parts of the world the perpetual fire was associated with the life and prosperity of the King, and even in Rome the fire kept burning by the Vestal Virgins was supposed to be connected with the preservation of the State. The connection of fire with the sun may well have been observed as a result of the spontaneous outbreak of grass fires in tropical climates.

Firearms. The use of gunpowder to propel projectiles was first developed in Europe, cannon discharging balls of stone being used in sieges during the 14th Century. The first cannon were made of iron bars bound together by iron hoops to form a tube. In a chamber at one end—the breech—the projectile was placed with the charge, which was fired through a touch-hole by a red-hot wire. Later, balls of lead and iron were used as shot. Few improvements were made before 1600, when bombards came into use—pieces with short barrel and large bore, the forerunner of the modern mortar.

The earliest hand-guns were miniature cannon, and were worked on the same principle. They were introduced into England in the reign of Edward III. The hand culverin, served by two men, as well as the smaller matchlock or arquebus, was fired by a slow match. Later the wheel-lock and (about 1600) the flint-lock were improved forms of ignition. In the former sparks were struck from pyrites by a serrated wheel; in the latter from a flint by the action of a hammer.

About 1830 the percussion cap superseded the flint-lock, the hammer striking a fulminate to generate sufficient heat to ignite the priming. In the 19th Century the smooth-bore musket gave way to the rifle, and breech-loading was adopted, a revolution to the methods used in the early cannon. See also *Lee-Enfield Rifle*; *Rifle*.

Fire Brigade. Fire brigades have existed from early times, in Babylon, Egypt and Rome. In England it was not until after the Great Fire of London (1666) that serious fire-fighting efforts were made. In the 18th Century the various insurance companies united to form brigades. In the 19th Century the Metropolitan Board of Works, and later the L.C.C., took over the duty of fire protection in London, and now almost all local authorities maintain fire brigades. At first leather buckets and hand-squirts were almost the sole equipment, but to-day pumping engines discharge 300 to 1,000 gallons of water per minute at a pressure of some 250 lb. per sq. in.

Modern equipment includes hose elevators, mechanically-extending ladders, asbestos suits and gas masks. For private protection against fire, chemical extinguishers, buckets of sand or water, and automatic sprinkler systems may be installed. Outside drencher installations prevent the spread of fire from one building to another. Every building occupied by, or used for the employment of, more than 20 persons must be provided with adequate means of escape from fire, and any building more than 50 feet high must possess a fire-escape. At present (1938) plans for the extension and development of fire brigades to cope with the effects of bombing raids in the event of war are being pushed forward.

Fire Damp, an inflammable gas produced in coal-mines, where it is a source of danger to life, as, when mixed with air to a certain percentage, it becomes explosive. It is chiefly methane or marsh-gas with some admixture of carbonic acid gas and nitrogen.

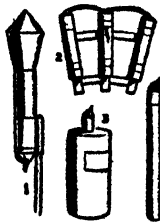
Firefly, a winged beetle (*Elater noctilucus*) which emits a phosphorescent light from yellow spots on various parts of the body, found especially in tropical America; the name is sometimes also applied to the wingless female glow-worm (*Lampyris noctiluca*).

Fire of London, The, lasted for four days in Sept., 1666, and is vividly described in Pepys' diary. Some 13,000 houses and 90 churches, including St. Paul's Cathedral, were burnt, and practically the whole of the City from the Tower to the Temple was razed to the ground.

Fireship, a ship filled with inflammable material and fitted with grappling-hooks, the idea being that the wind should drive it burning among the ships of an enemy fleet. Fireships were first used in the British navy by Lord Howard against the Spanish Armada in 1588.

Fireworks, preparations of gunpowder, sulphur, etc., which, on

being discharged into the air, explode and cause displays of coloured lights. Gunpowder, invented by the Chinese, has for many centuries been used by them for the manufacture of fireworks and crackers. Among types of fireworks are Roman candles, which eject stars amid an effusion of sparks, and Bengal lights, which give out a steady blue flame; the latter are used also for signalling, as are rockets. The Catherine wheel is an example of another type of firework on a fixed frame, in this case a revolving wheel. Firework displays are often given on occasions of mass rejoicing. On Nov. 5 the Gunpowder Plot is annually commemorated in England by firework displays.



FIREWORKS
(1) Sky Rocket;
(2) Prince of
Wales' Feathers;
(3) Mine of Serpents; (4) Roman
Candle

Fire-worship, worship of fire, especially as embodied in the sun; particularly as connected with the Zoroastrians of ancient Persia.

Firmament, a name given to the vault of the sky conceived as a solid substance studded with stars.

Firman, a Persian word denoting a mandate or decree; among the Turks the term was formerly applied to government decrees; the word is also used in India to denote a permit to trade.

First Aid, the preliminary treatment, necessitated by an accident, designed to prevent any fatal results before the arrival of skilled medical aid or before the sufferer can be taken to a hospital. It covers all emergency measures, from the application of iodine or other disinfectant to a wound, to artificial respiration (q.v.) in cases of suffocation and drowning. First aid to prevent bleeding is important in cases of a cut artery. The artery must be pressed on the side nearest the heart, although pressure is not possible if broken bone or glass is present. Venous bleeding is prevented by pressure on the side farthest from the heart. First-aid treatment of fractures involves supporting the broken bone, generally with the aid of a splint. Various kinds of poisoning also call for suitable first-aid measures.

First Empire, that of Napoleon I., Emperor of the French by a decree of the Senate on May 18, 1804. The Empire lasted until the restoration of the Bourbons in 1814.

First Fruits, or *Annates*, the proceeds of an ecclesiastical benefice during the first year it is held; in England assigned to the Pope in 1306, but after 1534 payable to the King. In 1703 they were assigned for the support of poor clergy and were consolidated with Queen Anne's Bounty (q.v.) in 1838.

First Offenders Act, an Act passed in 1887, determining the conditions on which a first offender might be released on probation if charged with certain offences. It was superseded by the Probation of Offenders Act in 1907.

First of June, Battle of (1794), a naval battle off Ushant, in the wars following the French Revolution, in which the French fleet, acting as convoy to grain ships from America, was defeated by the British under Earl Howe.

First Republic, proclaimed in France by the National Convention, following the overthrow of the Bourbon régime by the Revolution. The National Convention was succeeded by the Directory in 1795, and the Consulate in 1799. The Republic ended with the establishment of the First Empire (q.v.).

Firth, or *Firth*, a Scottish word, related to the Norwegian fjord, for a narrow arm of the sea stretching inland, or for the estuary of a river, such as the Firth of Clyde.

Firth, Mark, Sheffield steel manufacturer (1819-1880), and well-known philanthropist.

Fish, a class of vertebrates adapted to aquatic life. Fish breathe by taking in water through the mouth and passing it over internal gills, absorbing the oxygen into the blood, and ejecting the water through the gill-opening. A characteristic organ is the air-bladder, which is a tube, in some species connected with the gullet. It is filled with gases, and by means of this organ the fish can accommodate itself to the different pressures at various depths.

Fish are also equipped with fins by means of which they move and maintain equilibrium, the movements of the tail and tail-fin providing the chief propulsive force, while the dorsal,

anal, and pelvic fins act as keels. The pectoral fins are used for balancing and steering, while they are also able to check the fish in its forward movement. Most fish are covered with scales as well as skin. The eyes are similar to those of land vertebrates, but fish do not see far. The sole use of the nostrils is for smell. The species of fish are very varied, and adapted to widely different conditions of life. They are divided into two classes: *Selachii*, including sharks and rays; and *Pisces* or bony fishes.

Fish, *Royal*, a term in English law, designating fish of certain species (e.g., whales, porpoises, sturgeon, etc.), which are held to belong to the Crown, no matter by whom caught, if in British waters.

ROYAL FISH
(STURGEON)

Fisher, Andrew, Australian politician. Of Scottish birth, he emigrated in 1882 and became a Labour M.P. for the Commonwealth. In 1904 he was Minister of Trade, and later leader of the Labour Party. In 1908, from 1910 to 1913, and in 1914 he was Prime Minister. He left Australian politics in 1915 to become High Commissioner in London. (1862-1928).

Fisher, Herbert Albert Laurens, statesman, historian and educationist; educated at Winchester and New College, Oxford (of which he became Warden, 1925), Paris and Göttingen. Chichele Lecturer on foreign history, 1911-1912. Minister of Education, 1916-1918: he carried through the Education Act of 1918. M.P. for English Universities, 1918-1926. His best-known work is his *History of Europe*. (1865-).

Fisher, John, Bishop of Rochester, born in Beverley; was distinguished at Cambridge, and became professor of Divinity there; in 1504 he was elected Chancellor of the University and made Bishop of Rochester, but incurred the royal displeasure by opposing Henry VIII.'s divorce of Catherine of Aragon; was sent to the Tower in 1534 for refusing to take the oath of succession; was created a cardinal, but was beheaded by order of the King ere his hat arrived; was canonised in 1835. (1459-1535).

Fisher, John, first Baron, of Kilsnoe, admiral, entered the navy at the age of 13, and saw service in the Crimean War, in China and at Alexandria. He represented the navy at the Hague Conference of 1899, was commander of the Mediterranean Fleet, and in 1902 became Second Lord of the Admiralty. For six years from 1904 he was First Lord, and in that office introduced dreadnoughts, battle-cruisers and submarines. Resigning in 1910, he was reappointed at the outbreak of the World War, but finally resigned in 1915 owing to differences of opinion with Winston Churchill and Asquith, principally on the Dardanelles campaign. (1841-1926).

Fisheries. The fish has formed an important article of food since the earliest times, and to-day the fisheries are an important part of the economic life, especially of Great Britain, Russia, America, China, Norway and Japan. The North Sea fisheries are mainly herring and cod; Alaska and Columbia River, salmon; Gulf of Mexico, shrimp; New England, cod, mackerel, halibut, lobsters, clams. Japan, with Korea, leads the world in fisheries. The United Kingdom fisheries produce a catch of about 1,000,000 tons annually, two-thirds of which are cod, haddock and herring; U.S.A. fisheries: 1,350,000 tons of fish of over 100 kinds, including salmon. Other countries with considerable fisheries are France, whose fisheries have an annual value of somewhat

over one-third of that of Great Britain; Norway, chiefly cod, whale and herring, and Canada, each of an annual value of about one-fourth of that of Great Britain; Spain, which, before the Civil War, had fisheries nearly equal to those of Norway; Newfoundland, chiefly cod; and Australia.

Fishguard, market town and seaport in Pembrokeshire, Wales, 15 m. from Haverfordwest. G.W.R. Railway steamers ply between here and Ireland. Pop. 5,000.

Fitch, John, American inventor; born in Connecticut; in 1785 brought out a model steam-boat with side wheels, and in 1788 and in 1790 constructed larger vessels, one of the latter being for some time employed as a passenger-boat; some of his plans are said to have fallen into Robert Fulton's hands and given him the idea of his steamship. Committed suicide at Bardonia, Kentucky. (1743-1798).

Fitzgerald, Edward, English scholar, born in Suffolk; educated at Cambridge. His first book, *Euphrasian*, a dialogue on youth, appeared when he was 42, *Polonius* and some Spanish translations followed, but his fame rests on his translations of Persian poetry, and especially on his rendering of the 11th Century poet, Omar Khayyam. (1809-1883).

Fitzgerald, Lady, a daughter of Egalité and Mme. Genlis, called Pamela. Distinguished for her beauty and enthusiasm for liberty, she became the wife of Lord Fitzgerald. (d. 1831).

Fitzgerald, Lord Edward, younger son of the Duke of Leinster, born at Carlton Castle, near Dublin; joined the English army and served with distinction in the American War. In 1784 he was elected to the Irish Parliament, and opposed the English Government; joined the United Irishmen in 1796, and began plotting the rising of 1798. His scheme was betrayed, and he was arrested in Dublin after a determined resistance, during which he received wounds of which he died in prison. (1763-1798).

Fitzherbert, Mrs., a Roman Catholic lady, maiden name Maria Anne Smythe, with whom, after her second widowhood, George IV, while Prince of Wales, contracted a secret marriage in 1785, which, however, under the Royal Marriage Act, was declared invalid. (1766-1837).

Fitzmaurice, Edmund George, Baron, English Liberal politician and biographer, son of Fourth Marquess of Lansdowne; twice Under-Secretary for Foreign Affairs; in 1877 published his *Life of Lord Shelburne*. Also published a *Life of Lord Granville* and a biography of Sir William Petty. (1846-1935).

Fitzroy, a river in Queensland flowing into Keppel Bay. It is formed by the junction of the Dawson and Mackenzie R., and is navigable to Rockhampton.

Fitzroy, Algernon, British politician. Entering the House of Commons in 1900 as a Conservative, he was made Speaker in 1928. (1869-).

Fitzroy, Robert, admiral, navigator and meteorologist, born at Ampton Hall, near Bury St. Edmunds; in 1826-1830 conducted a survey of the coasts of Patagonia and Tierra del Fuego, a work he continued while commanding the *Beagle* (1831-1836), in which Darwin accompanied him; in 1843-1845 was Governor of New Zealand; published accounts of his voyages, etc.; committed suicide. (1805-1866).

Fitzsimmons, Robert, prizefighter, born at Histon, Cornwall; taken to New Zealand, 1871; became amateur champion of New Zealand. In 1890 went to U.S.A.; won middleweight world

championship from Dempsey, New Orleans, 1891; heavyweight world-championship from Corbett, Carson City, 1879. Beaten, Coney Island, 1899, by Jeffries; whom he fought again, 1903. Beaten by Jack Johnson 1907. (1862-1917).

Fitzstephen, William, biographer of Thomas à Becket, and was present at his murder. As preface to the Life of Becket, Fitzstephen wrote an invaluable description of the London of his time. (died about 1191).

Fitzwilliam, William, Earl, a politician of George the Third's time. The excesses of the French Revolution caused him to come over from the Whigs and support Pitt; favoured Catholic emancipation during his Lord-Lieutenancy of Ireland, but was recalled; held office under Grenville in 1806, and took some part in the Reform Bill agitation of the day. (1748-1833).

Fitzwilliam Museum, at Cambridge, developed from a collection of books and pictures left to the University by Richard, Viscount Fitzwilliam, who died in 1816; the museum is housed in a building designed in Greek style by G. Basevi in 1837.

Fiume, a port in Italy on the Adriatic, 40 m. S.E. of Trieste; a new town of spacious and colonnaded streets and many fine buildings has grown up on the ground sloping down from the old town; has an excellent harbour, and flourishing industries in paper, torpedoes, tobacco, etc. For some years after the World War its ownership was disputed between Italy and Yugoslavia. It was seized in 1918 by irregular Italian troops under D'Annunzio (q.v.), the airman-poet, who held it for nearly two years before the Treaty of Rapallo made it a Free State in 1920. After Fiume had again been occupied by Italian troops it was made capital of the Italian province of Carnaro. Pop. 54,000.

Five Mile Act, passed in 1665, prohibited dissenters from reaching within five miles of a town. It was repealed in 1689.

Flag, in botany, a popular name of certain British species of plants, belonging to the genus *Iris* (order Iridaceae), with long, sword-shaped leaves and blue or yellow flowers.

Flag, a symbolically designed rectangle of textile material attached to a staff, used as a national emblem, or for signalling. From the military badges of wood or metal carried by the ancient Egyptians, Assyrians and Greeks developed the Roman standard; the *velum*, or cavalry flag, was a piece of cloth attached to a cross-bar at the end of a spear. In England the first national banners had a religious significance, the present Union Flag being composed of the crosses of St. George, St. Andrew and St. Patrick. The various British dominions all have flags of their own, most of them being developments of the Union Jack.

Flagellants, medieval sect, which first arose in Italy in 1260, and subsequently appeared in other quarters of Europe, members of which scourged themselves in public processions in atonement for their own and others' sins. They were condemned by the Church and suppressed.

Flageolet, a non-reed, wood-wind instrument, seldom used in modern orchestras, having been mainly replaced by the piccolo.

Flag-Lieutenant, an officer in the British navy attached to an admiral and responsible for the transmission of his orders.

Flag-Officer, a naval officer commanding a squadron; in the British navy generally an admiral, vice-admiral or rear-admiral, so styled owing

to the fact that when in command of a fleet his flag is flown at the masthead of the flagship.

Flagship, that ship of a fleet which flies the admiral's flag, usually the St. George's Cross, red on a white ground.

Flambard, a Norman who came over with the Conqueror to England and became chaplain to William Rufus, being in 1099 made Bishop of Durham; founder of a college at Christchurch, Hants. (d. 1138).

Flamborough, a village in the E. Riding of Yorkshire, 2 miles E. of Flamborough Head, on which stands a lighthouse. Pop. 1,200.

Flamboyant, the name given, from the flame-like windings of its tracery, to a florid style of architecture in vogue in France during the 15th and 16th Centuries.

Flame-flower, a popular name for the *Knapweed*, a lilaceous plant with spikes of red and orange flowers, blooming in late summer.

Flamens, priests elected in Rome by the people and consecrated to the service of a particular god, such as Jupiter, Mars, etc.

Flamingo, a long-legged, long-necked bird with peculiarly hooked

bill and deep pink plumage, belonging to the family Phoenicopteridae, found in temperate and tropical lands; possesses affinities with the storks on one side and the Anseres on the other; chiefly a wader, but also flies and can swim in deep water.

Flaminius, Gaius, a Roman tribune and consul, who constructed the Flaminian Way; perished at Lake Trasimene, where he was defeated by Hannibal in the Second Punic War, 217 B.C.

Flaminius, Titus Quintus, a Roman consul, who defeated Philip of Macedonia and proclaimed the freedom of Greece. He called for the surrender of Hannibal, who chose to take poison rather than fall into his hands. (230-174 B.C.).

Flammarion, Nicolas Camille, French astronomer, born at Montigny-le-Rei; worked mainly at Paris and Juvier, author of many popular astronomical works. (1842-1925).

Flamsteed, John, the first astronomer-royal of England, born near Derby; astronomer-royal in 1675. From the Observatory of Greenwich, specially built for his use, he catalogued the fixed stars and supplied Newton with useful information bearing on his lunar theory. At first he was paid only £100 a year and so supplemented this by teaching and by taking holy orders, being presented to the living of Burston in Surrey, which he held till his death. (1646-1719).

Flanders, the land of the Flemings, formerly included, besides the present Belgian provinces of E. and W. Flanders, part of Zealand, and of Artois, in France. The ancient county dates from 862, when Charles the Bold of France raised it to the status of a sovereign county, and bestowed it upon his son Baldwin I. It has successively belonged to Spain and Austria, and in Louis XIV's reign a portion of it, now known as French Flanders, was ceded to France, the remainder, except for Zealand which became Dutch, in 1714 was made the Austrian Netherlands, and in 1831 was incorporated with the new kingdom of Belgium (q.v.). From 1914 to



FLAMINGO

1918 it was the scene of the most severe fighting and the heaviest British losses of the World War. There is a strong movement for self-government in the Flemish provinces of Belgium, which Germany fostered for her own purposes during the World War.

Flandrin, Hippolyte, a French painter, of Ingres; born in Lyons; was a pupil of Ingres; represented the 19th Century religious movement in art. (1809-1864).

Flannel, a soft woollen material of loose weave, warm though not of strong texture, formerly much worn in Wales, and used for undergarments; it has now lost much of its popularity. Rochdale is a centre of its manufacture.

Flash Point, at the lowest temperature petrol, etc., will ignite.

Flat, a musical sign (b) which indicates that the note to which it is prefixed is lowered by a semitone. The sequence of flat keys may be found by counting successively a perfect fifth downwards from the preceding tonic—c.g., C, F, Bb, Eb, etc.

Flat, a single floor or part of a floor of a building, designed as a residence separate from the remainder of the building; popular, especially in recent years, as a dwelling in preference to a house among many inhabitants in the large cities of Europe and America; flats are frequently built in large blocks, with communal restaurants, baths, games facilities and other services.

Flat-fish, class of marine fishes, Pleurocentrales, characterised when mature by a flattened body and the presence of both eyes on the same side. Species found in British seas include the halibut (largest of all flat-fish), plaice, flounder, witch, dab, turbot, brill and sole. The eyeless side is usually unpigmented and kept towards the sea-bed.

Flat-foot, a deformed condition of the arch, so that the inner edge of the foot rests on the ground. It may be due to lack of nourishment in early years combined with much standing or walking with the toes turned out, and can usually be corrected by suitable treatment in its early stages.

Flatford, a beauty spot in the parish of East Bergholt on the R. Stour, Suffolk. Flatford Mill and Dedham Mill have attained fame in the pictures of John Constable.

Flatulence, the production of gas in the stomach or bowels as a result of mal-digestion or of the fermentation of food in the intestine. The gases formed are mostly carbonic acid and marsh gas.

Flaubert, Gustave, French novelist, born in Rouen; author of *Madame Bovary*, a study of provincial life, which became the subject of a prosecution, and is the parent of the modern realistic novel, and *Salammbô*, wonderful for its vigour and skill in description. (1821-1880).

Flax (*Linum usitatissimum*), a plant of the order Linaceae, grown in the Argentine,

India and Ulster, bearing blue flowers; cultivated from early times for its fibre, which is woven into linen. The seeds are removed by "rippling," and the stems laid in troughs of water to "ret" (rot) until the fibres are easily separated out. Lined oil is extracted from the seeds, and the residue is made into oil-cake.

Flaxman, John, an eminent sculptor, born in York; exhibited at the age of 13, and won the silver medal of the Royal Academy at 14. For some years he supplied the Wedgwoods with designs for their famous



FLAX

pottery, and from 1787 to 1794 lived in Rome. In 1816 became professor of Sculpture to the Royal Academy. Besides many fine statues of eminent men and much exquisite work in bas-reliefs, he executed a series of noble designs illustrating Homer, Dante and Æschylus. (1755-1826).

Flea, general name for a number of wingless insects that live as parasites on various animals, including man, who is infested by the common flea (*Pulex irritans*), which sucks his blood; another species, the African jigger, bores its way into the foot, causing serious inflammation; the flea is remarkable for its great power of jumping, being able to cover 200 times its own length in a single movement.

Fleabane, name for plants of the genera *Conyza* and *Erigeron*, both of the order Compositae; from the former a volatile oil is prepared which keeps away insects, and the scent of the *Erigeron acris* serves the same purpose.

Flecker, James Elroy, British poet. A member of the Consular service, he used Eastern life as a background for poems and a poetic play *Hassan* for which Delliuss composed incidental music; died at Davos, Switzerland, of consumption. (1884-1915).

Fleet Marriages, clandestine marriages performed without licence by the chaplains of Fleet Prison, London.

Fleet Prison, a celebrated London jail in Farringdon Street; was a debtors' prison as far back as the 12th Century. It was demolished in 1842, and on its site now stands the Congregational Memorial Hall.

Fleetwood, borough and port at the mouth of the R. Wyre, Lancashire, England, 9 m. N.E. of Blackpool. There are steamer services to Belfast, Scotland and the Isle of Man; the principal industry is steam trawl-fishing. Pop. 23,000.

Fleetwood, Charles, a Cromwellian officer; fought as lieutenant-general against the King at Worcester, and acted as lord-deputy in Ireland; on the death of Oliver Cromwell advised the abdication of Richard Cromwell. (d. 1692).

Fleming, Sir John Ambrose, physicist, famous for his researches in electrical engineering, particularly in connection with wireless telegraphy and telephony; inventor of the thermionic valve. (1849-).

Flemish School, a school of painting, established in the 15th Century, to which Rubens, Van Dyck and Teniers belonged.

Flensburg, German seaport, in Schleswig-Holstein, at the S. end of the Flensburger Fjord, with a good harbour. It has breweries, iron-works, paper-mills and a large coal trade. Pop. 66,600.

Fleshy School, a name given by the realistic school of poets, including Rossetti, William Morris and Swinburne.

Fletcher, Andrew, of Saltoun, Scottish patriot and politician; entered the Scottish Parliament, but got into trouble through his opposition to James, Duke of York, and fled to Holland. For the next seven years he was a political refugee. He took part in the Rye House Plot and in Monmouth's invasion. His estates were restored in 1688, and he again sat in the Scottish Parliament. He was an active promoter of the abortive Darien Scheme, and a strong opponent of the Union of 1707. (1655-1716).

Fletcher, Giles, an English poet, born in London; author of a fervid and imaginative poem, *Christ's Victory and Triumph*, which won the admiration of Milton (1588-1623).

Fletcher, John, English dramatist, the son of a bishop of London; was left an orphan and in poverty; collaborated with Beaumont in the production of the plays published under their joint names, and also with Massinger and Jonson; died of the plague. (1579-1625).

Fletcher, Phineas, poet, brother of Giles Fletcher; was rector of Ill-gay, Norfolk; celebrated for his poem the *Purple Island*, or *the Isle of Man*, an ingenious allegory descriptive of the human body and its vices and virtues. (1582-1650).

Fletton, Old, a parish of Huntingdonshire, England, 1 m. from Peterborough, famous for the bricks produced there. Pop. 7,500.

Fleur-de-Lis (i.e., lily-flower), badge of three golden fleurs-de-lis

on a blue field, borne from the days of Clovis on their arms by the Kings of France, and thus the symbol of the French monarchy.

Fleury, André Hercule de, Cardinal, French statesman, born at Lodève, studied philosophy in Paris; became a doctor of the Sorbonne and almoner to the Queen and King Louis XIV., who subsequently made him Bishop of Fréjus and tutor to his son Louis. In 1726 he was chosen Prime Minister by Louis XV., and created a cardinal. He carried through a successful war with Germany, which resulted in the acquisition of Lorraine by France. (1653-1743).

Flies, with gnats and midges, form the order of insects called Diptera, characterised by the possession of two wings—i.e., the front pair; the "halteres," which are two appendages on either side of the thorax, taking the place of hind wings. The halteres give equilibrium and also, it is thought, contain an organ of hearing.

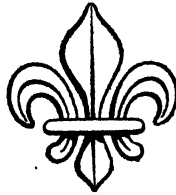
There are a vast number of species, the life-histories varying accordingly. All flies pass through a larval stage, the majority from eggs, although some species produce living larvae; the tsetse-fly, for instance, deposits full-grown larvae which turn instantly into pupae.

Flight-Lieutenant, a commissioned officer in the Royal Air Force, holding rank equivalent to a Naval lieutenant or an Army captain.

Flinders, Matthew, a naval officer, born in Lincolnshire; explored the coast of Australia with George Bass, and charted the Gulf of Carpentaria; experienced shipwreck and imprisonment by the French in Mauritius; wrote a graphic account of his voyage to Australia. (1774-1814).

Flint, (1) a maritime county of N. Wales, between Lancashire and Denbigh, with a detached portion lying to the N. of Shropshire; low stretches of sand form its foreshore, but inland it is hilly, with fertile valleys in which dairy-farming is extensively carried on; county town, Mold. Area 255 sq. m. Pop. 113,000. (2) Seaport on the estuary of the Dee, 13 m. NW. of Chester; has ruins of a castle of Edward I.'s time, with interesting historical associations; in the neighbourhood are copper-works and lead- and coal-mines. Pop. 7,600.

Flint, a mineral composed mainly of silica, found in chalk in irregular masses covered with a white crust. When the nodules are split, the flint is seen to be grey or black in colour, and translucent. It is used for road-surfacing, and in glass- and pottery-making; primitive man used it extensively for making weapons and domestic utensils.



FLEUR-DE-LIS

Flintlock, a gun-lock of Spanish invention, introduced about 1630. In a mallet of this type the hammer held the flint, and when the hammer fell, it opened the flash-pan and struck sparks from the cover of the pan, thus igniting the priming powder. The flintlock remained in use until superseded by the percussion cap, about 1830.

Floating Debt, that part of the National Debt which consists of treasury bills and short-term exchequer bonds. Sums borrowed by the Government from the Bank of England are also included.

Floating Islands, sometimes formed of masses of drift-wood on which débris, vegetation, etc., gradually form a soil, but more commonly portions of river-banks detached by the force of the current; they are to be met with off the mouths of the larger American, Asian and African rivers, and sometimes in inland seas and lakes.

Flodden, Battle of, fought on Flodden Hill, a low spur of the Cheviots, 6 m. S. of Coldstream, between James IV. of Scotland and the English under the Earl of Surrey on Sept. 9, 1513; it resulted in the crushing defeat of the Scots, who lost their king and the flower of their nobility, an event celebrated in Jean Elliot's *Flowers of the Forest*; a spirited account of the battle is given in the sixth canto of Scott's *Marmion*.

Flogging, in English law a punishment which may be inflicted on males in cases of robbery with violence, robbery or assault with intent to rob by a person armed with a weapon, conviction as an incorrigible rogue, discharging firearms at or using any substance with intent to injure or alarm the sovereign, having or attempting to have carnal knowledge of a girl under 13 years. It may be inflicted on males under 16 years for larcenies or malicious damage. Corporal punishment may be inflicted on children at the order of a magistrate, on conviction for an indictable offence. Females may not be given corporal punishment. It is an authorised punishment in the Army and Navy. A Commission appointed to investigate the matter reported in 1938 in favour of its abolition, except in cases of assault by a convicted prisoner upon a prison officer and a Penal Reform Bill introduced late in the year incorporated this.

Flood, Henry, Irish Nationalist, trained at Dublin and Oxford; entering the Irish Parliament, he soon won a place in the front rank of Irish politicians; from 1775 to 1781 he was Vice-Treasurer of Ireland; to Grattan's Irish Bill of Right he offered bitter opposition, holding it to be an altogether inadequate measure; in 1783 he was returned to the English House of Commons, but failed to make his mark. (1732-1791).

Flood Lighting, a form of civil illumination, whereby for purposes of display prominent buildings, monuments, etc., are lighted at night in such a way as to illuminate the features of the building with no diffusion.

Floods occur in lowlands traversed by a river whose channel is not deep enough to carry away any abnormal flow of water due to heavy rain, melting snow, etc. The rainy seasons often bring severe flooding of such large rivers as the Mississippi, Hwang-ho, Ganges, Nile and Rhine. Disastrous flooding of the Ohio and Mississippi Rr. in 1937, made over 1,000,000 persons homeless. In June 1938, breaches in the bank of the Hwang-ho (Yellow R.) in China caused either by the Chinese themselves or by Japanese gunfire flooded thousands of square miles of land, killed many thousands and held up the Japanese advance in the province. Methods of flood control are the building of levees and

dykes, spillways and reservoirs. Floods are also caused by inundation from the sea (as in Bengal in 1876, 200,000 lives being lost), torrential rain and cloudbursts.

Flora, goddess of flowers and gardens and divinity.

Flora, a name given to the collective plant life of a country or district, or to a list of the plant forms occurring therein.

Florence (Italian, *Firenze*), city of Italy, in Tuscany, 50 m. from the coast, on both sides of the Arno; the outlying suburbs are singularly beautiful, and are surrounded by finely wooded hills, bright with gay villas and charming gardens; the old city itself is full of fine buildings of historic and artistic interest; chief amongst these is the cathedral, or Duomo, begun in 1298, with its grand dome and campanile (293 ft.), by Giotto. In the Middle Ages it was an independent City State, the city of Dante, Petrarch, Michelangelo, Leonardo da Vinci, Boccaccio, Machiavelli, Galilei and many more of Italy's great men; from 1864 to 1870 it was the capital of Italy. It has many fine art-galleries; is an educational centre, and carries on trade in straw-plaiting and silk. Pop. 323,000.

Florida, "Land of Flowers," the most southern of the United States, forms a peninsula on the E. side of the Gulf of Mexico, and has on its eastern shore the Atlantic; has a coastline of 1,150 m.; the chief physical feature is the amount of water surface, made up of 19 navigable rivers, and lakes and ponds to the number of 1,200, besides swamps and marshes. The climate is equable, and for the most part healthy. Fruit-growing is largely engaged in. Timber, cotton, grape-fruit and tobacco are grown, and phosphates produced. There are extensive fisheries. The state contains many holiday resorts. The capital is Tallahassee. Area 56,700 sq. m. Pop. 1,035,000.

Florida Keys, a chain of small islands, southern extremity of Florida, extending for a distance of about 230 m. The islets, of which Key West (a summer resort) and Key Largo are the chief, were once much used by buccaners.

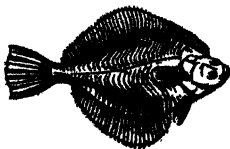
Florin, a coin, originating in Florence, after which an English gold coin first issued by Edward III. in 1337, and valued at 6s., was named. The present silver coin, value 2s., was first issued in England in 1849; since 1937 the word "florin" has not appeared on it.

Florio, John, the translator of Montaigne, born in London, of Italian parents; was a tutor of foreign languages for some years at Oxford; published an English-Italian dictionary called a *World of Words*, but his fame rests on his translation of Montaigne, which Shakespeare used freely. (1553-1625).

Flotilla, a term of Spanish origin, denoting a small fleet, or a fleet of small ships. It is now used especially of a fleet of destroyers, a destroyer of specially heavy type being known as a flotilla leader.

Flounder, a flatfish (*Pleuronectes flesus*), resembling the plaice, though

much smaller and more elongated, dark green or brown in colour as a rule, though albino varieties are found and specimens coloured on one side only. The eyes are large, the mouth is twisted, and the lower jaw protrusive. It inhabits inshore waters and



FLOUNDER

river-mouths of temperate countries, especially N. Europe.

Flour, a fine powder produced by the milling of cereals—e.g., rye, barley and wheat. The latter possesses a large amount of gluten which, when moistened, causes the flour to form a paste and is therefore most commonly used for bread. Ordinary wheat-flour is produced from grain from which the husk has been removed. If the husk is retained, a wholemeal flour is milled, much rougher in texture. Wheat-flour contains about 75 per cent. starch and very little fat, while wholemeal flour is enriched by the proteins and salts in the bran.

Flower, the part of a plant which contains its reproductive organs. The shape, colour and scent of a flower are specific aids to the process of reproduction, and attract the bees, butterflies, etc., which often act as fertilising agents. A flower is thought to be a modification of a leaf-shoot, terminating in an inflorescence instead of leaves.

Flowers vary greatly in form as between different species. A typical flower consists of a calyx or cup made of leaf-like bracts called sepals. The calyx encloses petals which are of a beautiful texture and often the most attractively coloured part of the flower. In many monocotyledonous plants, such as the daffodil, the sepals are themselves very like petals. In dicotyledonous plants the calyx is closer and more protective.

Within the petals are the stamens, the male part of the flower. At the end of each is the anther containing the pollen. The stamens surround the female organ, the pistil, which consists of three parts: the top (stigma) which catches the pollen for fertilising the seeds; the stem or style; and at the bottom the ovary containing the ovules or unfertilised seeds. Not all flowers, however, are self-fertilising; in some plants the stamen is in one flower and the pistil in another.

Fluke, or Liver Fluke, a parasitic worm (*Distoma hepaticum*), flat and lanceolate, of the order Trematoda. Its eggs hatch in damp ground, and the fluke begins its life as a parasite on a certain species of water-snail. Passing out, it enters into a cyst, clinging to grass stems. If this grass is eaten by a sheep or goat, the fluke passes into the biliary duct, causing "liver-rot." Its eggs in great numbers are expelled from the sheep through the bowels. It is rarely found in man.

Fluorescence, the property of certain substances of emitting radiation when illuminated; the emitted light is as a rule of different wave-length (i.e., colour) and emission only takes place whilst the substance is illuminated.

Fluorine, a non-metallic chemical element belonging to the same family as chlorine, bromine and iodine ("halogens"). It is extremely active chemically, and though its existence had been known since the 18th Century it was first isolated only in 1886, by the French chemist Moissan. Symbol F, atomic number 9, atomic weight 18.00. It is a very poisonous yellowish gas; a solution of its compound with hydrogen, hydrogen fluoride or hydrofluoric acid is used for etching glass.

Fluorspar, a mineral composed of fluoride of lime, used as a flux and for the production of hydrofluoric acid, which is used for etching glass.

Flushing, a Dutch seaport on the mouth of the western Scheldt; has an active shipping trade, docks, arsenals, etc. Pop. 22,000.

Flute, a non-reed, wood-wind instrument, extensively used both for orchestral and solo work. The chief type is the concert-

flute, with a compass of three octaves from Middle C. The flute underwent great changes during the 18th Century, when the Boehm system of fingering, now the most widely used, and the cylindrical, instead of the conical bore, were introduced. The player holds the instrument transversely, placing the lower lip to the embouchure, and so directing his breath that it strikes the opposite edge. The column of air is thus set into vibration. The opening and stopping of the holes has the effect of determining the length of this column, thus varying the pitch of the sound produced.

Fluting, in architecture, the vertical channelling of the face of a column. In Norman architecture the fluting was often spiral or zig-zag. The flutes on the Doric columns of ancient Greece were 20 in number, shallow and elliptical, those on the Ionic columns 24 in number and semi-circular.

Flux, a substance used to bring about the fusion of metals; or by combining with one part of an earthy mixture they enable another part (i.e., a third metal) to be extracted in a pure state. Salts of potassium and sodium borax, lime, etc., are used as fluxes.

Fluxions, a method, invented by Sir Isaac Newton, of determining the rate of increase or decrease of a quantity or magnitude whose value depends on that of another which itself varies in value at a uniform and given rate. The method of fluxions led to the invention of the calculus. See *Calculus*.

Flycatcher, the name in common of all the insect-eating birds of the family Muscipidae, closely related to, and some species being difficult to distinguish from, the Warblers; also closely related to the Thrushes. The common spotted Flycatcher (*Muscicapa griseola*) is an English visitor, arriving from Africa in May. The bill is short, fringed with bristles and flattened at the base. It darts at insects from a perch, pursuing and catching them on the wing.

Fly-fishing, the sport of angling, using artificial fly, as bait a natural or artificial fly. Salmon, trout and grayling are caught in this way in rivers and lakes. Artificial flies are cunningly contrived to represent different varieties of hover-flies. The "fly" must be cast so that it alights on the water in a natural manner.

Flying Boat, a type of aircraft designed for landing on water, in which the body itself serves as a boat and is not supported by floats, as in the case of a seaplane.

Flying Buttress, in Gothic architecture, a buttress attached only at one point to the mass of masonry whose outward thrust it is designed to counteract. It frequently overleaps the aisles to support the clerestory.

Flying Corps, Royal, the military air arm organised by the British War Office in 1912. In 1917 it was amalgamated with the Royal Naval Air Service to constitute the Royal Air Force, under the control of a separate Air Ministry.

Flying Dutchman,

a legendary Dutch captain, fated, for his sins, to scour the seas and never reach port, who appeared from time to time to sea-captains on a black spectral ship, and from the terror he inspired made them change their course. The legend is the subject of an opera by Wagner and a story by Marryat.



FLYING BUTTRESS

Flying Fish,

fish with wings or tails so adapted that they can leap or travel a certain distance through the air over water; they are generally tropical. There are



FLYING FISH

two main genera, the *Exocoetidae* or flying herring (true flying fish), and *Dactylopterus* or flying gurnard. In the case of those of the *Exocoetidae* family the wings are enlargements of the pectoral fins (in the two-winged types such as *Exocoetus paretocetus*) and of both pectoral and pelvic fins in the four-winged types (e.g., *Cypsilurus pacilopterus*).

Flying-Fox, or *Fox-Bat*, the common fruit-eating bats of the Pteropodidae family, with fox-like faces, native to Malaysia and India. Two species are particularly noteworthy—viz., *Acerodon jubatus*, the Philippine Fruit-Bat, on account of the large size it reaches (4 to 5 ft. across the wings), and *Pteropus medius*, on account of the damage it does to fruit-gardens in India.

Flying-Squirrel, the common name of a group of squirrel-like rodents of Europe, S. Asia and N. America, distinguished from the ordinary squirrel by a development of the skin between the feet on either side, which gives the animal a lateral expansion and buoys it up when leaping. They are placed in the genus *Petaurista* of the family Sciuridae, are natives of S. Asia and brightly coloured.

Flywheel, a heavy wheel connected to speed and rotating when the engine is in motion. It must be of sufficient size and weight to offset any undue suddenness in the engine's acceleration, while, on the other hand, any slackening of speed is counterbalanced by the considerable momentum gained by the flywheel. The purpose of the flywheel is therefore to ensure the smooth running of the engine, enabling it to keep a uniform speed if required.

Foch, Ferdinand, French general. Born at Tarbes, son of a civil servant. Joined the army in 1870. His first active service was in 1914, after he had made an international name as a strategist. At first he served under Joffre, being in command of the armies of the North, and in 1916, when Nivelle was given Joffre's command, Foch was sent on various missions. In March, 1918, when the final German offensive threatened to break through the allied lines he became supreme general of both the French and British troops, stemmed the attack, and brought the war to a successful end before the close of the year. Foch was a military genius of the first order. (1851-1929).

Fog, a cloud of condensed vapour caused ground or water; or, contrariwise, by cold air in contact with water warmed by the sun, as in a pond or marsh. Over industrial areas the fog is surcharged with particles of smoke and dust, round which the vapour condenses. When dense, it hinders visibility and disorganises traffic. On railways, detonators placed on the line act as fog signals, exploding when the train hits them. At sea, ships must give signals by siren every 2 minutes when under way during fogs.

Foggia, the capital town of the province of the same name in Apulia, Italy; has an ancient cathedral and traces of a former imperial palace, and is an important wood-trade centre. Pop. 62,500.

Fo-Hi, the mythical founder of the introduced cattle-rearing, instituted marriage and invented letters.

Föhn, a warm, dry wind which sweeps down the Alpine valleys from the mountains; cases are on record where it has melted two feet of snow in twelve hours.

Foil, a sheet of metal beaten to the thinness of paper—e.g., tinfoil and gold-foil (thicker than gold-leaf). Jewellers use foil as a background for precious stones, to set off their brilliancy; hence the metaphorical use of the word. The layer of tin and quicksilver used as backing for a mirror is also so called.

Foix, **Gaston de**, French military captain, nephew of Louis XII., from his daring exploits called the Thunderbolt of Italy; he beat the Swiss, routed the Papal troops, captured Brescia from the Venetians, and gained the battle of Ravenna against the Spaniards, but was slain when pursuing the fugitives. (1489-1512).

Fokker, **Antony Herman Gerard**, Dutch air-engineer. He went to Germany at the age of 20, and was a pioneer of aviation there, the German Government taking an interest in his work and buying the machine, named after him, which was extensively used in the World War; has since been concerned with aeroplane production in the Netherlands and U.S.A. (1890-).

Foleshill, part of the county borough of Coventry, Warwickshire, England, on the Coventry and Oxford Canal.

Foley, **John Henry**, Irish sculptor, born in Dublin; statues of Hampden, Burke, J. S. Mill, Goldsmith, etc., brought him fame, and he was commissioned by Queen Victoria to execute the figure of Prince Albert in the Albert Memorial; the equestrian statues of Hardinge and Outram in India are also his work. (1818-1874).

Folio, a sheet of paper folded once so as to make two leaves; hence a book consisting of sheets so folded; a page in an account-book; a page on which are written a certain number of words—in English legal and parliamentary documents, a folio represents 72 words, in America 100 words.

Folk-dancing, the traditional method spontaneously followed in rural surroundings, as opposed to the formal dancing of the ball-room and the stage. Much has been done in Great Britain in recent years to revive old country dances owing to the work of the English Folk-Dance Society.

Folkestone, a seaport and holiday resort on the coast of Kent, England, 7 m. SW. of Dover; has a fine harbour and esplanade; is much engaged in the herring and mackerel fisheries, and is the port for the cross-channel steamer service to Boulogne. Pop. 36,000.

Folklore, the body of traditional knowledge, ledge and beliefs peculiar to a race of people; first became the subject of scientific study in conjunction with sociological and anthropological research in the 19th Century. Its material includes stories, legends, children's rhymes, saws and superstitions, of which the long-forgotten origin and meaning may often be elucidated by reference to the history or religious practices of antiquity, or, frequently, by comparison with similar beliefs and practices in surviving primitive communities. The Brothers Grimm in Germany were pioneers in collecting the folklore of their country. In 1878 the Folklore Society was founded in England to further the study in this country.

Folkmoot, a popular assembly of political, judicial, and other administrative functions, held in each shire, and hence also called Shiremoot.

Folk-song, the general name for the body of songs, ballads, carols and the like, whether secular or religious,

which has grown up by popular tradition in any country, and often throws valuable light on its former history and customs. The collecting of folk-songs is now carried on systematically by students, who note down the words and music of songs heard at country gatherings and cottage firesides.

Fomentation, a soft, damp dressing, applied to a part of the body to relieve pain and lessen inflammation. A simple fomentation may be made by soaking several thicknesses of flannel in boiling water, wringing them out by twisting in a towel, and applying them as hot as they can be borne; it should be renewed as soon as it grows cool. Turpentine, laudanum, etc., are sometimes used for fomentations.

Fomorian, an ancient race of gods taken over from the pre-Celtic race known in Irish story as the Fírlboigs. Though the later Celts regarded them as baneful, they were really peaceful deities of the soil. The most prominent was Balor of the Evil Eye.

Fonseca, **Manoel Deodora da**, Brazilian statesman and first president; served against Paraguay, 1868-1870; Governor of Rio Grande do Sul, 1868-1887; dismissed for persistent republican activity. Sent, Dec. 1888, to command army corps on frontier of Matto Grosso; returned and headed insurrection that deposed the Emperor Pedro, 1889. Elected, Feb. 1891, president for four years, Fonseca proved incapable, and resigned in November. (1827-1892).

Font, a receptacle of stone or lead for the water used in baptism, generally

placed at the W. end of a church in the section called the baptistery. Stone fonts were often carved with elaborate symbolical designs.



FONT

Fontainebleau,

a town on the left bank of the Seine, 35 m. SE. of Paris, and famous for a château or palace of the kings of France, and the forest that surrounds it. The château, founded towards the end of the 10th Century, was enlarged and embellished by successive kings, beginning with Francis I., and was the place where Napoleon signed his abdication in 1814. It is now a national monument. Pop. 13,000.

Fontenoy, a village in Belgium, 5 m. SW. of Tournai, where Marshal Saxe beat the English, Dutch and Austrians under the Duke of Cumberland in 1745. Pop. c. 800.

Fonthill Gifford, village 2 m. Wiltshire, England. Nearly are the ruins of Fonthill Abbey, built by William Bockford (of *Valke* fame) in 1795 at a cost approaching £300,000; it largely collapsed in 1835.

Food, anything taken into the body of an animal or plant from which it is able to derive material for the growth and renewal of tissue and for the provision of bodily heat and energy. Man's food requires to be so varied that all the essential constituents required by the body may be present. Foods may be divided into two classes: body-building foods and "fuel" foods. The former are the nitrogenous foods, and are of prime importance because without nitrogen the body cannot maintain correct metabolism.

The nitrogenous foods are called *proteins*. Protein is the chief body-building material by means of which the tissue used up by the output of energy is repaired. The principal source of protein as food is the lean of various

kinds of meat. It is also an important constituent of milk, cheese and eggs. Vegetable protein is contained especially in peas, beans and lentils. The amount of protein daily necessary to a human being depends on the amount of muscular energy expended. Mental stress and the expenditure of nervous energy also demand an increase of nitrogenous food to repair waste tissue. A growing child requires additional protein.

All foods other than proteins may be classed as fuel foods—that is to say, they never become part of the living tissue, but are burnt up by the body in order to produce bodily heat and consequently energy. Foods for this purpose are divided into carbohydrates and fats. The former include all kinds of starch and sugar, starch being converted into sugar in the process of digestion. Natural sugar which can be easily assimilated is found in fruit and vegetables and also in honey. Refined cane-sugar and beet-sugar are not so readily digested, and have to undergo a conversion process during digestion in the same way as starch. The chief sources of starch are the cereals; potatoes, rice and bananas also contain it.

Carbohydrates should form about two-thirds of the total amount of food taken, and should bulk large if muscular work is undertaken. People also need more starchy food in cold weather than in hot. The fats are also sources of heat and energy; under this head come all animal fats, such as suet, lard, etc., as well as butter and cream, and the vegetable fats—*c.g.*, olive oil, cotton-seed oil, nut butter, margarine (also made from animal fat). The fish fats are cod-liver oil and halibut-liver oil, and fat is also contained in the yolk of an egg. Apart from the general functions of food outlined above, all classes of food in being "burnt up" by the body leave a residue of mineral matter, various salts of calcium, phosphorus, iron, magnesium, sodium, iodine, etc., and these mineral salts are essential to health; the composition of the blood, bones and teeth, and the working of the glandular system depending on them. Other vital food factors of essentially vegetable origin are the vitamins, of which some six have been distinguished as being present in various foods. Diseases such as scurvy and beri-beri are due to a deficiency of certain vitamins. In addition to food, four to six pints of water are required daily.

Food Control, started in Great Britain in 1917 as a war measure, with the establishment of a Food Ministry. Rationing cards for meat, sugar, butter and tea were issued to the public, and maximum prices were fixed by law to check profiteering.

Fool. See Jester.

Fools, Feast of, a festival of wild mirth in the Middle Ages, held on various dates in different places, often on Jan. 1, in which many of the rites and ceremonies of the Church were travestied.

Foot. (1) The extremity of the lower limb, below the ankle, consisting of a bony framework forming two arches, one from heel to toe, the other from side to side of the instep. At the back are the tarsal bones, with the calcaneum which forms the heel; further forward are the metatarsal bones, terminating in the 14 phalanges, forming the toes. The whole foot is supported by muscles and ligaments, the arch of the instep being supported in particular by the two plantar ligaments, running the length of the foot. (2) An English lineal measure, consisting of 12 inches, the third part of a yard the supposed average length of a man's

quantity or stress-accent.

Foot and Mouth Disease,

a disease of sheep, cattle and swine which is so infectious that stringent orders are made prohibiting the movement of animals in areas where it has broken out, and ordering the destruction of the infected. It is occasionally caught by man. Some compensation is paid for animals destroyed. Outbreaks early in 1938 necessitated standstill orders involving nearly the whole country. The distributing agency is unknown, though rats and migrant starlings have been blamed.

Football, Association, the leading winter game of Great Britain, in which a ball is propelled by the feet only, only the goalkeeper being allowed to use his hands. It first took modern shape in the schools towards the end of the 18th Century, but was not played according to definite rules until 1863, in which year the Football Association came into being. In 1871 the F.A. Cup competition was started, largely confined to old public-school clubs. In the following year international matches were inaugurated. Payment of professionals was not fully sanctioned till 1885, but the question continued to agitate the football world, and led in 1907 to the formation of the Amateur F.A., now again affiliated to the parent body. The Football League was formed in 1888, and ever since, the game has grown steadily in popularity, crowds of over 100,000 having watched the Cup Final. On the Continent the game has lately been taken up with great enthusiasm.

The game is played with 11 men on each side, the formation being 5 forwards, 3 half-backs, 2 full-backs and a goalkeeper.

In 1911 a new off-side rule was enacted, which ruled that a player could not be off-side in his own half of the field. When a player plays a ball, any other player of the same side who at the moment of playing is nearer his opponents' goal-line is off-side unless three or more of his opponents are at such moment of playing nearer their own goal-line. The field of play should not be more than 130 yds. long or less than 50 yds. wide. The goal-posts are 8 yds. apart; the goal area is a space 20 x 6 yds. in front of the goal, and the penalty area is a space 44 x 18 yds. in front of the goal. The ball is kicked off at the beginning of each half and after each goal by the centre-forward in the centre of the field within the kick-off circle, 20 yds. in diameter.

In the season 1936-1937 a new rule came into force whereby a player is not allowed to try to kick the ball while it is in the goalkeeper's hands. It is also made illegal for the goalkeeper to punt the ball at the goal-kick. The goalkeeper is not allowed to handle the ball outside his own penalty area and in any event may not carry it more than four steps.

The ball is round, leather-covered, weighing 13-15 oz., circumference 27-28 in. A goal is scored when the ball is kicked or headed between the goal-posts and under the bar. A goal may be scored from a free-kick. The English League matches were instituted in 1888, and there are now three Divisions.

Football, Rugby, the handling code of the game, which started at Rugby School in 1823, when a boy named William Webb Ellis took the ball in his hands and ran with it down the field, an innovation that was recognised in 1841. Clubs playing under the new rules were started at the universities and among old public-school boys, and in 1871 the Rugby Union was formed, international matches beginning in the 'seventies. No professionalism is allowed by the Rugby Union, a rule that led in 1893 to the formation of the Northern Union, rechristened the Rugby League in 1922.

In its early days the game was played with

about 50 players on each side, but later this was reduced to 20, and in 1876 the number was fixed at 15. The usual arrangement of the field is 8 forwards, 2 half-backs, 4 three-quarters and 1 full-back. The formation adopted by the New Zealand "All-Blacks" team, which toured England with such success in 1905-1906, was 8 forwards, 1 half-back, 2 five-eighths, 3 three-quarters and 1 full-back. An alternative formation is to play 7 forwards in the scrumage.

The present rules were drawn up in 1936. When a player touches down the ball behind his opponents' goal-line, a try is scored, 3 points; 5 points if converted by kicking the ball from a place-kick over the crossbar and between the uprights of the goal. A goal from a "drop" kick scores 4 points; a place-kicked goal from a "mark" (i.e., when a player catches the ball kicked by an opponent and simultaneously makes a "mark" with his heel) scores 3 points; a penalty goal also 3 points.

The field of play must not exceed 110 yds. in length, nor 75 yds. in breadth. The goal-posts must exceed 11 ft. in height, and are 18 ft. 6 ins. apart, the cross-bar being 10 ft. from the ground. A player is off-side if he enters the scrumage from his opponents' side, or if the ball is kicked, touched, or run with by one of his own side behind him. He cannot be off-side in his own in-goal. The ball is oval, leather-covered, length 11 to 11½ in., length circumference, 30 to 31 in.; width circumference, 25½ to 26 in.; weight 13 to 14½ oz.

Footie, Samuel, English actor and playwright, born in Truro, Cornwall, of good family; was educated at Oxford, and studied law, but ruined himself by gaming, and took to the stage; he became the successful lessee of Haymarket Theatre in 1741, where, by his inimitable powers of mimicry and clever comedies, he firmly established himself in popular favour. (1720-1777).

Foot-Pound, in mechanics, the unit by which work is measured; the amount of energy to raise a weight of 1 lb. through a distance of 1 ft.

Foraminifera, one of the most primitive forms of animal life, consisting of cells of protoplasm surrounded by a skeleton of limy material; they live in the ocean and their remains settle on the bottom as an ooze, e.g., globigerina ooze; some limestones are built up of their remains.

Forbes, a town of New South Wales, Australia, on the R. Lachlan, occupied in wool manufacture and the surrounding district in sheep-rearing. Pop. 5,400.

Forbes, Duncan, of Culloden, distinguished lawyer and politician, born in Buncrevy; called to the Scottish Bar in 1709; took an active part in putting down the rebellion of 1715, and in 1722 entered Parliament; three years later he was appointed Lord Advocate and Lord President of the Court of Session; during the 1745 rebellion he was active in the Hanoverian interest; was a devoted Scot, and unweariedly strove to establish the country in peace. (1685-1747).

Forbes, Isaac Rosita, explorer, has specially Arabia and East Africa; Kufara and Libya in 1920; Asir in 1932-1933; Abyssinia (Cinema expedition), 1934-1935. Has written travel-books and ten novels. (1893-).

Forbes-Robertson, Sir Johnston, British actor. Trained as a lawyer, he turned his attention to the stage, joined the Bancroft company, and proving a success started managing on his own account. He appeared in several Shakespearean roles and retired in 1913. (1837-).

Force, that which changes the state of a body from motion to rest or from rest to motion, or alters its rate of motion. The acceleration of a body is in proportion to the force exerted upon it, but is in inverse proportion to its mass. The unit of force is the dyne, which is the amount of force needed to give to a body of mass 1 gramme an acceleration of 1 cm. per second. The poundal is the unit which gives to a mass of 1 lb. an acceleration of 1 ft. per second.

Forcing (plants), a term used in horticulture for bringing flowers into bloom, or vegetables into a state of fitness for eating, earlier than their normal and proper season. Rock-plants, bulbs, and many other plants may be forced into bloom in an unheated greenhouse earlier than in an unprotected garden. In a heated greenhouse tropical and sub-tropical and summer-flowering plants may be induced to bloom in winter according to the temperature of the greenhouse. Early carrots and half-hardy annuals may be forced by sowing in a cold frame; and a hot-bed, a frame which is placed over newly turned manure, gives sufficient heat to force such plants as marrow, cucumber and celery.

Ford, Edward Onslow, sculptor; born in London; executed numerous statues and busts, examples of which are in the Tate Gallery, London. (1832-1901).

Ford, Henry, American motor manufacturer. He produced his first car in 1892, and in 1903 organised a company of his own at Detroit to exploit a cheap car, attaining a production of a million cars a year by 1920. By that time he was a millionaire, and a philanthropist. An ardent pacifist, he chartered a liner in 1915 to sail to Europe in an effort to stop the World War. In recent years has been the leading industrialist in the U.S.A. in opposition to President Roosevelt's New Deal. (1863-).



HENRY FORD

Ford, John, dramatist, born in Islington, N. Devon; studied at Oxford, and entered the Middle Temple in 1602; in 1606 appeared his first poetic work, *Fame's Memorial*, and for the next 33 years he was a prolific writer of plays, chiefly tragedies, collaborating in some cases with Dekker and Webster; *The Broken Heart* and *Perkin Warbeck* are among his best-known works. His grip on the greater human passions, and his power of moving presentment, are undoubted. (1586-1639).

Foreign Enlistment Act, 1870, regulates the conduct of British subjects during hostilities between foreign States with which Great Britain is at peace. The Act punishes British subjects who accept commissions or engagements in the fighting services of any foreign State which is at war with another foreign State with which Britain is at peace. It also punishes the building of ships for any foreign country which is at war with any friendly State.

Foreign Jurisdiction. The administration of British law in countries outside the dominion of the Crown is regulated by the Foreign Jurisdiction Act of 1890, extended by a further Act in 1913. The power of exercising jurisdiction in foreign countries may be acquired by the Crown as a result of treaty or capitulation, and is usually vested in the consular officers. The jurisdiction is generally limited to British subjects or persons under British protection, and covers civil and

criminal cases. The Foreign Jurisdiction Act may also apply in a British Protectorate, where the territory, not having been annexed, remains outside the normal colonial administration.

Foreign Legion, a military unit who are foreigners to the country in whose service they are engaged. The most noteworthy is the French *régiment étranger*, organised in 1831 and now forming a permanent regiment of five battalions based on Algiers. Recruits are accepted for service of 5 years without proof of identity. A foreign legion of Swiss and Germans volunteered for British service in the Crimean War. Foreign legions served in Spain in the Carlist War (1872-1876) and in the Civil War which broke out in 1936.

Foreign Office, a British Department of State, established in 1782, when the Secretaryship of Foreign Affairs was created in place of the former Secretary for the Northern Department of Europe. The Foreign Secretary, who is always a member of the Cabinet, is assisted by two or three Parliamentary Under-Secretaries, who form part of the Government, also by a permanent Under-Secretary and four Assistant Under-Secretaries. All dealings with foreign Powers and with British representatives abroad are conducted through the Foreign Office, and beyond his formal duties, the function of the Foreign Secretary is to shape the policy of H.M. Government in all foreign affairs.

Foreland, North and South, two rocky promontories on the E. coast of Kent, which lie 16 m. apart; have the Downs and Goodwin Sands between them; they are well marked with lighthouses.

Forensic Medicine, *OR* Medical Jurisprudence, a branch of legal science in which the principles of medicine are applied to the purposes of the law, originating out of the frequency with which medical points arise in the administration of justice, e.g., in murder trials and in cases where insanity is involved.

Forestalling, in commerce, the practice for merchandise before it is placed on the market, so as to increase the demand and sell again at an enhanced price. It was illegal in England until 1844.

Forest Gate, a populous suburb of E. London in the County Borough of West Ham, 5 m. from the City. Pop. 18,700.

Forest Laws, laws enacted in ancient times for the purpose of guarding the royal forest lands, such as the New Forest in Hampshire, as hunting preserves. Up to the time of Henry III. they were of excessive harshness, death being a not infrequent penalty for any infringement. The privileges of forest have now fallen into abeyance, as also the special Forest Courts, while many of the royal forests, which in Henry VIII.'s time numbered 69, have been disafforested.

Forestry, the art of planting trees, the geographical distribution of forest-lands, of the methods of planting and transplanting, propagation, and storage of seeds, prevention of insect pests, and of the economic uses of various kinds of timber and of the best means of developing and managing forest land for economic purposes. The forest area of the world is nearly 8 billion acres, including Europe 752,000,000 acres, Canada 890,000,000, U.S.A. 850,000,000, tropical S. America 530,000,000, Asiatic Russia over a thousand million, and Central Africa 230,000,000. There are four main forest regions: (1) the zone of coniferous trees over the N. parts of

Europe, Asia and America; (2) that of the catkin-bearing trees (oaks, beeches, etc.) over the remainder of the N., extra-tropical regions; (3) that of the mixed forests, which includes the whole of the tropics; and (4) that of the rigid-leaved woods (eucalyptus, myrtles, etc.), confined to a part of S. Africa and two-thirds of Australia.

Forestry Commission, a body by the Government under the Forestry Acts, 1919 to 1927. Its function is to promote the study of forestry in England, develop afforestation and provide grants for that purpose. The Crown Woods were transferred to the Commission in 1924, and a great deal more land has been acquired.

Forfar, the county town of Angus (Forfarshire), Scotland, 14 m. N.E. of Dundee; manufactures linen; was once an important royal residence, and was made a royal burgh by David I. Pop. 9,600.

Forfarshire, now called Angus, a E. side of Scotland, lying N. of the Firth of Tay. Strathmore and the Cairn of Gowrie are fertile valleys, where agriculture and cattle-rearing flourish, and which, with the Braes of Angus in the N. and the Sidlaw Hills to the S., make up a finely diversified county. Jute and linen are the most important articles of manufacture, of which Dundee and Arbroath are centres. The county is particularly rich in antiquities—Roman remains, castles, priories, etc. Pop. 270,000.

Forfeiture, a penalty whereby a person loses the title to his property as a result of some illegal act. In this sense it is now practically obsolete. But offences against customs regulations, and similar crimes, may involve forfeiture of the goods concerned.

Forgery, the act of falsifying or altering a written document with general intent to defraud. In common law it is a misdemeanour, but by special statutes forgery in a number of cases is punishable as a felony with penal servitude for any period from three years.

Forget-me-not, *OR* *Myosotis* (House-Ear), a

plant of the order Boraginaceae. Its flowers are blue, pink or white, in one-sided coiled spikes, without bracts. There are several garden species in England, as well as an alpine species, grown as a rock-plant.



FORGET-ME-NOT

Formaldehyde,

a colourless gas with a pungent, suffocating smell obtained by passing a mixture of air and methyl alcohol vapour over a heated copper spiral; formula, HCHO . It is usually sold as a solution in water (with a little methyl alcohol) under the name of formalin; the latter finds wide application as a disinfectant and as a preservative of anatomical specimens. The chief use of formaldehyde is in the manufacture of plastics.

Formalin. See Formaldehyde.

Forma Pauperis, in a legal phrase used in connection with the right given to poor persons to sue, or defend an action in the High Court. Any person may sue or defend "in forma pauperis" on proof that he is not worth 20s. his wearing apparel and the subject-matter of the action excepted. He must lay a case before counsel, who must certify that he has a cause of action or defence. The Court may then assign to him a solicitor and counsel, who cannot refuse their services without good reason.

Formby, a town and urban district 8 m. W. of Ormskirk, Lancashire, England. Formby Point, a residential district, known as Formby-by-the-Sea, has a promenade with view of the Mersey. The district is agricultural. Pop. 7,900.

Formic Acid, so called because it is secreted by ants (Latin, *formica*), is a weak acid of the chemical formula H-COOH ; it is a colourless, syrupy liquid setting at 8°C . to a mass of white crystals. Boiling-point 101°C . It is manufactured by heating sodium hydroxide (caustic soda) with carbon monoxide under pressure, when the two substances combine to yield sodium formate, from which the free acid may be obtained by adding sulphuric acid.

Formosa (Japanese, Taiwan), a large island off the coast of China, from which it is separated by the Fukien Channel, 90 m. broad. Formosa was ceded to Japan by the Chinese in 1895. It is an island of much natural beauty, and is traversed N. and S. by a fine range of hills; is famed for its bamboos, and exports rice, tea, camphor and fish. Area 13,900 sq. m. Pop. 5,250,000.

Formula, in mathematics, a set of symbols whereby properties of numbers are expressed in succinct fashion; thus the formula $a^2 - b^2 = (a + b)(a - b)$ implies that the difference of the squares of two numbers is equal to the product of their sum and difference. In chemistry a formula is used to denote a molecule of a substance, and indicates the numbers of atoms of which the molecule is composed; thus H_2SO_4 denotes one molecule of sulphuric acid, consisting of two atoms of hydrogen, one atom of sulphur and four atoms of oxygen. Sometimes a chemical formula is expanded so as to show the supposed spatial relationships of the atoms in the molecule.

Forres, a royal burgh in Morayshire, Scotland, on the Findhorn, 2 m. from the sea and 10 m. SW. of Elgin; has ruins of a castle—once a royal residence—and a famous "Stanin Stane," Sueno's Stone, 25 ft. high, dating from the year 900. Pop. 4,200.

Forster, John, English writer, born in Newcastle; was educated for the Bar, but took to journalism, and soon made his mark as a political writer in the *Examiner*; he subsequently edited the *Foreign Quarterly Review*, the *Daily News* (succeeding Dickens), and the *Examiner* (1847-1856). He was the author of several historical sketches, but his best-known works are his biographies of Goldsmith, Landor and Dickens. (1812-1876).

Forster, William Edward, statesman, born in Bradpole, Dorset, son of a Quaker; in 1861 he became member of Parliament for Bradford; in succession Under-Secretary for the Colonies, Vice-President of the Council of Education, and a Privy Councillor. His chief legislative measure was the Elementary Education Bill of 1870, which, as a member of Gladstone's Cabinet, he carried through Parliament, two years after which the Ballot Act was introduced by him. As Irish Secretary in 1880 he made an earnest effort to grapple with the Irish problem, but, losing the support of his colleagues over the imprisonment of Parnell and other Land League leaders, he resigned. (1818-1886).

Fortaleza, a seaport and capital of the State of Ceara, Brazil. The harbour is shallow; trades in coffee and rubber. Pop. 140,000.

Fort Augustus, a small village in Scotland, on the Caledonian Canal, 33 m. SW. of Inverness; the fort, built in 1716 and enlarged in 1730, was utilised as a barracks during the disturb-

ances in the Highlands, but after being dismantled and again garrisoned down to 1857, it finally in 1876 passed into the hands of the Benedictines (g.v.), who have converted it into an abbey and college. Pop. c. 1,000.

Fort-de-France, the capital and most important town of the island of Martinique, French W. Indies. It is situated on a fine harbour and has marine batteries, an arsenal, cathedral and municipal theatre. The town was burnt down in 1890 following a cyclone. Pop. 43,500.

Fortescue, Sir John, English lawyer, born in Somersetshire; was called to the Bar at Lincoln's Inn, and in 1442 became Lord Chief Justice of the Court of King's Bench. He was a staunch Lancastrian during the Wars of the Roses, and shared the exile of Queen Margaret and her son Edward, for whom he wrote in dialogue form his famous *De Laudibus Legum*, a treatise still read; was taken prisoner at the battle of Tewkesbury. He died at the age of 90. (c. 1385-1475).

Fortescue, Hon. Sir John William, historian of the British Army, was fifth son of the third Earl Fortescue. The issue of his large-scale History began 1899, and finished with the thirteenth volume in 1930. He was Librarian at Windsor Castle, 1905-1926. (1859-1933).

Fort George, a fortress on the Moray Firth, 12 m. NE. of Inverness; was built in 1748, and is now the headquarters of the Seaforth Highlanders.

Forth, a river of Scotland, formed by the junction of Duchray Water and the Avonduh, streams which rise one on Ben Lomond and the other on Ben Vonne, and which, after 14 and 9 m., unite at Aberfoyle. The river thence flows with many windings, called Links, through some of the fairest country of the eastern lowlands to Alloa (51½ m.), where begins the Firth, which stretches 51 m. to the North Sea, and which at Queensferry is spanned by a massive railway bridge known as the Forth Bridge. (1882-1890).

Fortification, the preparation and strengthening of de-

fensive works about a city or other place of importance, to defend it against hostile attack which has been practised from the beginning of organised warfare. The Mesopotamians and Greeks fortified their towns, and the famous walls of Troy were believed to have a mythical origin. Thick walls of stone were almost impregnable against ancient attacking methods, and the catapults and battering-rams of the Romans were on the whole ineffective means of destroying fortifications. The bastions of the medieval castle also withstood attack successfully and enabled a flanking fire to be directed against the besiegers battering against the curtain wall.

With the introduction of artillery and the use of iron shot, attack gained an advantage against defence. The ravelins or out-works were extended further in successive stages to keep the artillery at a distance from the main works; and this has been the central problem facing military engineers right up to the present day. The greatest expert in fortification until recent times was Sebastian de Vauban (1633-1707). In the 19th Century the penetrating power of artillery increased, explosives became more destructive, and the fortifications of Paris built in 1846 proved unable to withstand bombardment in the Franco-Prussian War. At the beginning of



PILL-BOX

the World War the Belgian fortresses were rapidly demolished. Field fortifications, however, entrenchments, bomb-proof shelters, and small concealed "pill-boxes" built of concrete, proved more effective as defence, although no fortifications of this impermanent character were proof against the howitzer shell.

All the experience gained in the World War has been put to use in the most extensive system of fortification at present existing—the so-called Maginot Line which defends the NW. frontier of France where it is contiguous with Germany and Luxemburg. It consists of a line of casemates, connected by extensive underground systems of works, gas-proof and bomb-proof. The line is kept permanently garrisoned and stocked with provisions, ammunition, etc.

Fort Sumter, an island fort in Charleston Harbour, S. Carolina, U.S.A., at which was fired the first shot in the American Civil War, in April 1861.

Fortuna, a Roman divinity, the goddess of luck, and especially good luck; is represented in art as standing poised on a globe or a wheel, to express her inconstancy.

Fortunate Islands, two islands the ancients to have been situated in the Atlantic, far to the W. of the African Coast. They were so named because the souls of the blessed were believed to reside there. The name has also been given to the Canary Is., which some suppose are the origin of the tradition.

Fortunatus, a character in a popular German legend, who possessed a *purse*, out of which he was able to provide himself with money as often as he needed it, and a *cap*, by wearing which, and wishing to be anywhere, he was straightway taken there; these, by his own free election and choice, he got conceded to him by the Upper Powers, and they proved a curse to him rather than a blessing.

Fortune-telling, the practice of events by means of astrology, divination, crystal-gazing or palmistry, is of very ancient origin. The laws in England against fortune-telling were formerly severe, and even to-day under acts of 1743 and 1842 a fortune-teller is liable to imprisonment as a disorderly person.

Fort William, (1) a small burgh in Inverness-shire, 86 m. SW. of Inverness, near the southern end of the Caledonian Canal. The railway station stands on the site of the old fort, which in 1655 was built by monks. A meteorological observatory was erected here in 1889. (2) port in Ontario, Canada, on the Kaministiquia R., at head of Lake Superior; an important railway junction with 26 m. of landlocked harbour. It is a great distributing centre and has grain elevators, with iron and other mineral deposits near by. Pop. 20,500.

Fort Worth, a city of Texas, U.S.A., has petroleum, meat-packing and railway industries. Pop. 163,500.

Forum, a public place in Rome and Roman cities where the markets and courts of justice were held and popular assemblies met for civic business.

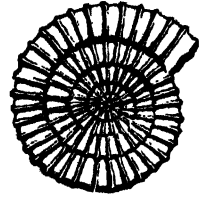
Fosdick, Harry Emerson, American Baptist minister; born at Buffalo, New York; educated at Colgate University and Union Theological Seminary; became professor of Practical Theology at the latter in 1915 and, later, pastor of Riverside Church, New York. Author of many popular religious books. (1878-).

Fosseway, The, one of the great Roman military roads in Britain, probably following the course of an earlier

Celtic road, running from SW. to E.; its course was from Exeter, through Bath, Silchester, Leicester and Lincoln.

Fossil, defined as "any body, or the traces of the existence of any

body, whether animal or vegetable, which has been buried in the earth by natural causes" (Lyell). Fossils therefore are any portion of an animal or vegetable organism, such as the shells of molluscs, the skeletons of corals, bones of vertebrate animals, leaves of plants, etc., which have undergone a process of petrification by pressure and by the complete infiltration of mineral matter. The term "fossil" also includes the moulds or "casts" of shells, the fossilised footprint of an animal, or any other mark of the former presence of a living organism. The study of fossils is called paleontology.



FOSSIL AMMONITE

Foster, Myles Birket, English water-colour artist, born in North Shields. His earliest work was done in wood-engraving under the direction of Landells, and many of his sketches appeared in the *Illustrated London News*. Following this he executed, in collaboration with John Gilbert, a series of illustrations for the works of Goldsmith, Cowper, Scott and other poets, in which he exhibited a rare skill in rural scenes. In 1861 he was elected a member of the Water Colour Society. (1825-1899).

Fotheringhay, a village in Northamptonshire, on the Nen, 9 m. SW. of Peterborough; the ruined castle there was the scene of the execution of Mary Queen of Scots, in 1587. Pop. 200.

Foucault, John Bernard, a French physicist, born in Paris; distinguished for his studies in optics and problems connected with light; demonstrated the rate of the rotation of the globe by the oscillation of a pendulum. (1819-1868).

Fouché, Joseph, Duke of Otranto, born in Nantes, a member of the French National Convention, who voted for the death of Louis XVI.; became Minister of Police under Napoleon; falling into disfavour, was sent into exile, but recalled to Paris in 1814; advised Napoleon to abdicate at that time and again after Waterloo; served under Louis XVIII. for a period but was obliged at length to quit France for good; died at Trieste. (1763-1820).

Foula, a high and rocky islet among the Shetlands, 32 m. W. of Lerwick. Its sandstone cliffs on the NW. are 1,230 ft. in height, and rise sheer from the water. It is sparsely peopled. Fishing is almost the sole pursuit.

Foulis, Robert and Andrew, celebrated Glasgow, where Robert, the elder, in 1743 became printer to the university. His press was far-famed for the beauty and accuracy of editions of the classics. Andrew subsequently joined his brother. An academy, started by the brothers in 1753 for engraving, moulding, etc., involved them eventually in financial ruin. They have been called the "Scottish Elzevirs" (Robert, 1707-1776; Andrew, 1712-1775).

Foundations, the substructure supporting a building, designed not only to bear the immediate weight of the walls, columns, etc., but also to distribute it evenly and in accordance with the weight-bearing capacity of the soil beneath the foundations; the term is generally used for the base of a building sunk below the

surface of the ground, preferably below the reach of frost; for buildings for which permanence is required, the foundations should go very much deeper.

Foundling Hospitals, institutions for rearing of children who have been deserted by their parents; they exist in most civilised countries; the first foundling hospital was established at Milan in 787, and others arose in Germany, Italy and France before the 14th Century; the Paris foundling hospital is a noted institution of the kind, and admits legitimate orphans and children pronounced incorrigible criminals by the court; the London foundling hospital founded by Captain Thomas Coram, which supports about 500 children, was moved from Guilford Street, London, to Redhill in 1926.

Fountain, a spring or an unceasing natural or artificial. The term is also applied to the architectural setting or artificial superstructure to such a continuous flow of water. Fountains are either designed in the form of a basin into which the water is conveyed through a spout, often ornamental, or their principal feature may be the display of water by means of jets and sprays. If, for decorative effect, the water is allowed to overflow from the basin, the latter must be carefully adjusted to give an even flow of water all round. Fountains in Mohammedan cities are generally enclosed, surrounded with colonnades and tiled paving.

Fountain of Youth, the magic fountain of which Sir John Mandeville wrote, as possessing the power to restore the aged to youth, which was believed to be on an island in the Bahamas group; Ponce de Leon, a Spanish adventurer, sailed to Florida in quest of it in the 16th Century.

Fountains Abbey, a Cistercian abbey, 2 m. from Ripon, in the W. Riding of Yorkshire, England. It was founded by Thurstan, Archbishop of York, in 1132, and dissolved by Henry VIII. in 1540. Beautiful ruins of the buildings still remain.

Fouquier-Tinville, Antoine Quesada, a French revolutionary, born near Artois; member of the Jacobin Club, Attorney-General of the Revolutionary Tribunal; was guillotined after the fall of Robespierre. (1747-1795).

Fourier, François Marie Charles, French socialist, born at Besançon; as agent in cloth business, travelled in W. Europe; served two years in army; became agent for a provision merchant and saw much to disgust him with the commercial system. Proposed the creation of colonies or Phalanxes, to embrace finally all mankind, who should dwell in Phalansteries or standardised homesteads. Wrote *Le Nouveau Monde Industriel et Socialiste*, 1829, and other works. His failure to establish any phalanxes never convinced him there was any fault in his philosophy. Died in prison. (1772-1837).

Fourier, Jean Baptiste Joseph, Baron, French mathematician and physicist; Prefect of Isère, 1801-1814; baron, 1808. Perpetual Secretary for Mathematical Sciences, Academy of Sciences, 1822; Studied theory of heat. Devised Fourier's Series, 1807. (1768-1830).

Fourteen Points, a summary of put forth by President Woodrow Wilson in Jan. 1918. They affirmed the principle of national self-determination and autonomy, the reduction of armaments, the impartial consideration of colonial distribution, and the freedom of the seas. The League of Nations was foreshadowed in Point No. 14. The Fourteen Points were intended as the basis

of the Peace Treaty between Germany and the Allied and Associated Powers.

Fourth Dimension, according to Theory of Relativity, the dimension which holds indivisibly the three spatial dimensions with that of time to form a curved "continuum," and within which occur all material phenomena. With the other three dimensions it composes space-time. The theory was put forward to account for certain physical phenomena observable in the movements of stars and atoms, not explained by Newton's laws of gravitation, which are held to be applicable only to the world as observed by man.

Fourth Estate, the daily press, so called by Edmund Burke, pointing, in the House of Commons, to the reporters' gallery.

Fourth of July, the anniversary of the declaration of American Independence in 1776.

Fourth Party, English Parliament formed by Lord Randolph Churchill in 1880, consisting of four or five dissident Conservatives; its influence was much greater than its numbers suggest; A. J. (later Earl) Balfour worked with it for a time.

Fowey, a market town and shipping port 8 m. from St. Austell, Cornwall, England, on W. side of R. Fowey. Several Cruising vessels sailed from here to the Holy Land. The forces of Lord Essex surrendered to Charles I. here, 1644. Exports china clay, china stone and coal. Pop. 2,600.

Fowler, Sir John, civil engineer, born in Sheffield; was actively engaged in the construction of numerous railways (notably the London and Brighton and Metropolitan), and in dock and bridge building; carried through important works in Egypt in 1885, and, with Sir H. Baker, designed the Forth Bridge, on the completion of which he received a baronetcy. (1817-1898).

Fox (and Fox-hunting). The foxes constitute a genus (*Vulpes*) of carnivorous animals of the Dog (Canidae) family of mammals. They are distributed over most of the N. part of the Northern hemisphere and southwards in Mexico, Morocco, India and China. The colour of their coats varies from buff to grey. They are not gregarious animals. Among the notable species are the Arctic Fox (*Vulpes lagopus*), an important fur-bearing species, being blue in summer and white in winter; the Common Fox (*Vulpes alopec* or *V. vulpes*) which is found in Britain and has long been hunted.

The fox-hunt did not take its present form until about 1750, when hounds were first trained for the sport. Foxes are hunted by the scent secreted by glands beneath the tail. They inhabit "earth" in large woods, spinners, oster-beds and gorse thickets. Their habits are nocturnal. Pairing takes place in February, and the cubs are born in April. September and October are devoted to cub-hunting, to "blood" the young hounds and train them for hunting proper. The season begins on Nov. 1.

The officials of the hunt are the Master (M.F.H.), in whose hands is the management of the hunt and of the field; a huntsman, who supervises the feeding and training of hounds; the whipper-in (two for large packs), who turns the hounds to the sound of the horn, whips them off at a wrong scent and checks them at the end of a hunt.



Fox, Charles James, an eminent Whig statesman, third son of Henry Fox, first Lord Holland, born in London; was educated at Eton and Oxford, and at the age of 19 sat in Parliament for Midhurst. He held office under Lord North, but quarrelled with the premier and went over to the Whigs, then led by Rockingham; here he came under the influence of Burke, and with him offered uncompromising opposition to the American War. In the Rockingham ministry which followed he was Foreign Secretary, and subsequently joined North in the short-lived coalition ministry of 1783. During the next 14 years he was the great opponent of Pitt's Government, and his brilliant powers of debate were displayed in his speeches against Warren Hastings and in the debates arising out of the French Revolution, in which he advocated a policy of non-intervention. His sympathy with the French revolutionaries cost him the friendship of Burke. During a retirement of five years he wrote his *History of James II.* On Pitt's death in 1806 he again came into office as Foreign Secretary, but died shortly afterwards. (1749-1806).

Fox, George, founder of the Quakers, born at a poor weaver, and till his twentieth year plied the trade of a shoemaker; conceived that he had a call to withdraw from the world and give himself up to a higher ministry; about 1646 began his crusade against the religion of mere formality, and called upon men to trust to the "inner light" alone. His quaint garb won him the title of "the man with the leather breeches," and his mode of speech, with his "thous" and "thees," subjected him to general ridicule; but by his earnestness he gathered disciples about him who adopted his principles and in the prosecution of his mission he visited Wales, Scotland, America and various parts of Germany, not without results. Many years of his life were spent in prison, but his teaching drew him a large number of adherents, and Quaker centres were formed in Holland and Germany as well as in this country. (1642-1691).

Foxe, John, martyrologist, born in Bowton, Lincolnshire; in 1545 he resigned his Fellowship of Magdalen College, Oxford, espousing the doctrines of the Reformation, and for some years acted as a private tutor in noble families; during Queen Mary's reign he sought refuge on the Continent, where he met Knox and other leading Reformers; he returned to England on the accession of Elizabeth, and was appointed to a prebend in Salisbury cathedral, but his Nonconformist leanings precluded his further preferment; his most famous work is his *Book of Martyrs*, first published in Latin, the English version appearing in 1563. (1516-1587).

Foxe Channel, a strait N. of Hudson Bay, Canada, separating Baffin Land from the Canadian mainland and from Southampton I.

Foxglove (i.e., folks' or fairies' glove), a popular name for the *digitalis* (*D. purpurea*). It is indigenous in the British Isles, where it is found as a common wayside plant, generally with a purple flower. The leaves contain digitalin and are actively poisonous.

Foxhound, a crossbreed of greyhound and terrier, especially bred and trained for foxhunting, keen-scented and capable of sustained speed. They are trained to cub-hunting at 18 months, and thereafter are usually in their prime for three or four seasons and used for fox-hunting.



FOXGLOVE

Fox-terrier, a small dog which has been bred in England

for several hundred years as being particularly suitable for "bolting" foxes and badgers. There are two varieties, the smooth-haired and wire-haired, differing little except in the nature of the coat. They are white in colour, and have patches of black or tan on the head, body and legs.



FOX-TERRIER

Foxtrot, a popular dance of American origin, introduced into England at the beginning of the 20th Century; it grew so much in favour that it temporarily ousted the waltz.

Foyers, Fall of, a fine cascade, having a fall of 165 ft., on the lower portion of the Foyers, a river of Inverness-shire, which enters Loch Ness on the E. side, 10 m. N.E. of Fort Augustus.

Foyle, Lough, an inlet of the sea about 20 m. long, between counties Donegal (Thirionall, Ireland, Eire) and Londonderry, Northern Ireland. The R. Foyle empties into it. It has been the subject of dispute as to fishing rights between N. Ireland and the Irish Free State.

Fraction, in mathematics or mensuration, a division of a given unit; thus an ounce is a fraction of a pound. It is expressed either as a vulgar fraction, by two numbers, the upper, or numerator, being written above a line, and the under, or denominator, below it: thus, $\frac{1}{2}$ means two fifth parts of unity; or as a decimal fraction, by extension of the ordinary decimal method of numeration to cover tenths, hundredths, etc., of unity, a point being written after the unit figure: thus .4 means four-tenths, or two-fifths, of unity. A fraction whose numerator is smaller than its denominator is called proper; if otherwise, improper.

Fracture, a skeletal injury to the body by the violent breaking of a bone, at any point, but usually at a distance from the joint. When the skin is unbroken, the fracture is "simple"; a "compound" fracture, where the skin is lacerated, sometimes with accompanying hemorrhage, is more serious owing to the danger of infection and the difficulty of setting caused by splintering. The manner in which the bone is broken may be either oblique, transverse, spiral, comminuted or pulverised, or green-stick (of immature bones of young persons). Diagnosis is aided by the X-ray, and careful setting, followed by rest, is essential to recovery.

Fracture, in geology, an irregular breakage in a rock or mineral not occurring in a plane of natural cleavage. Various kinds of fracture are distinguished by the designations "even," "uneven," "conchoidal" or shell-like (i.e., one side concave, the other convex), "spintery" or scaly, and "hackly" (i.e., covered with sharp unequal points).

Fragonard, Jean Honoré, a French artist, born in Grasse; gained the "prix de Rome" in 1752, and afterwards studied in Rome; was a member of the French Academy, and during the Revolution became keeper of the Musée. Many of his paintings are in the Louvre, and are characterised by their free and luscious colouring. (1732-1806).

Fram (Norwegian name, meaning "forward"), a ship especially designed for Arctic exploration by Dr. Fridtjof Nansen and used by him in 1893. The strength of the ship, combined with the sloping sides, successfully withstood the pressure of the ice.

Framlingham, an ancient market town on R. Ore, Suffolk, England, 7 m. from Saxmundham. The church contains several monuments of the Howard family. There are a corn exchange and castle ruins. Framlingham College, for boys, was founded in 1876. Pop. 2,100.

Frampton, Sir George James, sculptor; entered Royal Academy schools, 1881; R.A., 1902; knighted, 1908. Works include "Peter Pan," Kensington Gardens; Edith Cavell Memorial, in London; statues of Queen Victoria at Calcutta, Winnipeg, etc.; and figures on St. Mary's spire, Oxford. (1860-1928).

Franc, a silver coin $\frac{1}{20}$ fine, the monetary unit of France since 1799, nominally equals about 2d. in English currency (£1 = 124.21 francs); before the World War was valued about 9½d. (£1 = 25.2 francs), and was also in use in Belgium and Switzerland, and under other names in Italy, Spain and Greece; since the War has fluctuated considerably in value, and was re-stabilised on a gold basis in 1928.

France, a country of Western Europe, and one of the "Great Powers." Area 212,995 sq. m. Pop. (1931 census) 41,508,000. France occupies a geographical position of peculiar advantage, having a S. foreshore on the Mediterranean and a W. and N. seaboard washed by the Atlantic and the English Channel, possessing altogether a coastline of upwards of 2,000 m., while to the E. it abuts upon Belgium, Germany, Switzerland and Italy. It is divided into 90 departments, including Corsica.

It is mainly composed of lowland and plateau, but has the Cevennes in the S. while the Pyrenees and Alps (with the Vosges and Ardennes farther N.) lie on its S. and E. boundaries. Rivers abound, and form, with the splendid railway, canal and telegraph systems an unrivalled means of internal communication; but there are very few lakes.

It enjoys on the whole a fine climate, which favours the vineyards in the centre (the finest in the world), the olive groves in the S. and the wheat and beetroot region in the N. There are also considerable iron deposits. Its manufactures include silk, wine and woollen goods, and in fine artistic work it is without an equal. The colonies have a total area of over 5,000,000 sq. m., and include Algeria, Madagascar, French India, French Indo-China, French W. Africa, French Equatorial Africa and French Somaliland.

The French are a people of keen intelligence, of bright, impulsive and vivacious nature; urbane, cultured and pleasure-loving in the cities, thrifty and industrious in the country. Few races have given so rich a bequest to the literature and art of the world. Roman Catholicism is the dominant form of religion, but Protestantism and the Jewish religion are also State supported. The Government is a Republic, and there are two legislative chambers—a Senate and a Chamber of Deputies.

Originally occupied by Celts, the country, then called Gallia, was conquered by the Romans between 58 and 51 B.C., who occupied it till the 4th Century, when it was overrun by the Teutons, including the Franks, who became dominant; and about 870 the country, under Charles the Bald, became known as France.

There was no central authority until the reign of Hugh Capet (987). He and his successors, especially Louis VI. (le Gros), established the royal power. In the 14th and 15th Centuries the Valois dynasty was strengthened after the Hundred Years' War. Following the success of Charles VI.'s generals and Joan of Arc, the English were finally driven out of France by Charles VII. (1450).

War in Italy, begun by Charles VIII. (1494), was inflamed by the rivalry of Francis I. and Charles of Spain, and followed by the Wars of Religion (1562). Henry IV. inaugurated the dynasty of the Bourbons. The Edict of Nantes pacified France, and thanks to Richelieu, Louis XIII. reigned absolute.

The power consolidated by Mazarin and Colbert was compromised by Louis XIV.'s wars. Absolutism became further discredited until overthrown by the Revolution and the execution of Louis XVI. (1793). France had henceforth a constitution, and saved from invasion by the National Convention, was given a strong central government by Napoleon. In 1815 the Bourbons were restored. After the Liberal Revolution (1830) Louis-Philippe became king, and the constitutional charter was promulgated. A further revolution (1848) overthrew Louis-Philippe. Prince Louis Napoleon was elected president, but a *coup d'état* (1851) re-established the Empire.

The Second Empire was prosperous, but its foreign policy was disastrous. After the Franco-Prussian War (1870-1871) a National Assembly was set up, and Napoleon was deposed. The Third Republic survived the Communist Revolution in 1871, and a period of consolidation was not checked until the World War.

In 1919 reconstruction became imperative. Clémenceau's power did not long survive the war. Briand's pacific policy was defeated in 1922 by Poincaré, who with the occupation of the Ruhr pursued an aggressive policy of making Germany pay. In 1924 Herriot evacuated the Rhineland, and stabilised Europe. Poincaré returned to power to save the franc. Successful, he resigned in 1928. Briand dominated foreign policy either as premier or foreign minister until his death (1932).

Herriot's ministry failing on financial questions, was followed by instability which ended with riots in Paris (Feb. 1934). A strong coalition government was formed under Doumergue. In 1935 Laval, Premier, with Flandin, Foreign Minister, came to an understanding with Italy. Consequently France actively condemned Germany's violation of the Versailles Treaty. In May 1936 a swing to the Left in the Elections made Blum, the leader of the Popular Front, Premier. His Government dissolved the Fascist Leagues, dealt satisfactorily with a number of industrial strikes, and during the Spanish Civil War maintained with Great Britain a strict policy of non-intervention. During 1936 and 1937 a series of financial crises occurred, and in 1938 Daladier formed a strong government to restore prosperity.

France, Anatole, pen name of Jacques Anatole Thibault, French novelist.

Son of a Parisian bookseller, he published his first work in 1868, and soon made a name as a writer of satire; received the Nobel Prize for literature in 1921. Among his works are *Penguin Island* and *The Revolt of the Angels*. (1844-1924).



ANATOLE FRANCE

Francesca, Pietro della, an Italian painter, sometimes called Piero Borghese after his native place; did fresco-work in Florence and at Loreto; painted pictures for the Duke of Rimini, notably "The Flagellation"; was a friend of Raphael's father; some of his pictures are in the London National Gallery. (1420-1492).

Francesca da Rimini, a beautiful lady of the 13th Century, whose pathetic love

story finds a place in Dante's *Inferno*. She was betrothed by her father, the Lord of Ravenna, to Giovanni of Rimini, but her affections were engaged by Paolo, his brother. The lovers were found together by Giovanni and murdered by him.

Francesco di Paula, or *St. Francis of Paola*, founder of the order of the Minims, born in Paola, in Calabria; took up his abode in a cave, where the severe purity and piety of his life attracted to him many disciples. Subsequently he founded an ascetic brotherhood, called the Minims; now reduced to a few members, mostly in South Italy. (1416-1507).

Franche-Comté, an ancient province, in the E. of France, centring round Besançon, added to the crown of France in the reign of Louis XIV. at the peace of Nimeguen in 1671.

Franchise, the right to elect members confined to freeholders of land and the clergy, the right was extended under the Reform Bill of 1832. In 1885 votes were given to all males over 21 who were resident ratepayers, lodgers in unfurnished rooms rented at more than £10 a year, and certain classes of servant. Women, peers and imbeciles were excluded. The Representation of the People Act of 1918 extended the vote to women over 30 and abolished all property qualifications, and in 1928 the franchise was further extended to women over 21.

Francia, Dr. José Gaspar Rodríguez de, dictator of Paraguay; a lawyer; in the revolutionary uprising which spread throughout Spanish South America, Paraguay played a conspicuous part, and when in 1811 she declared her independence Francia was elected secretary of the first national junta, and two years later one of two consuls. Eventually, in 1814, he became dictator, a position he held till his death. He is the subject of a well-known essay by Carlyle. (1757-1840).

Francis, *St. of Assisi*, founder of the Franciscan order, born in Assisi, in Umbria; began life as a soldier, but during a serious illness was converted, and devoted himself to a life of poverty and self-denial. His enthusiasm provoked emulation, and some of his neighbours associated with him and formed a brotherhood, which gave rise to the order. After being approved by the Pope, it rapidly spread both in and beyond Europe, engaging in missionary work and preaching; is still one of the most numerous of Roman Catholic religious orders. Franciscan nuns are called "Poor Clares." *St. Francis* was specially famous for his love of Nature and the lower animals.

Francis, *St. of Sales*, Bishop of Geneva, born at Sales, near Amiens, founder of the Order of the Visitation; was sent to persuade the Calvinists of Geneva back to the Church of Rome, and applied himself zealously to the reform of his diocese and the monasteries; wrote the famous *Devout Life*. (1567-1622).

Francis I., King of France, 1515-1547; recaptured Milan, 1515; aspired to Imperial crown, 1519. Met Henry VIII. of England on the Field of the Cloth of Gold, 1520. Defeated by Emperor Charles V. and captured at Pavia, 1525; lost Italian possessions. Defeated Charles at Ceresole, 1544, but was compelled by alliance of Charles with Henry to make peace with former at Cresp. (1494-1547).

Francis II., King of France, 1559-1560, son of Henry II., whom he succeeded. A weak-minded boy; married Mary Queen of Scots, 1558. (1544-1560).

Francis I., Holy Roman Emperor, 1745-1765; son of Duke of Lorraine; married Maria Theresa, daughter of

Emperor Charles VI. Was succeeded by his son Joseph. (1708-1765).

Francis II., Holy Roman Emperor, 1792-1806, Austrian Emperor from 1804; son of Emperor Leopold II. Defeated repeatedly by Napoleon. Last holder of the Imperial title. (1768-1835).

Francis, Sir Philip, British politician and author; educated at St. Paul's School; clerk in Secretary of State's office and War Office. Appointed to Council of Bengal, 1773. Wounded in India in duel with Warren Hastings. In Parliament at intervals, 1784-1807; prominent accuser of Hastings. (1740-1818).

Franciscans, or *Minorites*, an order of friars founded by St. Francis of Assisi in 1208; they were in particular pledged to absolute poverty, though in later times they were allowed to hold property in common. They were divided into a First Order of friars, a Second of nuns and a Third of lay disciples. In later times several internal disputes led to divisions in the order, and there are now three main branches, Capuchins, Conventuals and Franciscans of the Leonine Union.

Francis Ferdinand, Archduke of Austria and

the Emperor Francis Joseph's heir. His assassination at Serajevo on June 28, 1914, was the immediate cause of the World War. (1863-1914).

Francis Joseph,

Emperor of Austria and King of Hungary; succeeded to the throne in 1848 on the abdication of his uncle, Ferdinand I. The Hungarian difficulty was the chief problem of



ARCHDUKE FRANCIS FERDINAND

the early part of his reign, with which he at first dealt in a spirit of harsh oppression, but the desire for national autonomy was met by the creation of a dual monarchy in 1867, Francis being crowned King of Hungary. He was on the throne when Austria declared war on Serbia in 1914. Other important events were the cession of Lombardy to Sardinia in 1859 and of Venetia in 1866, after an unsuccessful war with Prussia. (1830-1916).

Franck, César Auguste Jean Guillaume, Hubert, musical composer; born at Liège; naturalised in France, 1870. Had distinguished career at Paris Conservatoire. Wrote several symphonies, oratorios and operas, including *Le Valet de Ferme* (1852); *Hulda* (1855). (1822-1890).

Franco, General Francisco, leader of the Civil War of 1936, spent most of his early military service in Morocco; in 1933 was in command in the Balearic Is., and in 1935 Chief of Staff of the Spanish Army; later he was sent to the Canary Is. by the Spanish Socialist government, whence in July 1936 he flew to Tetuan, Morocco, and thence to the mainland to open hostilities in the Civil War. In Oct. 1936 he was declared Commander-in-Chief and "Chief of the Spanish State." (1893-).

Franconia, former name of a district (a portion of the kingdom known as Austrasia), which, as the home of the Franks, was regarded as the heart of the Holy Roman Empire; the emperors long continued to be crowned within its boundaries; subsequently it was divided into two duchies, East Franconia and Rhenish Franconia; the latter was abolished in 1501 and the former much diminished; from 1806 to 1837 the name had no official existence, but in 1837 the names Upper, Middle and Lower Franconia were given to the three northern divisions of Bavaria.

Franco-Prussian War was a war precipitated on the one hand by Bismarck's policy of unifying and extending Germany under Prussian domination, and on the other by Napoleon III.'s disastrous ventures in foreign policy, his failure to obtain from Bismarck the reward promised to him as a price for non-intervention in the war against Austria, and finally his refusal to admit the candidature of the Hohenzollern Prince Leopold for the throne of Spain. France declared war in Aug. 1870.

Marshal MacMahon was immediately defeated at Weissenburg and Wörth, and General Frossard at Spicheren. On Sept. 1 MacMahon was again defeated at Sedan, when on his way to relieve Bazaine, who was besieged at Metz. The following day Napoleon III. surrendered and was made a prisoner of war. A Government of National Defence was formed at Paris, and refused to yield to Prussian domination; but in 10 weeks Paris was besieged. In September Strasbourg surrendered; in October, Metz; and the Prussians occupied Orleans.

Following Bismarck's rapid advance and victory at Bapaume early in 1871, Paris capitulated. Peace was ratified in Frankfurt in May. France ceded Alsace and E. Lorraine, Metz and Strasbourg. A large indemnity was also imposed, to be paid within three years, during which period a garrison of German troops was to remain on French soil.

Franc-Tireurs, (*i.e.*, free-shooters), French volunteers, chiefly peasants, who carried on a guerrilla warfare against the Germans in the Franco-Prussian War; were at first denied the status of regular soldiers by the Germans and mercilessly shot when captured, but subsequently, having joined in the movements of the regular army, they were when captured treated as prisoners of war.

Frankau, Gilbert, novelist, whose mother was the novelist known as Frank Danby; educated at Eton, began writing poetry in 1910. His first novel *One of Us*, 1912, was in verse. His second prose novel, *Peter Jackson* (1919) and *Masterson* (1926) are his most successful works. Author also of *The City of Fear* and *Gerald Cranston's Lady*. (1884-).

Frankenstein, a student in a romance of that name by Mrs. Shelley. He created a soulless monster, yet a being not without craving for human sympathy; this creature, purely animal and powerful for evil, eventually kills his creator. Popularly, though erroneously, the name is often applied to the monster itself who, in the story, is unnamed.

Frankfort-on-the-Main, one of the free cities of Germany, a centre of importance under the Kaisers and the seat of the Diet of the Germanic Confederation, and one of the great banking centres of the world; birthplace of the poet Goethe, and the seat of a University. Pop. 556,000.

Frankfort-on-the-Oder, a town of Prussia, in the province of Brandenburg, 51 m. SE. of Berlin; is a well-built town; is actively engaged in the manufacture of machinery, chemicals, paper, etc. Pop. 78,000.

Frankincense, a resinous product of the genus *Bonellia*. It is found in round, pinkish globules, covered with white powder; has a sweet smell when burnt, and is a common ingredient of incense.

Franklin, under the feudal system a freeholder of land owing fealty to the sovereign alone; subsequently the term was applied to what may be regarded as a yeoman farmer.

Franklin, Benjamin, born in Boston, U.S.A., youngest son of a tallow-

chandler; received a meagre education, and at the age of 12 became apprenticed to his brother, a printer and proprietor of a small newspaper; subsequently made his way almost penniless to Philadelphia, where he worked as a printer. In 1724 he came to England and for 18 months laboured at his trade in London, when he returned to Philadelphia, and there he became proprietor of the *Pennsylvania Gazette*. In 1732 began to appear his *Poor Richard's Almanac*, which was a great success.

Four years later he entered upon a public career, rising through various offices to the position of Deputy Postmaster-General for the Colonies, and sitting in the Assembly; carried through important political missions to England in 1757 and 1764, and was prominent in the deliberations which ended in the declaration of American independence in 1776. He visited France and helped to bring about the French alliance, and, as American minister, signed the Treaty of Independence in 1783; was subsequently minister to France. His name is also associated with scientific discoveries, notably the discovery of the identity of electricity and lightning. (1706-1790).

Franklin, Sir John, Arctic explorer, born in Spilsby, Lincolnshire; entered the navy in 1800; was present at the Battle of Copenhagen; shortly afterwards accompanied an expedition, under Captain Flinders, to explore and survey the coasts of Australia; wrecked; subsequently distinguished himself at the Battle of Trafalgar. In 1818 he was second in command of an unsuccessful expedition sent out under Captain Buchan to discover a North-West Passage, and in 1819 he was chosen to head another Arctic expedition, which, after exploring the Saskatchewan and Coppermine R. and adjacent territory, returned in 1822. Franklin was created a post-captain, and in 1829, knighted. In 1845 was put in command of an expedition, consisting of the *Erebus* and *Terror* for the discovery of the North-West Passage. The expedition never returned. Many relics of this unfortunate explorer were found, demonstrating the discovery of the North-West Passage, but the story of his fate has never been precisely ascertained. (1786-1847).

Franks, the name given in the 3rd Cent. to a confederation of Germanic tribes, who subsequently grouped themselves into two main bodies called the Salians and the Ripuarians, the former dwelling on the Upper Rhine, and the latter on the Middle Rhine. Under their king, Clovis, the Salians overran Central Gaul, subjugating the Ripuarians, and extending their territory from the Scheldt to the Loire, whence in course of time they gradually developed the kingdom of France. The Franks were of a tall and martial bearing, and thoroughly democratic in their political instincts.

Franz, Robert, musical composer, born in Halle. His first songs appeared in 1843, and were cordially appreciated by Mendelssohn and other masters. In 1868 ill-health forced him to resign his musical appointments in Halle. He published upwards of 250 songs. (1815-1892).

Frascati, a town in the Rome province of Italy, 12 m. SE. of Rome. It is much visited by tourists and there are interesting ruins in the neighbourhood. The district produces good wine, oil and grain. Pop. 12,800.



BENJAMIN FRANKLIN

Fraserburgh, a seaport on the N.E. coast of Aberdeenshire, Scotland. It has a good harbour. Industries include herring-fishing and machine-tool manufacturing, and there is a large timber trade. Pop. 2,700.

Fraser River, the chief river of British Columbia (named after Simon Fraser, the explorer, in 1808), is formed by the junction near Fort George of two streams, one rising in the Rockies, the other flowing out of Lakes Stuart and Fraser. It discharges into the Georgian Gulf, 300 m. below Fort George. Rich deposits of gold are found in the lower basin, and an active industry in salmon-catching and canning is carried on.

Fratricelli (i.e., Little Brethren), a religious sect in Italy in the 13th Century, which continued to exist until the close of the 15th. They were an offshoot from the Franciscans (q.v.), who sought to enforce more rigidly the laws of St. Francis, and declined to accept the pontifical mitigations. Ultimately they broke away from the authority of the Church, and maintained a separate organisation, having declared the Church in a state of apostasy. Their régime of life was of the severest nature; they begged their daily food from door to door, and went clothed in rags.

Fraud, the wilful deception of one law a plea of fraud can be maintained only on proof of the following three points: (1) that a statement has been made representing as true something that was really false, and was made on the assumption that the deceived person would act on it; (2) that the person who made the false statement was either aware that it was not true or recklessly unconcerned whether it was so or not; (3) that the person deceived acted on the false statement and thereby suffered loss. A contract entered upon as the result of fraudulent representations cannot be enforced against the party defrauded. The maxim, *fraus vitiat omnia* (fraud vitiates everything), implies that once fraud is proved, any transaction induced by it is at once vitiated, and at any stage of the proceedings.

Fraunhofer, **Joseph von**, German optician, born in Straubing, Bavaria; rose to be manager of an optical institute at Munich, and eventually attained to the position of professor in the Academy of Sciences. He is chiefly remembered for his observation of the dark lines in the solar spectrum, since called after him the Fraunhofer lines. (1787-1826).

Fraunhofer Lines, the fine black solar spectrum, first observed by Wollaston in 1802, and later studied by Fraunhofer (above). The lines correspond to the wave-lengths of light absorbed in the reversing layer of the sun.

Frazer, **Sir James George**, British anthropologist and writer, born in Glasgow. He made a study of mythology and folklore, and published in 1890 *The Golden Bough*, a monumental study of comparative religion. He was knighted in 1914; O.M., 1925. (1854-).

Frederick VI., of Denmark, became the insanity of his father; succeeded the latter, 1808. His reign is noted for the abolition of feudal serfdom and the prohibition of the slave-trade in Danish colonies, and the granting of a liberal constitution in 1811; while his participation in the maritime confederation between Russia, Sweden and Prussia led to the destruction of the Danish fleet off Copenhagen in 1800 by the British, and his sympathy and alliance with Napoleon brought about the bombardment of Copenhagen in 1807, and the cession of Norway to Sweden in 1814. (1768-1839).

Frederick III., German emperor, born in Potsdam; fought at Königgratz in 1866, and in 1870 in the Franco-Prussian War; married the Princess Royal of England; succeeded his father, William I., but fell a victim to a serious throat malady after a reign of only 101 days. (1831-1888).

Frederick I., surnamed **Barbarossa** (Red-beard), of the house of Swabia, Emperor of the Holy Roman Empire (q.v.) from 1152 till 1190. His reign is the most brilliant in the annals of the empire, and he himself among the most honoured of German heroes. His vast empire he ruled with iron rigour, extending his sovereign rights to Poland, Hungary, Denmark and Burgundy. The great struggle of his reign, however, was with Pope Alexander III. and the Lombard cities, whose right to independence he acknowledged by the treaty of Constance (1183). He was drowned in Cilicia in the crusade against Saladin and the Moslem power. His lifelong ambition was to secure the independence of the empire, and to subdue the States of Italy to the imperial sway. (1123-1190).

Frederick II., called the Wonder of the World, grandson of the preceding. He was crowned emperor in 1215, at Aix-la-Chapelle, having driven Otto IV. from the throne. He gave much attention to the consolidating of his Italian possessions, encouraged learning and art, and had the laws carefully codified. He was opposed by the Papal power and the Lombards. In 1228 he gained possession of Jerusalem, of which he crowned himself king. His later years were spent in struggles with the Papal and Lombard powers, and darkened by the treachery of his son Henry and of an intimate friend. He was a man of outstanding intellectual force and learning. (1194-1250).

Frederick V., Electoral Prince Palatine, succeeded to the Palatinate in 1610, and married Elizabeth, daughter of James I. of England. An attempt to head the Protestant union of Germany and his usurpation of the crown of Bohemia brought about his ruin and expulsion from the Palatinate in 1620 by the Spaniards and Paparians. He took refuge in Holland, but two years later his principality was given to Bavaria by the emperor. (1596-1632).

Frederick I., first King of Prussia, third Elector of Brandenburg, and son of the Great Elector Frederick-William, whom as elector he succeeded in 1688. He extended his territory by purchase; supported William of Orange in his English expedition, and lent assistance to the Grand Alliance against France, for which he received the title of King of Prussia, being crowned such in Königsberg in 1701. (1657-1713).

Frederick II., King of Prussia from 1740 to 1786, surnamed "The Great," grandson of the preceding, and nephew of George I. of England, born in Berlin. After his marriage in 1733 he resided at Rheinsburg, indulging his taste for music and French literature, and corresponding with Voltaire. He came to the throne with the ambition of extending and consolidating his power. From Austria, after two wars (1740-1744), he wrested Silesia, and again fought the empire in the Seven Years' War (1756-1763), while in 1776 by force of arms he acquired the Duchy of Franconia. As administrator he was uni-



FRÉDÉRIC II.

nently efficient, the country flourished under his rule. (1712-1786).

Frederick Louis, Prince of Wales from 1729; eldest son of George II. and father of George III.; born at Hanover; Duke of Gloucester, 1717; of Edinburgh, 1727. Came to England, 1728; married Augusta, daughter of the Duke of Saxe-Gotha, 1736. Hated by his parents, he maintained an opposition court, finally at Leicester House, where he died. (1707-1751).

Fredericksburg, city of Spotsylvania county, Virginia, U.S.A. In the American Civil War the Confederates defeated the Union forces here in 1862. It has leather and woollen manufactures. Pop. 7,000.

Frederick-William, Elector of Brandenburg, born in Berlin; became ruler of Prussia in 1640, and in 1648 by the Treaty of Westphalia secured large accessions of territory, afterwards creating a strong standing army, introducing various industries into Prussia, re-organising the finances, and rebuilding and beautifying his capital, Berlin; was the founder of modern Prussia, and is known as the "Great Elector." (1620-1688).

Frederick-William I., King of Prussia, born in Berlin, ascended the throne in 1713. In 1720, at the peace of Stockholm, he received part of Pomerania with Stettin for repoussing the cause of Denmark in her war with Russia and Poland against Sweden. The rest of his reign was passed in improving the status of his country. (1688-1740).

Frederick-William II., King of Prussia, nephew of Frederick the Great (q.v.); succeeded to the throne in 1786, but soon lost favour by indolence and favouritism. In 1788 the freedom of the press was withdrawn, and religious freedom curtailed. He involved himself in a weak and vacillating foreign policy, wasting the funds accumulated by his uncle in a useless war with Holland. At the partition of Poland in 1793 and 1795 various districts were added to the kingdom. (1744-1797).

Frederick-William III., King of Prussia from 1797 till 1840; abandoned his position of neutrality towards Napoleon and declared war in 1806; defeat followed at Jena and in other battles, and by the Treaty of Tilsit (1807) Prussia was deprived of half her possessions. Under the able administration of Stein the country began to recover itself, and a war for freedom succeeded in breaking the power of France at the victory of Leipzig (1813), and in 1815 her lost territory was restored. (1770-1840).

Frederick-William IV., King of Prussia from 1840 till 1861. His reign is marked by the persistent demands of the people for a constitutional form of government, which was finally granted in 1850. A year previously he had declined the imperial crown offered by the Frankfurt Diet. In 1857 he became insane, and his brother was appointed regent. (1795-1861).

Fredericton, the capital of New Brunswick, Canada, situated on the river St. John; is the seat of a bishopric and of a university; has an extensive lumber trade. Pop. 8,800.

Free Church of England, or Reformed Episcopal Church, a religious sect numbering about 12,000 members with 50 churches. It was founded in the middle of the 19th Century, as a protest against the spread of "High Church" views in the established Church of England.

Free Church of Scotland, an ecclesiastical body formed by secession from the Church of Scotland; in 1800 the greater part joined with the United Presbyterians to form the United Free Church of Scotland, and a long dispute took place over the property of the body, eventually settled by a Royal Commission.

Free Cities of Germany, were cities which enjoyed sovereign rights within their own walls, independent representation in the Diet, and owned allegiance solely to the emperor. Their internal government was sometimes democratic, sometimes the opposite. Their peculiar privileges were obtained either by force of arms, by purchase, or by gift of the emperors, who found in them a convenient means of checking the power of their feudal lords. Most of them lost their privileges in 1803, but Frankfurt-on-Main continued to be independent until 1866, and Hamburg, Lübeck and Bremen until 1871.

Freehold, by English law, real property in Crown in return for such services as a free man would render to his lord: hence the name freehold. Freehold amounts in practice to absolute ownership, and the freehold tenant may dispose of the property by conveyance or, after his death, by will. There were formerly three kinds of freehold estate: fee simple, fee tail and estates for life. By the Law of Property Act of 1925, legal estates in tail and for life were abolished, and freehold property is now legally held to exist only in fee simple.

Freeman, one enjoying certain municipal rights, immunities or privileges within a city or borough, including a share in any revenue obtained from property owned by the Corporation. Honorary freedom is often conferred as a mark of esteem upon any eminent person, not necessarily a resident in the city or borough, or upon one who has done a signal service to the city or borough. Apart from this, a resident only, or the near relative (i.e., wife, son or daughter) of one already admitted, may be admitted to freedom.

Freeman, Edward Augustus, historian, born at Mitchley Abbey, Staffordshire; was a Fellow of Trinity College, Oxford; examiner in the School of Law and Modern History; in 1884 he was elected Regius Professor of Modern History at Oxford. He was the author of many scholarly works ranging over the whole field of history, his fame, however, mainly resting on his great *History of the Norman Conquest*. (1823-1892).

Freemasonry, in modern times is the wide institution of the nature of a friendly benevolent society, having for its objects the promotion of social intercourse amongst its members, and, in its own language, "the practice of moral and social virtue," the exercise of charity being particularly commended. By a peculiar grip of the hand and certain passwords members are enabled to recognise each other, and the existence of masonic lodges in all countries enables the freemason to find friendly intercourse and assistance wherever he goes.

Its origin is found in the masonic brotherhoods of the Middle Ages, and some of the names, forms and symbols of these old craft guilds are still preserved. In an age when great cathedrals and monasteries were rapidly springing up masons were in great demand, and had to travel from place to place, hence signs were adopted by which true masons might be known amongst each other and assisted. The idea of utilising this secret method of recognition for general, social and charitable purposes, without reference to the

mason's craft, seems to have originated in the Edinburgh Lodge, where, in 1600, speculative or theoretical masons were admitted.

In its present form of organisation it dates back to 1813, when the "United Grand Lodge of Ancient Free and Accepted Masons of England" was formed. The Grand-Master is always a member of the Royal Family.

On the continent of Europe Freemasonry has become involved with politics, and has been suppressed in recent years in Italy, Germany and elsewhere; it is strongly attacked as a "secret society" by the Roman Catholic Church. It is widespread in the U.S.A., where its total membership is about 3½ millions.

Free Port, name given to a port at which ships of all nations may discharge or load cargo without payment of customs or other duties, save harbour dues. They were created in various Continental countries during the Middle Ages for the purpose of stimulating trade, but the system of bonded warehousing has superseded them.

Freestone, a builder's term for various stones, which do not split into layers, and which are capable of being cut into large blocks, uniform in colour and texture, and able to be carved.

Freethinkers, the name given to various writers and others who opposed the supernatural authority of the Christian Church; first came into use in the 18th Century. They were and are often wrongly confused with atheists; their attitude, however, is strictly an agnostic one.

Freetown, the capital of Sierra Leone, British W. Africa, situated on the northern extremity of the Sierra Leone peninsula, forming a fine natural harbour which affords good anchorage close to shore for largest ships. Pop. 59,600, mainly non-European.

Free Trade, the name given to the former commercial policy

of England, first elaborately set forth by Adam Smith in his *Wealth of Nations*, the repeal of the Corn Laws in 1846 being the first step towards its adoption. Strictly used, the term is applicable only to international or foreign trade, and signifies a policy of strict non-intervention in the free competition of foreign goods with home goods in the home

markets. Differential duties, artificial encouragements (e.g., bounties, drawbacks), to the home producer, all of which are characteristic of a protective system of trading, are withheld, the belief being entertained by free-traders that the industrial interests of a country are best served by permitting capital to flow into those channels of trade into which the character and resources of the country naturally dispose it to go. About 1803 began under Joseph Chamberlain a strong movement in England—the Tariff Reform Movement—directed to its abolition; and the change of circumstances after the World War led in 1932 to its supersession by a protective system.

Free Will. Whether man is morally a free agent or a being whose actions are predetermined by past events beyond his control, has long been one of the chief matters of philosophical controversy. Descartes and Hume postulated the absence of contingency in man's conduct, while Kant excepted the spiritual realm from the necessity which he observed in the material

world. Under the influence of physical science, later 19th Century philosophy tended to deny human free will, but at present it is in greater favour, at least within a limited field. In Christianity St. Augustine laid down the principle of free will as a fundamental belief of the Church. The doctrine of absolute pre-destination, however, advanced by Luther and Calvin, took a strong hold of Protestant belief at the time of the Reformation.

Freezing Mixtures, mixtures used low temperatures, usually on a small scale now that efficient mechanical refrigerators are readily available. A mixture of ice and salt gives a temperature of about -23° C., while other common freezing mixtures are (a) ammonium nitrate, sodium carbonate and water, (b) ammonium chloride, potassium nitrate and water, and (c) sodium sulphate crystals (Glauber's salt) and concentrated hydrochloric acid. For lower temperatures, a mixture of solid carbon dioxide and ether may be used; this will quickly freeze mercury.

Freiberg, in the centre of the Saxon mining district, 80 m. SW. of Dresden; is an old town, which arose upon the discovery of its silver-mines in 1163. It has a fine old cathedral, and a famous school of mines; the manufactures comprise gold and silver work, wire, chemicals, etc. Pop. 36,000.

Freiburg, or Fribourg, (1) a Swiss canton between Bern and Vaud, and having three enclaves in the latter; the population consists chiefly of French Catholics; is hilly; dairy-farming, watch-making, and straw-plaiting are the chief industries. Area 656 sq. m. Pop. 143,000.

(2) Capital of the canton, is situated on the Sarine, 19 m. SW. of Bern; the river is spanned by a suspension bridge, there is an old Gothic cathedral with one of the finest-topped organs in Europe, and a University. Pop. 21,600.

Freiburg, in Breisgau, an important town in Baden, Germany, at the W. side of the Black Forest, and 3½ m. NE. of Basel; has a Gothic cathedral famous for its architectural beauty, and a university; has important manufactures in silk, cotton, thread, paper, etc.; is the seat of a Catholic archbishop, and is associated with many stirring events in German history. Pop. 100,000.

Freight, the price paid for the transportation of goods by land or sea from one place to another; the term was originally restricted to sea transport only, but is now extended to all transport, including passenger.

Freischütz (i.e., Freeshooter), a legendary hunter who made a compact with the devil whereby of seven balls six should infallibly hit the mark, and the seventh be under the direction of the devil, a legend which was rife among German troopers in the 13th and 14th Centuries, and has given name to one of Weber's operas.

Fremantle, a seaport town in W. Australia, on the Swan R., 10 m. from Perth, of which it is practically a suburb; the first ingoing and outgoing port of call for steamships; has saw-mills and soap and leather factories. Pop. 25,500.

Frémont, John Charles, an American Georgia; in 1843 explored the South Pass of the Rockies, and proved the practicability of an overland route; explored the Great Salt Lake, and the upper reaches of the Rio Grande; rendered valuable services in the Mexican War; after unsuccessfully standing for the Presidency in the anti-slavery interest, he again served in the army as major-general; a scheme for a southern railway to the Pacific brought him into trouble with the French Government in 1873, when he was tried and condemned for fraud. (1813-1890).



JOSEPH
CHAMBERLAIN

French, John Denton Finkstone, 1st Earl of Ypres, British general; first entered the navy, but transferred to the army in 1874, seeing service in Egypt. He was given command of the cavalry in the Boer War, was made a Major-General and established his reputation at Kimberley and Bloemfontein. When a Field-Marshal in 1914 he resigned on account of the incident at the Curragh, but he was appointed to lead the British Expeditionary Force in the World War in August, and was in command at Mons, the Marne, the Aisne and the first battle of Ypres. In 1916 he was superseded by Haig, and in 1918 became viceroy of Ireland. He was created viscount in 1915, Earl in 1921, and granted £50,000 in 1919. (1852-1925).



EARL OF
YPRES

French Equatorial Africa, embraces the four colonies of Gabon (105,000 sq. m.), Middle Congo (173,000 sq. m.), Oubanghi-Chari (236,000 sq. m.) and Chad (400,000 sq. m.). The chief towns of each of these colonies are respectively, Libreville, Brazzaville, Bangui and Fort-Lamy. The colonies are under the authority of a Governor-General with an administrative council. Their total population is about 3,320,000, including about 5,000 Europeans.

French Guiana, or *Cayenne*, French colony in S. America, between Brazil and Dutch Guiana; fertile but unhealthy; produces gold, cocoa and timber; contains an important penal settlement. Area 34,700 sq. m. Pop. 47,400. The capital is Cayenne.

French Guinea, is situated on the W. African coast, N. of Sierra Leone. The area is 98,000 sq. m. The chief town, Konakri, has a population of 8,800. Population of colony, 2,050,000 of whom 3,000 are Europeans.

French Revolution, the great upheaval in France at the end of the 18th Century, which was caused by the evils of the taxation and land-owning system, which oppressed the lower classes, and the influence of Rousseau on the middle classes who demanded a greater share of government. The disorganised state of national finances compelled Louis XVI. to call the States-General in May, 1789, for the first time for many years, and the Third Estate broke away the following month to form the National Assembly. In July the Paris mob stormed the Bastille, and forced the Royal Family to flee to Paris. A new body called the Legislative Assembly was formed in 1791, and the monarchy was overthrown in 1792, France being declared a Republic. In 1793 a committee of Public Safety was formed and the Reign of Terror started, the king and Robespierre, one of the leaders of the revolution being among the victims of the guillotine. A Directory was formed in 1795, and in 1799 Napoleon Bonaparte became Consul and ultimately Emperor.

French West Africa, consists of Senegal, French Guinea, Ivory Coast, Dahomey, French Sudan, Mauritania, Niger and the Dakar area. The total area is about 1,600,000 sq. m. Pop. 14,470,000. The Governor-General is assisted by a council. Ground-nuts, cocoa and other tropical products are exported. The capital is Dakar.

Frensham, a town on the E. Wey, 4 m. inland, from Farnham, Surrey, England, a beauty spot much resorted to for fishing, etc. Pop. 3,000.

Frere, Sir Henry Bartle Edward, diplomatist and colonial governor, born near Abergavenny; entering the East India Company in 1834, as the chief-commissioner in Sind did much to open up the country by means of canals, roads, etc.; during the Mutiny he distinguished himself by the manner in which he suppressed the rising in his own province; from 1862 to 1867 he was Governor of Bombay; in 1867 was knighted, and five years later carried through important diplomatic work in Zanzibar; his last appointment was as Governor of the Cape; the Kaffir and Zulu Wars involved him in trouble, and in 1880 he was recalled, having effected little. (1815-1884).

Frere, John Mookham, English politician and author, born in London; in 1799 became Under-Secretary for Foreign Affairs; a year later he was envoy to Lisbon, and subsequently minister to Spain; in his early days he was a contributor to the *Anti-Jacobin*, and shares with his school-fellow Canning the authorship of the *Needle Knife-Grinder*; but he is best known by his fine translations of some of Aristophanes's plays. (1769-1846).

Fresco, the art of painting on walls freshly laid with plaster, or which have been dampened so as to permit of the colour sinking into the lime. There were two methods, the *fresco secco* and the *fresco buono*. In the first the wall was sprinkled with water, and the colours were then worked into the damp surface; in the second process, in which finer and more permanent effects were obtained, the artist worked upon the fresh plaster of the wall (which was laid for him as he proceeded), pouncing or tracing his designs with a stylus. Only colours which are natural earths can be employed, as they require to be mixed with lime, and are subject to the destroying effect of that substance. As a method of mural decoration it was known to the ancients, and some of the finest specimens are to be seen in the Italian cathedrals of the 14th and 15th Centuries. The art is still in vogue, but can only be practised successfully in a dry climate.

Freshwater, village and holiday resort 12 m. W. of Newport, Isle of Wight, England. Tennyson long resided in the neighbourhood. Pop. 3,100.

Fresnel, Augustin Jean, French physicist, born in Broglie, Eure. As an engineer he rose to be head of the Department of Public Works at Paris. In 1825 he was elected an F.R.S. of London. He made discoveries in optical science which helped to confirm the undulatory theory of light, and invented a compound lighthouse lens. (1788-1827).

Fresno, city in California, U.S.A., on the Southern Pacific Railway. 207 m. S.E. of San Francisco; the surrounding district, extensively irrigated, produces abundance of fruit, and raisins and wine are largely exported. Pop. 53,000.

Fretwork, the name given to open-boards or panels of wood. The board, on which the design is first drawn, is laid on a V-shaped rest. The fret-saw is a thin blade held in a frame, similar to a hack-saw for cutting metal. The blade is first inserted through a hole cut in the wood, then tightened up in the frame. A mechanical saw can be used, the operator merely guiding the wood.

Freud, Sigmund, Austrian psychologist, founder of the study of psychoanalysis; professor at Vienna; he applied his methods successfully to many cases of nervous disorders. He has written several books on dreams and nervous diseases, including *The Interpretation of Dreams*. In 1938 he left Vienna to escape Nazi persecution, and came to England. (1856-)

Freyr, in the Scandinavian mythology the god who rules the rain and sunshine, and gives peace, wealth and abundant harvests. The wooing of Gerda, daughter of the giant Gylmer, by Freyr is one of the most beautiful stories in the northern mythology. His festival was celebrated at Christmas, and his first temple was built at Upsala.

Freytag, Gustav, German novelist and dramatist, born in Kreuzburg, Silesia; from 1839 to 1870 was teacher of German language and literature at Breslau; from 1870 resided at Wiesbaden. His many novels and plays and poems place him in the front rank of modern German litterateurs. Several of his novels have been translated into English, including his masterpiece, *Soll und Haben* (Debit and Credit). (1816-1895).

Friar (i.e., brother), a name applied generally to male members of Catholic religious orders who, unlike monks, travelled about, whereas the monk remained secluded in his monastery. Many orders of friars arose in the 13th Century, especially the Grey Friars or Franciscans, the Black Friars or Dominicans, the White Friars or Carmelites, Augustinians or Austin Friars, and later the Crutched Friars or Trinitarians.

Friar's Crag, a beauty in Cumberland, England, consisting of a rocky promontory on the N.E. shore of Derwentwater. It is owned by the National Trust.

Friction, the resistance a body meets when sliding over another. If the lower body is tilted, an angle will ultimately be reached at which the upper body begins to slide over it; this angle is called the limiting angle. At the limiting angle, the weight of the upper body, its reaction or pressure upon and perpendicular to the lower body, and the friction, are in equilibrium, and the friction is then known as the limiting friction. Friction is reduced, though it can never be completely eliminated, by making the surfaces in contact as small and as smooth as possible, and by the application of a lubricant such as oil or graphite. The advantage of ball-bearings is that sliding contact is largely replaced by rolling contact.

Friday, the sixth day of the week, so called as consecrated to Frigga or Freyja, the wife of Odín; is proverbially a day of ill luck; by Catholics kept as a day of abstinence from meat in memory of the Crucifixion, and by Mohammedans as the weekly day of special devotion.

Frideswide, Saint, patron saint of Oxford; said to have been a Mercian princess and martyr. Cardinal Wolsey transformed her monastery into Christ Church College. (c. 650-c. 735).

Fridtjof Nansen Land, an uninhabited archipelago in the Arctic Ocean, N. of Nova Zembla, formerly known as Franz Josef Land; was discovered and partly explored in 1873-1874 by Payer and Weyprecht. Arctic animals are found in good numbers. It is considered an excellent base for expeditions in quest of the North Pole.

Friedland, a town in Prussia on the R. Alle, 27 m. from Königsberg. Napoleon defeated the Russians and Prussians here in 1807. Pop. 3,300.

Friedrichshafen, town in Württemberg, Germany, on Lake Constance. It is a holiday resort, whence steamers ply to other towns on the lake. Its industries include boat-building and ship construction, the lake forming a testing-ground for the machines. Pop. 13,500.



FRANCISCAN MONK

Friendly Islands. See Tonga Islands.

Friendly Societies, associations for mutual aid in sickness, unemployment, old age, etc. Such societies developed from the medieval guilds, and some date back to the 16th Century. Legislative encouragement was not given until 1793, and many friendly societies, being allied to trade unions, suffered under the disabilities imposed by the Combination Acts of 1799 and 1800. When these were removed, the friendly societies attached to various trades flourished again, and the movement was encouraged by the Act of 1850, which admitted as friendly societies the various federated "orders"—e.g., the Independent Order of Odd Fellows, the Manchester Unity, established 1810, and the Ancient Order of Foresters, established 1834.

All friendly societies (including "Orders," with various branches; Benefit Societies; Deposit Societies and Collecting Societies) are regulated by an Act of 1896, amended in 1908. Since that date, the work of the societies has expanded in spite of the growth of State relief, and although affiliation has reduced the actual number of societies, membership continues to increase. Most of them are approved societies for National Health Insurance purposes.

Friends, Society of, a community of Christians popularly known as Quakers, founded in 1648 by George Fox (q.v.), and differing from other sects chiefly in their belief in an "inner light," and their rejection of clergy and sacrament as media of grace. They refuse to take oaths, and are opposed to war and slavery. In England they number about 30,000; in the U.S.A. about 110,000.

Friesland, the most northerly province of the Netherlands, with a rich soil; low-lying and pastoral; protected by dykes. Area 1250 sq. m. Pop. 415,000.

Frieze, the middle band of an entablature between architrave and cornice, or more usually the decoration of that band; hence, frequently, any band of applied decoration. In the Doric order it was divided by vertical bands (triglyphs) into panels (metopes) decorated with sculptured groups.

Frigate, originally an oared Mediterranean sailing-ship. In the 17th Century many such ships were built for the British Navy, but the Seven Years' War saw the first vessel built of the type later technically known as a frigate—a fast, full-rigged ship with upper deck, spar deck and lower deck, carrying guns which by 1808 had increased in number to 50.

Frigate-bird, a tropical fish-eating sea-bird of the order

Ciconiiformes, allied to the cormorant; characteristics are short legs, broad wings, long forked tail and powerful flight. It forces other sea-birds to disgorge their food.



FRIGATE-BIRD

Frigga, a Scandinavian goddess, the wife of Odín; worshipped among the Saxons as a goddess mother; represented the earth.

Frimley, town in Surrey, England, 30 m. SW. of London; now forms an urban district with Camberley. It is mainly residential. Pop. 16,000.

Frinton-on-Sea, seaside resort in Essex, England, 7 m. NE. of Clacton. Pop. (with Walton) 7,300.

Frisian Islands, a number of islands parallel with and close to the coasts of the Netherlands and NW. Germany. The largest are Texel, Terschelling and Ameland, all belonging to the Netherlands.

Frisians, a Low German people, who occupied originally the shores of the North Sea about the mouths of the Rhine and Ems; distinguished for their free institutions; tribes of them at one time invaded Britain, and form a strain in the population especially of East Anglia.

Frith, William Powell, English painter, born near Ripon, Yorkshire; his works frequently depict crowds, his subjects varied and interesting, and among his most popular pictures are "Derby Day" and "The Railway Station." (1819-1909).

Frobisher, Sir Martin, famous English navigator, born near Doncaster; thrice essayed the discovery of the North-West Passage during Elizabeth's reign; accompanied Drake to the West Indies; was knighted for his services against the Armada; conducted several expeditions against Spain; was mortally wounded when leading an attack on Brest. (1535-1594).

Froebel, Friedrich, a German educationist, 1st who followed Pestalozzi in devising a system of physical and intellectual training for young children; founder of the famous Kindergarten system. (1782-1852).

Frog, an amphibious animal of the

Frog, family Ranidae, common over most of the world except Australia. It is tailless, squat, with long hindlimbs, short forelimbs, pointed snout, bulging eyes and cleft tongue, the point of which lies backward towards the throat. It hibernates at the bottom of ponds during winter, coming out in spring to mate, the females producing eggs which float on the water. In summer the frog has a more or less terrestrial life in wet, grassy places, feeding on flies, worms, etc. It generally croaks only during mating-time. The eggs hatch into tadpoles with external gills. Later the gills disappear, and the head and body are rounded together, propelled by a long tail. Some species are used for food in France and elsewhere.



FROG

Frogbit, a water-plant of the genus *Hydrocharis* (*Hydrocharis morsus-ranae*), of the order Hydrocharitaceae. It is monocotyledonous and the leaves are ribbon-like; common in still ponds.

Frog-hopper (*Aphrophora*: froth-bearing), a small insect of the family Cercopidae, belonging to the sub-order Homoptera. They jump considerable distances. The larvæ surround themselves in froth, known as "cuckoo-spit."

Frogmore, a royal residence and the burial-place of Queen Victoria and Prince Albert, her consort.

Froissart, Jean, a French chronicler and poet, born in Valenciennes; visited England in the reign of Edward III., and was sent thence to Scotland to collect more materials for his chronicles; after this he wandered about Europe to add to his store; he died in Flanders. His chronicles, which extend from 1325 to 1400, are written with grace and wit. (1337-1410).

Frome, market town in Somersetshire, England, on border of Wiltshire, on the river of the same name, 15 m. from Wells. Industries are cloth manufacturing, printing, metal works and iron foundries. Pop. 16,100.

Fronde, a name given to a revolt in France in opposition to the Court of Anne of Austria and Mazarin during the minority of Louis XIV. The war passed through two phases; first a war on the part of the people and the parlement, called the Old Fronde, which lasted from 1648 till 1649, and then a war on the part of the nobles, called the New Fronde, which lasted till 1652, when the revolt was crushed by Turenne and the royal power triumphed.

Frost, a climatic condition occurring when the temperature of the atmosphere falls below 32° F., and water, plant juices, etc., freeze. Black frost is frost sufficiently intense to blight vegetation and turn it black, but without the presence of hoar or white frost. See also **Hear-frost**.

Froude, James Anthony, English historian and man of letters, born at Totnes, Devon. Trained originally for the Church, he gave himself to literature, his chief work being the *History of England from the Fall of Wolsey to the Defeat of the Spanish Armada*, in 12 vols., of which the first appeared in 1854 and the last in 1870. He also wrote a *Life of Carlyle*, *Nemesis of Faith* and *Short Studies of Great Subjects*. He ranks as one of the masters of English prose, though his accuracy in detail is questionable. (1818-1894).

Fruit, that part of a plant which contains the seed; the fertilised and developed gynaecium or pistil. The gynaecium, the female section of a plant, contains the ovary, within which are the carpels containing the ovules, and the style and stigma. When the ovule is fertilised, it develops into what is known as the seed, and the receptacle (i.e., the axil part of the flower which supports the pistil) becomes enlarged and fleshy for its protection, forming the pericarp. The external layer of the pericarp or "skin" is called the epicarp, the inner layer the endocarp, and the middle layer the mesocarp.

Botanically, the pod of a pea, the samara of a sycamore and the poppy capsule are fruits, but the term is more usually restricted to the various kinds sold commercially as "fruit." In addition to apples and pears, classed as "pomes" or pseudocarps, as they develop from the receptacle as well as from the ovary, fruit may be divided into "drupes" (stone fruit), "drupels" or little drupes, and berry fruits. Stone fruit develops from the ovary alone, the receptacle withering after fertilisation. Each fruit is formed from a separate two-ovule carpel. When one ovule is fertilised, it forms the seed, round which the wall of the ovary thickens. The seed is found within the stone, and round the latter forms the pulp enclosed by the skin. A nut is a fruit in which the ovary develops, but the mesocarp becomes woody and not fleshy. The class of stone-fruits or drupes include cherries, plums, peaches, nectarines, almonds, damsons, apricots, bullaces and sloes. The class of fruit called drupels is that in which the fleshy part develops round each seed, as above, but several seeds cluster together, as the raspberry and blackberry. The value of the drupes, with the exception of the almond, lies in the fleshy edible mesocarp. Berry fruits (e.g., gooseberries, currants and grapes) are distinguished from drupes by the fact that the whole pericarp is succulent, and there is no hard endocarp or stone round the seed.

Fry, Charles Burgess, English cricketer; educated at Repton, and Wadham College, Oxford, being captain of University football and cricket clubs; held world's record for long jump; captained England's team in test-matches, 1913. Honorary director, naval training-ship *Mercury*. Later wrote many books and articles on cricket. (1872-).

Fry, Mrs. Elizabeth, philanthropist, born in Gurney, the Quaker banker; devoted her life to prison reform and the reform of criminals; as well as other benevolent enterprises; she has been called "the female Howard." (1780-1845).

Fryatt, Capt. Charles, British seaman, who was in charge of the steamship *Brussels* when she was attacked in March 1915 by a German submarine which he rammed, for which he was shot in Bruges on his capture by the Germans in June 1916. (1872-1916).

Fuad, King of Egypt, succeeded his brother as Sultan in 1917, and on the declaration of Egypt's independence in 1922 became king. (1868-1936).

Fuad Pasha, Turkish statesman and diplomatist, much esteemed and honoured at foreign courts, at which he represented Turkey, for his skill, sagacity and finesse; became Minister of Foreign Affairs in 1852; was hostile to the pretensions of Russia; during the Crimean War commanded troops on the Greek frontier. (1814-1869).

Fuchow (Foochow), a Chinese city, the capital of the province of Fukien, situated on the R. Min, 125 m. N.E. of Amoy. Massive walls 30 ft. high enclose the original town, but the extensive suburbs reach down to the river, which is bridged, and is a convenient waterway for trading with the interior; it was made a free port in 1842, and is the centre of a busy trade in tea, timber and textiles. Pop. 323,000.

Fuchsia, a flowering plant of the order Onagraceae, with funnel-shaped hanging flowers, mostly red or purple; native to America, but cultivated as a garden plant in Great Britain, and in the West of Ireland as a hedge-plant.



FUCHSIA

Fuchsine, or Magenta, a crystalline aniline dye, first used as such in 1859; resembles the fuchsia in colour.

Fuels, substance used to produce heat by their combustion in the air. Practically all fuels are either carbon or compounds of carbon, and thus represent reservoirs of energy stored up by the activity of green plants (see Carbon-Assimilation); the chief are coal, coke, peat and wood among solids, petroleum (including petrol, paraffin oil and heavy oil) and alcohol among liquids, and coal-gas, water-gas, producer-gas, natural gas and hydrogen among gases. Of these, only the last is non-carbonaceous.

The process of combustion results in the conversion of the fuels into carbon dioxide, water, etc., by reaction with atmospheric oxygen, heat being evolved during the oxidation. The modern tendency is to use gaseous fuels where possible, since here the cost of transport is least and the flexibility of application greatest.

Fugger, the name of a family of bankers at Augsburg who rose to great wealth and eminence in Germany, particularly under the Emperors Maximilian and Charles V., to whom they lent vast sums of money; were created counts of the empire by Charles.

Fugue, a form of musical composition, based on a principal theme, which is announced and answered, often with slight variations, by different instruments, and then subjected to a discursive development. It was greatly developed by Bach.

Fuji-yama, a volcano and the highest mountain (12,425 ft.) in Japan; is 60 m. west of Tokyo; dormant since the eruption of 1707.

Fukien, mountainous seaboard province of S. China, opposite the island of Formosa, producing tea, sugar, ginger, camphor, timber and porcelain clay. Area 62,000 sq. m. Pop. 11,760,000.

Fulahs, a mixed race of the Upper Sudan whose territory extends between Senegal and Darfur, of superior physique and intelligence, mostly Mohammedans.

Fulda, the capital of the province of Hesse-Nassau, Germany on R. Fulda, noted for its ecclesiastical buildings, among which is the Benedictine abbey founded in 744. Chief industries are clothing and textiles. Pop. 25,000.

Fulgurite, a rock which has been fused by lightning, or vitrified by lightning. In sandy soil lightning sometimes produces a deep bore, fusing and vitrifying the sand or gravel to a depth as great as 20 ft.

Fulham, a borough of SW. London, on the Thames, opposite Putney, with the palace of the bishops of London and a large electrical power station. Pop. 150,000.

Fuller, Thomas, historian, divine and wit, born in Northamptonshire; entering into holy orders, he held several benefices in the Church of England, and a prebend in Salisbury Cathedral; lost favour under the Commonwealth; wrote a number of works, in which are combined gaiety and piety, good sense and whimsical fancy; among them are the *History of the Holy War*, the *Church History of Great Britain* and the *Worthies of England*, the last his principal work and published posthumously. (1608-1661).

Fuller's Earth, name given to various soft clays of fine texture, containing alumina, obtained from the oolite and chalk systems and formerly used in the "fulling" or cleansing of wool.

Fulminate of Mercury, a high explosive used for detonating dynamite and gun cotton.

Fulton, Robert, an American engineer, born in Pennsylvania; began life as a painter, but soon turned to engineering. He was one of the first to apply steam to the propulsion of vessels, and devoted much attention to the invention of submarine boats and torpedoes. In 1807 he built a steamboat to navigate the Hudson River, with a very slow rate of progress, however, making only five miles an hour. Other inventions included machines for dredging and a submarine boat. (1765-1815).

Fume-precipitation, Electrical, a method invented by Sir Oliver Lodge and F. G. Cottrell for removing by electrical means the dust and other solid particles from furnace-gases, etc. The principle is to pass the gases through a pipe along the axis of which a wire electrode is fixed; the electrode and pipe are connected to the respective terminals of a high-voltage (c. 100,000 volts) direct-current supply, and as heavy a discharge as just avoids the passage of sparks is sent between them. The dust particles become charged and are attracted to, and deposited upon, the electrode of opposite charge.

Fumigator, one of various substances or insecticidal fumes. Sulphurous acid produced by burning sulphur is most commonly used for freeing rooms from vermin. The room is first stripped, windows, chimneys, etc., are stopped up, and the sulphur is left burning, the door being tightly sealed and not opened for at least 24 hours. Chlorine is also a powerful germicide; formalin vapour, camphor, resin and volatile oil such as eucalyptus are used as mild disinfectants. A hot-air or steam fumigator is used for disinfecting clothes and portable property.

Fumitory, a flowering plant of the used in medicine. The stems are brittle and filled with watery juice. From *Fumaria officinalis* fumaric acid and the alkaloid fumarine are obtained.



FUMITORY

Funchal, the capital of Madeira, at the head of a bay on the S. coast, and the base of a mountain 4,000 ft. high, extends a mile along the shore, and slopes up the sides of the mountain; famous as a health resort. Pop. c. 31,000.

Function, in mathematics, a variable depends on another quantity or other quantities; to take a simple example, the length of life of a set of motor-car tyres is a function of the mileage. If y is a function of x , this fact is represented mathematically by the equation $y = f(x)$; x is called the independent variable and y the dependent variable.

Fundamentalism, a 20th Century religious movement, mainly in U.S.A., affirming the absolute and literal truth of the Bible, especially its miraculous element, and consequently opposed to much of modern science. It came into prominence in 1925 at the trial of a school-master named Scopes, for teaching evolution in the State of Tennessee.

Funded Debt, originally that part of the National Debt which was charged against a special fund established with a view to its repayment: now the name for any State debt on which normally interest is paid without a definite obligation for repayment of principal by a given date. In Great Britain it includes Consols, Annuities, Conversion Loan, Consolidated Loan and War Loan.

Fundy Bay, an arm of the sea between New Brunswick and Nova Scotia; it is of difficult navigation owing to the strong and rapid rush of the tides.

Fünen, the second in size of the Danish islands, separated from Zealand on the E. by the Great Belt and from Jutland on the W. by the Little Belt; it is flat except on S. and W., fertile, well cultivated, and yields crops of cereals.

Fungus, a comprehensive term for various cryptogamic plants of the group *Thallophyta*, including mushrooms, toadstools, rust, smut, mildew and mould. Fungi are related to algae, from which they are descended, and to lichens. Distinguishing characteristics of a fungus are an absence of chlorophyll or green colouring-matter, and a structure made up of intertwined threads (hyphae), instead of organically fused tissue. Fungi feed on organic matter, and like animals, absorb oxygen and give off carbon dioxide. Some fungi, e.g. the mushroom, are edible.

Fur, the thick, soft hair covering the bodies of certain mammals. It has from the earliest times been used in the manufacture of clothing for human beings, the furs especially used for this purpose being those of small carnivorous animals, such as the mink, sable, stoat, marten, etc., and also amphibious rodents, such as the beaver and muskrat. Fur is a non-conductor of heat, and is light and warm for clothing. When cut from the skin, fur is used in the manufacture of felt for felt hats, etc., the fur of the beaver being especially valuable in this respect. In recent years fur-bearing animals have been largely raised in captivity; in Canada alone there are over 7,000 fur farms. Materials resembling fur are now frequently produced from vegetable materials.

Furies. See *Erinyes*.

Furlough, leave of absence granted to a soldier other than an officer, who while on furlough may not leave the United Kingdom. The term is also used of officers' leave from foreign service.

Furnace, a structure in which heat is generated and applied. There are four main types of furnace—viz., coal or coke-burning, gas-burning, oil-burning and electric. Where the material has to be heated in contact with the fuel, as in smelting iron and burning limestone, a solid fuel is usually preferred; thus in the former operation the iron ore, mixed with other minerals to give a fusible slag, is heated with coke in a blast furnace about 70 to 100 ft. high, lined with a fire-resisting substance. Blasts of hot air are forced in at the bottom through pipes known as tuyères, and the carbon monoxide formed by the partial combustion of the coke reduces the iron ore to metallic iron, which sinks in the molten state to a well beneath and is tapped off at intervals.

In reverberatory furnaces the fuel is combusted in a separate chamber, and the hot gases are led over a hearth on which the material to be heated is spread; the roof of the hearth is vaulted so as to reflect and focus downwards as much heat as possible. In gas-fired furnaces coal-gas, water-gas and producer-gas are the chief fuels; they are sometimes preheated and are burned in apparatus working on the familiar Bunsen-burner principle.

The oil for oil-fired furnaces is sprayed into the combustion chamber from atomisers, while in electric furnaces (invented by the French chemist Moissan) the heat is generated by striking an arc between electrodes made of carbon or some other suitable material.

Furness, an area of N. Lancashire, cut off from the rest of the county by Morecambe Bay. It has extensive ruins of the ancient Furness Abbey. The chief town, Barrow-in-Furness, has commodious docks and iron works. Pop. of town, 60,400.

Furniss, Harry, artist and caricaturist, born in Wexford; on staff of *Punch* from 1880 and 1894; started a humorous paper of his own without success and afterwards engaged in lecture tours. (1884-1925).

Furnivall, Frederick James, English philologist, born at Egham, Surrey; specialised in Early and Middle English Literature; founder and director of numerous societies for promoting the study of special works, such as the Early English Text, Chaucer, Ballad, and New Shakespeare Societies, and editor of publications in connection with them. (1825-1911).

Furse, Charles Wellington, British artist. After studying at the Slade School and in Paris he made a name for open-air portrait painting, sport and country life being his most successful themes. "The Return from the Ride" and "Diana of the Uplands" are in the Tate Gallery. (1868-1904).

Furth, a town in Bavaria, at the confluence of the Ra. Pegnitz and Reditz, 8 m. from Nuremberg. Manufactures mirrors, toy and fancy goods. Pop. 77,000.

Furtwängler, Wilhelm, German musical conductor; born in Berlin-Schöneberg; studied in Munich; conducted opera there and in other German cities. Director of Berlin Philharmonic Orchestra, 1922. Has frequently visited England and America with great success. (1856-).

Fusan, a seaport in the SE. of Korea, on the Korean Strait. It is the terminus of the railway from Seoul. Pop. 150,000, including many Japanese.

Fuse, an electrical safety device, consisting of a strip of fusible metal (i.e., of low melting point) fitted to a fireproof

frame and fixed between terminals. If the current carried by the fuse exceeds a fixed value, the fuse melts, disconnecting the current.

Fuseli, Henry, properly Fuselli, a famous portrait-painter, born in Zurich; came to England at the age of 22, and met Sir Joshua Reynolds; after eight years spent in study of the Italian masters, and Michelangelo in particular, he returned to England and became an R.A.; he painted a series of pictures, afterwards exhibited as the "Milton Gallery." (1741-1825).

Fusel Oil, name given to the higher series, especially amyl alcohol; it is used for various industrial purposes.

Fusible Metal, a bismuth alloy, with melting point below 100° C., commonly used for safety plugs in the furnace crown of steam boilers: when the water falls below a certain level, they melt and allow the water and steam to escape, extinguishing the fire.

Fusilier, a foot soldier so named from he carried the fusil, or light musket, there being now six regiments of fusiliers, including the Royal Scots Fusiliers, raised by the Earl of Mar in 1679; the 7th or Royal Fusiliers, raised during the Monmouth Rebellion

EARLY FRENCH FUSIL

in 1685; the Royal Welch Fusiliers, and the Lancashire Fusiliers, both raised under William

III. in 1688; and the Royal Inniskilling Fusiliers.

Fust, Johann, a rich burgher of Mainz, associated with Gutenberg and Schöffer, to whom, with them, the invention of printing has been ascribed. He is sometimes supposed to have been the original of the Faust legend. (d. 1466).

Fustian, various heavy textile materials, of cotton, including velveteen, moleskin and corduroy. The pile is produced by means of extra warp threads woven in loops over wire.

Futures, term in commerce applied to the purchase of a commodity (merchandise, stocks and shares) with a view to delivery at a future date. The practice lends itself to speculation in that a person may sell in the hope that by the time of delivery the price will have fallen and he can re-purchase at a cheaper rate.

Futurism, like Post-impressionism and Cubism, a modern movement in art, especially painting, emphasizing the importance of the subjective side of the artist's conception. Its origin is associated with the name of the Italian poet Marinetti.

Fylfot, an alternative name for the Swastika (q.v.).

Fyne, Loch, an arm of the sea in Argyll, Scotland, extending N. from Bute to Inveraray, and from 1 m. to 2 m. broad; famed for its herrings.

Fyzabad, the old-time capital of Gujrat, in India; 78 m. E. of Lucknow; a troop-station, but of declining importance. Pop. 66,000.

G

Gaba Tepe, a headland on the Gallipoli Peninsula, Turkey. During the World War Australian and New Zealand forces, under General Birdwood, disembarked 2 m. N. of Gaba Tepe in April 1915, and, though unable to make progress, held their positions until their withdrawal in the following December.

Gabbatha, the place where Pilate's judgment-seat was erected when he pronounced sentence on Christ; (John xix. 13); it stood outside the praetorium, for sentence had to be pronounced in the open.

Gabelentz, Hans Conon von der, a distinguished German philologist, born at Altenburg; was master, it is said, of 80 languages; contributed treatises on several of them, his most important work being on the Melanesian. (1807-1874).

Gabelle, an indirect tax, especially one on salt, the term applied to a State monopoly in France in that article, the exaction in connection with which was a source of much discontent; the people were obliged to purchase it at government warehouses and at extravagant, often very unequal, rates; the impost dates from 1286; was abolished in 1789.

Gabelsberger, Franz Xaver, inventor of the system of shorthand that is most used in German countries. (1789-1849).

Gabes, a town 205 m. S. of Tunis. It is composed of Gabes, the port and European quarter, and Djars and Mensel, the native quarters. There is trade in grain, dates, bananas and other fruit, and hides. Pop. 15,000.

U. E.

Gable, a triangular-shaped piece of wall closing the end of a double-

pitched roof; a decorative feature of German Renaissance and of the Elizabethan style in England.

Gaboon, a French colony in W. Africa fronting the Atlantic, between the Cameroon country and the Belgian Congo, and forming part of French Equatorial Africa; in the NW. is the great Gaboon estuary, 40 m. long and 10 m. broad at its mouth, with Libreville, the capital, on the N. bank; along the coast the climate is hot and unhealthy, but it improves inland; the natives belong to the Bantu stock. The French settled in it first in 1842, but only after the explorations of De Brazza in 1876-1886 were they able to extend and colonize it. Rubber, palm oil, coffee, cocoa, cotton and ivory are produced. Area 104,000 sq. m. Pop. 389,000 (1,300 whites).

Gaboriau, Emile, French novelist, in which *The Lerouge Affair*, *Monsieur Lecocq* and *Slaves of Paris* are best known; born at Sanjon. (1835-1873).

Gabriel, an angel, one of the seven in the traditions of both the Jews and the Moslems as discharging the highest functions, and in the Gospel especially as announcing the forthcoming birth of Jesus to the Virgin Mary, and that of John Baptist to Zacharias.



GABLE

Q

Gad, (1) a god of fortune, probably of Babylonian origin, identified with the planet Jupiter; his name occurs in place-names such as *Baal-gad* and indicates a local cult. (2) One of the Jewish tribes inhabiting the E. of the Jordan, deriving its name from the seventh son of Jacob. (3) A prophet, follower of David, whose seer and counsellor he was (2 Sam. xiv.); he wrote a history of David's reign (1 Chron. xxix.).

Gadames, or **Ghadames**, an oasis and town in Italian Libya, situated in the SW. corner of Tripoli, on the N. border of the Sahara; the fertility of the oasis is due to hot springs, from which the place takes its name; high walls protect it from sand-storms; it is an entrepôt for a large caravan trade with the interior, and is connected by a motor road with Tripoli; the inhabitants are Berbers and Arabs. Pop. 7,000.

Gadara, a town of ancient Palestine, of which extensive ruins only now remain. The site is on the E. side of the Jordan, 6 m. from the Sea of Galilee.

Gaddi, the surname of a celebrated family of Florentine artists; the principal members were: **Gaddo** (1260-1332), painter and worker in mosaic and a friend of Cimabue and Giotto; **Taddeo** (1300-1366), his son, a pupil of Giotto and the most eminent member of the family; and **Agnolo** (1330-1396), son of Taddeo. The work of the Gaddi family consisted almost entirely of religious pictures characteristic of the period.

Gades, the ancient name of Cadiz (q.v.).

Gadolinium, a metallic chemical element belonging to the group of rare-earth metals. Symbol Gd, atomic number 64, atomic weight 157.3. Named in honour of Gadolin, a Swedish chemist.

Gadshill, an eminence in Kent 2½ m. NW. of Rochester; the scene of the robbery by Falstaff and his companions (Shakespeare's *Henry IV*, pt. 1). Dickens resided here from 1860 until his death in 1870.

Gaekwar, the hereditary title of the over Baroda (q.v.), in Gujarat, India.

Gaelic, the ancient language of Scotland and Ireland; of Celtic origin, its introduction dating from about the commencement of the 6th Century; was the official and Court tongue in Scotland until the 11th Century, when English began to supersede it; is still spoken in parts of both countries, there being over 7,000 persons in Scotland speaking Gaelic only in 1931, while Irish Gaelic, or Erse, has been revived in Elre.

Gaels. Exact information on the origin and movements of the Celtic tribes which invaded and settled in Neolithic Britain defies research. The following facts, however, are established. There were two successive waves of Celtic invaders: fair, big-statured people of a round-headed type, unlike the long-headed, dark inhabitants whom they displaced. The earlier invaders were the Gaels or Goidels, who drove the people of Neolithic Britain into the remote parts of W. Ireland and N. Scotland, and themselves settled in the interior, whence they spread to certain districts of Ireland and Scotland.

In Scotland they divided into two groups, those in the Highlands being known later as Picts, and those in the Lowlands later as Scots. These people were to a certain extent displaced by the later invaders, the Brythonic or British people, who in turn settled in the interior regions and spread to Wales. The language of the Brythonic invaders is called "Cymric," and is distinct from the "Gaelic" of the earlier invaders. Some authorities base on this divergence of language a theory

that the Gaelic and Brythonic peoples were of entirely different races.

The more generally accepted theory, however, is that differences of language are to be explained by the fact that the two peoples developed their own culture widely separated from each other. The Celts probably came originally from Central Europe. There are traces of the earlier immigrants, the Gaels, in the Baltic region and the Rhine and Moselle valleys, and of the later in the Alps, Gaul and Spain.

Gaeta, a fortified seaport of S. Italy, NW. of Naples; a favourite watering-place of the ancient Roman nobility; it is rich in classic remains, and in its day has witnessed many sieges; the inhabitants are chiefly employed in fishing and a light coast trade. Pop. 8,000.

Gage, Thomas, English general, son of the first Viscount Gage; he served in the Seven Years' War, and took part in 1755 in Braddock's disastrous expedition in America; in 1760 he became Military Governor of Montreal, and three years later Commander-in-Chief of the British forces in America; as Governor of Massachusetts he precipitated the revolution by his ill-timed severity, and after the battle of Bunker's Hill was recalled to England. (1721-1787).

Gaia, or **Ge**, in Greek mythology, the primeval goddess of the earth, the *alma mater* of living things, both in heaven and on earth, called subsequently Demeter, i.e., Gemeter, Earth-mother.

Gainsborough, a market town of Lincolnshire, England, on the E. bank of the R. Trent, 18 m. NW. of Lincoln. Here in 1013, the Danes landed under King Sweyn, whose supposed tomb is in the district. There is a cattle market, and the industries include ship-building and engineering. Pop. 18,700.

Gainsborough, Thomas, English portrait- and landscape-

painter, born at Sudbury, Suffolk; he early displayed a talent for drawing, and at 14 was sent to London to study art; at 19, shortly after his marriage, he set up as a portrait-painter at Ipswich; in 1760 removed to Bath, where he had many wealthy and fashionable sitters, and in 1774 to London, where he became a rival in portrait-painting of Sir Joshua Reynolds. Ruskin declared him to be the greatest colourist since Rubens; among his most famous pictures are portraits of Mrs. Siddons, the Duchess of Devonshire and the Hon. Mrs. Graham, as well as "Shepherd Boy in the Shower," "The Seashore" and "The Blue Boy." (1727-1788).

Gairdner, Lake, a salt-water lake in S. of Lake Torrens. It is 100 m. long and 40 m. broad, but its area is much reduced in dry seasons.

Gairloch, a village of Ross and Cromarty, Achnasheen. The neighbourhood is well wooded. Pop. 2,000.

Gaius, a Roman jurist of the 2nd Century, concerning whose life hardly anything is known. By the Romans themselves he was included among the five jurists whose pronouncements were authoritative. His most important work, the *Institute*, which served as a basis for Justinian's celebrated *Institute*, was unknown to modern students until 1816, when it was restored from a palimpsest discovered by Niebuhr at Verona.



THOMAS
GAINSBOROUGH

Galago, a family of mammals, allied to the lemurs, found in SW. Africa; it is popularly known as the "bush baby" and feeds on insects. It is remarkable for its large ears and eyes.



GREAT GALAGO

Galapagos,

a group of islands, 13 in number, barren on the N., but well wooded on the S., situated on the equator, 800 m. W. of Ecuador, to which they belong. All bear English names, bestowed upon them by the buccaneers of the 17th Century; Albemarle I. makes up more than half of their area; they are volcanic in formation, and some of their 2,000 craters are not yet extinct; their fauna is of peculiar scientific interest, as exhibiting many species unknown elsewhere, and includes tortoises and lizards of gigantic size; besides the islands proper there is a vast number of islets and rocks. Area 3,000 sq. m. Pop. 2,000.

Galashiels, a burgh of Selkirkshire, 34 m. SE. of Edinburgh, Scotland, on the R. Gala. It is a centre of the woollen industry, and there are also tanneries. Pop. 13,000.

Galata, a suburb of Istanbul, Turkey, on the S. extremity of the Bosphorus, where the European merchants reside.

Galatea, a nymph to whom Polyphemus made love, but who preferred Actis to him, whom therefore he made away with by crushing the latter under a rock, in consequence of which the nymph threw herself into the sea. See also *Pygmalion*.

Galatia, an ancient district of Asia Minor which was invaded and taken possession of by a horde of Gauls in the 3rd Century B.C., whence the name; in 25 B.C., under Augustus, it became a Roman province, and after many vicissitudes was annexed by the Ottoman Turks in the 14th Century A.D.

Galatians, *Epistle to the*, an epistle of St. Paul to the churches in Galatia, probably written at Ephesus about the year A.D. 58. Apparently a discontented party within the Church had been insisting upon the need for a formal observance of the Jewish law, with its rites and ritual. In this epistle Paul urges the Galatians to turn a deaf ear to such agitators, asserts the independence of the faithful from the Mosaic law, now superseded by the law of Christ, and urges them to "stand fast in the liberty wherewith Christ had made them free," and not to pin their faith to circumcision and the formalism of the law.

Galatz, or *Galacz*, a river-port of Rumania, on the Danube, 80 m. above the Sulina mouth of the river, and 166 m. NE. of Bucharest; the new town is well laid out, and contains some fine buildings, including a cathedral. Its harbour is one of the finest on the Danube; a great export trade is carried on in grain and timber, while textiles and metals are the chief imports. Pop. 102,000.

Galaxy. See *Milky Way*.

Galba, *Servius Sulpicius*, Roman emperor from June, A.D. 68, to Jan., 69; elected at the age of 73 by the Gallic legions to succeed Nero, but for his severity and avarice was slain by the Praetorian guard, who proclaimed Otho emperor in his stead. (5 B.C.—A.D. 69).

Gale, *Thomas*, English antiquary; became professor of Greek at Cambridge in 1666 and Fellow in 1669; Dean of York,

1697; noted for his editions of classical writers and works on early English history. (c. 1636-1702).

Galen, a famous Greek physician born in Pergamum in Asia Minor; after studying in various cities, he settled in Rome, and eventually became physician to the emperors M. Aurelius, L. Verus and Severus; of his voluminous writings 83 treatises are still extant, treating of many subjects, philosophical as well as medical; for centuries after his death his works were accepted as authoritative in the realm of medicine. (c. 131-c. 201 A.D.).

Galena, or *Lead-glance*, the ore from which metallic lead is chiefly extracted; consists principally of lead sulphide, together with silver and other impurities, and occurs as bluish-grey cubic crystals in veins of crystalline rocks or in carboniferous limestone.

Galerius (*Galerius Valerius Maximianus*), Roman emperor, born in Dacia, of lowly parentage; rose from a common soldier to be the son-in-law of the Emperor Diocletian, who in 292 nominated him Caesar, ruling over Illyricum and the valley of the Danube; in 305, on the abdication of Diocletian, he became head of the Eastern Empire, which he continued to rule until his death in 311; his name is associated with a cruel persecution of the Christians under Diocletian.

Galiani, *Ferdinando*, an Italian political economist and man of letters; born at Chieti and educated for the Church; held several important offices under the Neapolitan Government; in Paris became the associate of Grimm and Diderot; his *Treatise on Money* is a milestone in the history of economics. (1728-1787).

Galicia, a captaincy-general and formerly a kingdom and province in the NW. corner of Spain fronting the Bay of Biscay and the Atlantic; now divided into the four provinces, Coruña, Lugo, Orense and Pontevedra; the county is hilly, well watered, fertile and favoured with a fine climate, but is only very partially cultivated; some mining is carried on. The chief river is the Miño, and among the larger towns are Coruña, Santiago, Vigo, Lugo and Ferrol. Area 11,254 sq. m. Pop. 2,270,000.

Galicia, a district of Poland extending N. of the Carpathian Mts.; it is a fertile region watered by the Dniester, Vistula, Pruth and other rivers, and is still largely covered with forest; the products include timber, grain, hemp, flax and tobacco; coal, iron, copper and salt are mined, and there are petroleum wells; cattle and hides are exported. The chief towns include Lemberg (Lwow)—the capital—Cracow, Tarnopol, Stanislawow and Przemyśl. Galicia (Galiczka Polish) was annexed by Austria in 1773, but gained its independence after the World War, and became a subject of contention by Poles and Ruthenians; it was officially recognised as Polish territory in 1923.

Galileans, a fanatical sect, followers of one Judas of Galilee, who fiercely resented taxation by the Romans, and whose violence contributed to induce the latter to vow their extermination.

Galilee, the northern division of Palestine, divided into Upper and Lower Galilee; it is about 60 m. long and 30 m. broad. It was the scene of most of the chief events in the life of Christ, at that time being a Roman province.

Galilee, *Sea of*, an expansion of the Jordan, 12½ m. long, and 8 m. broad, enclosed by steep mountains, except on NW. It is remarkable in being nearly 700 ft. below the level of the Mediterranean. The Jordan has been harnessed to supply electric power to Tiberias and other towns.

Galilei, *Galileo*, Italian mathematician, physicist and astronomer, was born at Pisa, Feb. 15, 1564. He studied medicine, and did not turn his attention seriously to physical science until the sight of a lamp swinging in the cathedral started him upon the investigations that led him to discover the isochronism of the pendulum (1601). Obligated by poverty to leave the university, he lectured in Florence and Pisa, where he used the Leaning Tower to demonstrate his discovery of the laws of falling bodies. Professor of mathematics at Padua in 1592, he invented the first practical telescope (1609) and used it to make several astronomical discoveries of the first importance.

A treatise which he published in 1613 supporting the Copernican theory of the universe drew upon him the persecution of the bigoted; the Copernican system was stigmatised as heretical, and Galileo was forbidden to hold or teach it. Undaunted, he issued a new treatise in 1632, which was immediately condemned by the Inquisition, its author being convicted of heresy, imprisoned for some months and forced to recant. He died at Florence, Jan. 8, 1642.

Galileo's discoveries and inventions are among the most important ever made. Besides these already mentioned, they include the invention of the hydrostatic balance, of a rudimentary thermometer and an improved microscope and of the use of pendulums to regulate clocks, while his discoveries in physics paved the way for those of Newton.

Gall, *Franz Joseph*, the founder of phrenology, born at Tiefenbrunn, Baden; in 1785 he established himself as a physician in Vienna, where he pursued investigations on the nature of the brain and its relation to the cranium; in 1796 he lectured on his theory that mental and moral qualities may be deduced from the external configuration of the skull. (1758-1828).

Gall, *St.*, an Irish monk who, about 585, accompanied St. Columban to France in his missionary labours, but, being banished thence, went to Switzerland, and founded a monastery on the Lake of Constance. The Swiss town and canton of St. Gall are named after him. (c. 550-645).

Gallas, a Hamitic race occupying the S. and central parts of Abyssinia; energetic, intelligent and war-like, they follow mostly pastoral occupations; they number over four millions (or more than one-half the population of Abyssinia), and are mostly heathens.

Gall-bladder, a pear-shaped sac lying under the right lobe of the liver, and acting as a reservoir for the bile secreted by that organ; from the gall-bladder the bile passes into the duodenum, where it plays an important part in digestion. The function of the gall-bladder includes the concentrating of the bile by removing water from it, but even if it is removed or stopped up, bile can still reach the duodenum from the liver. Bile stored by the gall-bladder, however, has a lower percentage of water than pure liver-bile. The chief disorders of the gall-bladder are catarrh of the bile-ducts, often accompanied by jaundice and gall-stones.

Galle, or *Poind de Galle*, fortified seaport town, prettily situated on a rocky promontory in the S.W. of Ceylon; there is a good harbour, but the shipping, which at one time was extensive, has declined since the rise of Colombo. Pop. 38,000.

Galleon, a man-of-war or armed merchantman, used by the Spaniards in the 16th Century. The foremast and mainmast were square-rigged, the mizen carried a lateen; there were three or four decks carrying batteries; at prow and stern were high bulwarks.

Galley, a long, narrow, single-decked ship-of-war, often with a beak for ramming, extensively used in the 16th Century by the Venetians and Genoese. The Venetian galley carried three masts with lateen sails, but depended mainly on its oars, 50 or 60 in number. These were worked by slaves, five or six being chained to each bench. It was a common practice to man Christian ships with captive Moslems, and *vice versa*. Up to the 18th Century criminals in France were condemned to row in the galleys.



GALLEY

Gall-fly, a hymenopterous insect of the *Cynipidae* family. The larva develops while completely enclosed in a gall, which is an abnormal growth of a plant (such as an oak-apple), caused probably by a poison excreted by the larva.

Galliard, a lively dance in triple time, popular in Europe, especially Italy, during the 16th and 17th Centuries.

Gallican Church, the Catholic Church in France, which, while sincerely devoted to the Catholic faith and the Holy See, refused to concede certain rights and privileges which belonged to it from the earliest times; it contended that infallibility was vested not in the Pope alone, but in the entire episcopal body under him; maintained the supreme authority of general councils and that of the holy canons in the government of the Church, and insisted that the temporal power of kings was held independently of the pope. These contentions were summed up in a declaration of the French clergy in 1682, their opponents being known as "Ultra-montanists."

Galli-Curci, *Amelita*, Italian soprano singer. Born in Milan in 1889, she studied at the local conservatoire, won a prize there at 16, and made her opera debut at Rome in 1900, subsequently singing in S. America, New York and London.

Gallieni, *Joseph Simon*, French general and administrator; fought in defence of Bazelles, 1870. Lieutenant-Colonel and Governor of Upper Senegal, 1886. Served in Sudan and Tonking. Governor of Madagascar, 1896-1905. General, 1899. Governor of Paris, 1914, organised victory of the Marne. Minister of War, 1915-1916. (1849-1916).

Gallienus, *Publius Licinius*, Roman Emperor from 260 to 268, and for seven years (253-260) associated in the Government with his father, the Emperor Valerian; under his lax rule the Empire was repeatedly invaded, while in the provinces a succession of usurpers, known as the Thirty Tyrants, sprang up; in 268 he was murdered by his own soldiers whilst besieging the rebel Aureolus at Milan.

Gallio, *Junius Annaeus*, the Roman consul of Achaia in the days of St. Paul, before whom the Jews of Corinth brought an appeal against the Apostle, which he treated with careless indifference as no affair of his (*Acts xviii*), in consequence of which his name has become the synonym of an easy-going ruler or prince. He was a brother of Seneca, the philosopher. (d. 65 A.D.).

Gallipoli, a fortified seaport town in S. Brindisi, on a rocky islet in the Gulf of Taranto, close to the mainland, with which it is connected by a bridge of 12 arches; a fine cathedral and huge tanks hewn out of the solid rock for the storage of olive-oil are objects of interest. Pop. 8,000.

Gallipoli, a fortified seaport of European Turkey, on a peninsula of the same name at the western end of the Sea of Marmora, at the mouth of the Dardanelles, 90 m. S. of Edirne (Adrianople); it was the first city captured by the Turks in Europe (1356), and the peninsula was the site of the Dardanelles campaign (1915-1916) during the World War. The Turkish name is Gallibolu. Pop. about 25,000.

Gallipoli Campaign, a campaign of the first year of the World War, undertaken on Turkey's renunciation of her original policy of neutrality after closing the Dardanelles to the British fleet. This action cut off direct communication between Great Britain and Russia. At the same time there was evidence that Bulgaria intended to form an alliance with the Central Powers.

At the instigation mainly of Winston Churchill, the British Government decided to force the passage, relieve Russia and check the eastward extension of Germany's power. The original plan in Jan. 1915 was to force the Dardanelles with the fleet alone, but this was abandoned as impracticable. Sir Ian Hamilton was accordingly appointed to reinforce the naval attack by landing a force of Australians, New Zealanders and British Territorials.

His scheme was to land forces at various points on the Gallipoli Peninsula, mainly at Cape Helles and "Anzac" Cove, and make a massed attack on the stronghold of Krithia. There was, however, no accurate information on the nature of the country, and the real strength of the Turkish army was unknown. Moreover, the supplies of ammunition and of trained soldiers were inadequate.

Three attacks on Krithia in April and May were repulsed with overwhelming loss. In August a fresh attempt was made and troops were landed at Gaba Tepe and Suvla Bay, but the result was equally disastrous. Sir Ian Hamilton was superseded by Sir Charles Monro, who was commissioned by the Coalition Government to evacuate the position. This was completed by the end of 1915 without a single loss.

Gallium, a metallic chemical element, named in honour of France (Latin *Gallia*), or perhaps of its discoverer, Lecocq (Latin *gallus*) de Boisbaudran. It belongs to the same group as boron, aluminium, indium and thallium. Symbol Ga, atomic number 31, atomic weight 69.72.

Galloway, a district in the SW. of Scotland, co-extensive with Wigtown and Kirkcudbright, though formerly of considerably greater extent; the industry of the population is limited chiefly to agriculture, the rearing of sheep and cattle and fishing, while it is still noted for a small but hardy breed of horses called Galloways.

Galloway, Mull of, a rocky promontory, of Wigtownshire, forming the extremity of the peninsula called the Rhinns of Galloway; the most southerly point in Scotland, it rises to a height of 210 ft., and is crowned by a powerful lighthouse.

Gallows, a structure for the execution of the death sentence by hanging, consisting of two posts with a horizontal beam from which depends the rope.

Gall-stones, obstructions formed in the gall-bladder. They consist of unexpelled deposits of bile-pigment, combined with lime, and encrusted with a crystalline substance called "cholesterin." They may be numerous and small like gravel, or large, the size of an egg. Their removal often necessitates an operation.

Galston, a town of Ayrshire, Scotland, on the R. Irvine, 4 m. E. of Kilmarnock. Industries include coal-mining, weaving and lace-making. Pop. 6,300.

Galsworthy, John, British novelist and playwright. Educated

at Harrow and Oxford, he became a barrister, but spent most of his time writing and travelling. *The Island Pharisees*, published in 1904, was his first notable work, and was followed by a number of books, mostly realistic studies of upper middle-class life during the early twentieth Century, of which the sequence known as *The Forsyte Saga* is the most important. *The White Monkey* (1924), *The Silver Spoon* (1926) and *Susan Song* (1928), which together form a trilogy, extend the Forsyte motif to modern times. Among the best known of his plays are *The Silver Box* (1906), *Strife* (1909), *The Skin Game* (1920), *Loyalities* (1922) and *Escape* (1926). (1867-1933).



JOHN
GALSWORTHY

Galt, a town of Ontario, Canada, 56 m. SW. of Toronto, on the Grand R. Power for its numerous industries is obtained from Niagara Falls. Pop. 13,000.

Galt, John, Scottish novelist, born at Irvine, Ayrshire; educated at Greenock, where he held a post in the Custom-house for a time; as secretary of the Canada Land Co. (1820-29) was responsible for much pioneer work in opening communications in Ontario, where, also, he founded the town of Guelph. His best novels, *The Ayrshire Legatees*, *The Annals of the Parish*, *Sir Andrew Wylie*, *The Entail* and *The Provost*, are unexcelled in their way. (1779-1839).

Galton, Sir Francis, British scientist and explorer, born at Birmingham, a cousin of Charles Darwin; studied medicine, and in 1844-1846 travelled in Syria, Egypt and the Sudan; in 1850 explored Damaraland and other parts of S. Africa. Subsequently turned his attention to meteorology, anthropology and eugenics (a science founded by himself); especially noted for his researches in heredity. (1822-1911).

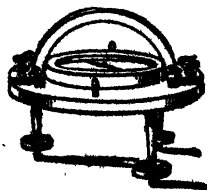
Galvani, Luigi, an Italian physiologist, born at Bologna, where he became professor of Anatomy in 1762; celebrated for his discoveries in animal electricity, originating in his observation of the muscular contractions in the legs of frogs when in contact with different metals. The word "galvanism" is derived from his name. (1737-1798).

Galvanising, a process whereby iron and steel products are given a coating of zinc as a preventative against rust. There are two principal methods: hot-dipping and electro-galvanising. In the first the metal to be galvanised is dipped in molten zinc after having been first cleaned and treated with a flux. The deposition of zinc by the electro-plating process is suitable only for small articles.

Galvanometers. These instruments, which

are used for the detection of electric currents, are of three principal types. The moving-coil galvanometer has a coil of fine wire suspended between the poles of a permanent magnet. When a current passes through it the coil rotates and turns a pointer.

Moving iron galvanometers depend for their action on the magnetisation of one or more pieces of iron by a current which



GALVANOMETERS

passes through a stationary coil. The current in a hot-wire galvanometer passes through a fine wire, heats it, and causes it to sag and move a pointer.

Moving-coil galvanometers are usually more accurate and more reliable than those of the other types, but cannot be used with alternating currents. Moving iron instruments are cheap and robust, and can be used for alternating currents of moderate frequencies. For high frequencies a hot-wire galvanometer must be used. Any galvanometer can be converted into an ammeter or a voltmeter by the addition of conductors of suitable resistances.

Galveston, city and seaport of Texas, U.S.A., situated on a low island of the same name at the entrance of Galveston Bay into the Gulf of Mexico and connected with the mainland by a causeway 2 m. long; it has a splendid harbour, and ranks as the third cotton port of the world; it has a medical college and a large trade in grain, oil and timber, as well as important manufactures. In 1900 the city was devastated by a tidal wave, 5,000 lives being lost; it is now protected by a vast sea-wall. Pop. 53,000.

Galway, a maritime county in the W. of Connaught, Ireland (Eire), in the province of Connaught; area 2,375 sq. m.; Lough Corrib (25 m. long) and Lough Mask (12 m. long), stretching N. and S., divide the county into E. and W. districts: the former is boggy, yet arable; the latter, including the picturesque district known as Connemara, is wild and hilly, with a rocky and indented coast. The Suck, Shannon and Corrib are the chief rivers; the Slieve Aughty Mts. in the S., and the Twelve Pins (2,395 ft.) in the W., are the principal mountains; fishing, some agriculture and cattle-rearing are the chief employments; there are many interesting cromlechs and ruins. Area 2,293 sq. m. Pop. 168,000.

Galway, the capital of Connaught, Ireland (Eire), and of the county of that name; situated on the N. side of Galway Bay, at the mouth of the Corrib R., 45 m. NW. of Limerick; the cruciform church of St. Nicholas (1320), Lynch's Castle and remains of a monastery (1296) are noteworthy; the town is the seat of a University College; fishing is an important industry, while wool and black marble are exported. Pop. 13,000.

Gama, Vasco da, Portuguese navigator, and the discoverer of the route to India round the Cape of Good Hope, born at Sines, in Alematejo; already an experienced mariner, he was in 1487 despatched by King Emanuel I. on his celebrated voyage, in which he rounded the Cape and reached Calicut, in India; in 1499 he returned to Portugal, being received with great honour; three years later he led an expedition to Calicut to avenge the massacre of a small Portuguese settlement founded there the year before; on his way he founded the colonies of Mozambique and Sofala, and after inflicting a cruel punishment upon the natives of Calicut, returned to Lisbon in 1503 and went into retirement at Evora; in 1524 he was appointed Viceroy of Portuguese India, but died at Cochín soon after his arrival; the incidents of his famous first voyage round the Cape are celebrated in Camoens' memorable poem *The Lusiad* (1499-1524).

Garniel, a Jewish rabbi, the instructor of the law, distinguished for his tolerant spirit and forbearance in dealing with the Apostles in their seeming departure from the Jewish faith. (Acts v. 34).

Gambetta, Léon Michel, French statesman, born at Cahors, of Italian and Jewish descent. Called to the Bar in 1859, he soon came into prominence on account of his advanced republicanism and loyalty to the Empire; deputy for Marseilles.

1869; proclaimed the Republic after the Battle of Sedan, and as Minister of the Interior (1870), took vigorous measures to defend Paris. When the city was invested, he escaped to Tours in a balloon, and, as virtual ruler of France, made heroic attempts to repel the invading Germans, but resigned after the surrender of Paris, and set for Strasbourg in the Assembly. After the war, as leader of the Republicans, he employed his fiery oratory against conservatives, royalists and clerical reactionaries, being fined and imprisoned in 1877 for libelling President MacMahon; in 1879 he became President of the Chamber and in 1881 Premier, but his power was already waning when he died as a result of a revolver accident. (1838-1882).

Gambia, (1) a river of W. Africa, flowing for about 1,000 m. through French Guinea, Senegal and Gambia Colony, and discharging into the Atlantic at Bathurst through a deep estuary; light craft can ascend as far as the Barraconda Rapids, 350 m. from the mouth and about 150 m. farther when the river is in flood.

(2) A British colony and protectorate in W. Africa extending along both banks of the R. Gambia to a distance of 6 m. and for about 250 m. from its mouth. Bathurst, on the island of St. Mary, at the mouth of the river, is the capital, and, together with Georgetown and some adjoining land and islands, it forms the colony proper, which has an area of 69 sq. m. and a pop. of 14,000. The remainder of the territory constitutes the protectorate (area 4,000 sq. m.; pop. 185,000). The country consists largely of creeks and swamps, and communication is chiefly by launches and steamers. Ground-nuts are the chief export, and small quantities of millet, rice, cassava and indigo are also produced.

Gambier, James, Baron, British admiral, born in the Bahamas; at 22 became a post-captain; under Lord Howe distinguished himself against the French at the Battle of the First of June (1794); in the following year he was made Rear-Admiral, and in 1799 Vice-Admiral; Governor of Newfoundland, 1809-1804; for his part in the bombardment of Copenhagen (1807) was made a baron. A dispute with Lord Cochrane at the Battle of Aix Roads against the French led to his being court-martialled, but he was honourably acquitted; Admiral of the Fleet (1830). (1756-1833).

Gambling Laws. Laws making debts irrecoverable at law were passed in the reigns of Charles II. and Queen Anne. By the Gaming Act of 1845 all wagering and gaming contracts were declared void, and no action can be brought at law to recover debts incurred in this way; however, once a bet or other wager has been paid, the money cannot be recovered.

In the case where a creditor agrees to refrain from taking some effective action against a debtor which he has a legal right to take (such as exposing him as a defaulter and so, possibly, subjecting him to social or professional damage), in consideration of receiving payment of his debt by some mutual arrangement, this constitutes a fresh and binding contract, enforceable at law; it must be noted, however, that the contract must not include, on the creditor's side, a promise to abstain from taking legal action for the recovery of the original debt, such debt being, of course, irrecoverable.

Betting transactions not being valid at law, commissions based upon them are likewise unenforceable, and the same applies where an agent pays or promises to pay debts incurred by him on behalf of a principal. But if the principal wins a bet, he is legally entitled to any money in respect of it received by his agent from a third party.

Ready-money football betting was prohibited in 1920, and to write, print, publish or knowingly circulate any advertisement or coupon relating to such betting is an offence punishable by fines.

Gamboge, a resin obtained from *Garcinia Hamburii*, a tree of Siam, Cambodia and Cochin China. It is used in medicine and as a yellow pigment for paint and varnishes.

Game Reserve, tracts of land which in their natural condition for the preservation of game. Canada is the foremost country in protecting its native animals. Animal parks and reserves of that Dominion total nearly 55,000 sq. m.; S. Africa has the Kruger National Park, where lions and elephants, among many other animals, may be seen in their native haunts. The most notable reserve, for both animals and birds, in the United States is the Yellowstone National Park.

Gamma Rays, name given to electro-magnetic radiations of very short wave-length emitted by certain radioactive substances; they have enormous powers of penetration.

Gandak, river in British India. It rises in the Nepal Himalayas and flows SW., but on entering British India turns to the E. and forms the boundary between the United Provinces and Bihar, eventually entering the Ganges opposite Patna. During the rainy season it often floods large areas.

Gandhi, Mohandas Karamchand, Indian politician and Nationalist leader;

born at Porbandar, in Kathiawar, studied law in London and became a barrister of the Inner Temple; in 1893 went to S. Africa, where he became a vigorous champion of the rights of Indian settlers; after the World War he embarked in India upon a campaign of opposition to what he conceived to be British injustice and oppression, which was characterised by professedly non-violent tactics known as "passive resistance," "civil disobedience" and "non-co-operation." However, his investment by the National Congress with the fullest powers was followed by serious disorders, and in 1922 he was sentenced to six years' imprisonment, but was released less than two years later; again imprisoned for a few months in 1930 for a breach of the salt law; subsequently his energies were directed rather towards social and humanitarian progress than towards politics, his efforts to improve the lot of Hindu "untouchables" being especially noteworthy. (1869-).



GANDHI

Gando, a native State in N. Nigeria, upon the NW. border of Sokoto, of which it is a dependency; the inhabitants belong to the Fulah race, and are Mohammedans; Gando is also the name of the capital, an active centre of the cotton trade.

Ganesha, a Hindu god represented as having an elephant's head and four arms; the inspirer of cunning devices and good council, also the patron of letters and learned men.

Ganges, the great sacred river of India, has its source in an ice-cave on the southern side of the Himalayas, 8 m. above Gangotri, at an elevation of 10,300 ft. above the sea-level; at this, its first stage, it is known as the Bhagirathi, and not until 133 m. from its source does it assume the name of Ganges, having already received two tribu-

raries; issuing from the Himalayas at Sukhi, it flows in a more or less southerly course to Allahabad, where it receives the Jumna, and thence makes its way by the plains of Bihar and past Benares to Goalanda, where it is joined by the Brahmaputra; the united stream, lessened by innumerable offshoots, pursues a SE. course till joined by the Meghna, and under that name enters the Bay of Bengal; its most noted offshoot is the Hooghly, upon which Calcutta stands, which pursues a course to the W. of the Meghna; between these lies the Great Delta, which begins to take shape 220 m. inland from the Bay of Bengal; the Ganges is 1,557 m. in length, and offers for the greater part an excellent waterway; by Hindus it is held in great reverence as a sacred stream whose waters have power to cleanse from all sin, while burial on its banks is believed to ensure eternal happiness, and to be cast into its waters after death is to gain eternal peace.

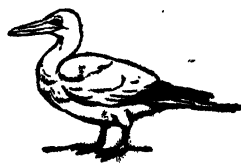
Ganges Canal, constructed mainly for the purpose of irrigating the arid land stretching between the Ganges and the Jumna Rs., originally extended from Hardwar to Cawnpore and Etawah, but has since been greatly enlarged, and at present (including branches) has a total extent of 3,700 m., of which 500 m. are navigable; it has contributed to mitigate suffering caused by famines by affording a means of distributing ready relief.

Ganglion, a small mass of nerve-cells situated in the course of a nerve, and into which other nerves run. The ganglia of the sensory nervous system lie near the roots of the nerves in the spinal cord, while the ganglia of the sympathetic system are located in various parts of the body, the largest being the solar plexus, in the abdomen.

Gangrene, the mortification of any part of a living body, due to interruption of the blood-supply owing to injury or disease. There are two kinds of gangrene: dry and moist. Dry gangrene is characterised by a shrivelling of the dead part, which turns a dark-brown colour; a line of demarcation appears between the dead and the normal tissue, and in course of time the affected part may separate entirely from the rest of the body. In moist gangrene, which is the more serious form, there is much swelling and discoloration, with putrefaction and a foul discharge; the line of demarcation is absent, and the whole limb may be gradually involved. Owing to modern methods of surgery, cases of gangrene are far less prevalent than they used to be.

Gannet, a large, web-footed sea-bird, with white plumage, except

upon the head and neck, which are cream-coloured; the wing-quills are dark brown, and there are patches of dark-blue naked skin round the eyes; the blue-grey beak is almost straight and about 6 ins. in length. Gannets feed on fish, which they catch by diving, sometimes from astonishing heights. They frequent rocky coasts, and are found on the islands off the N. and W. coasts of the British Isles, and notably on the Bass Rock in the Firth of Forth.



GANNET

Ganymedes, a beautiful youth, whom Zeus, attracted by his beauty, carried off, disguised as an eagle, to heaven; having had immortality conferred upon him, he was made cup-bearer of the gods instead of Hebe.

Gao, Karvah, or Karvah, a Persian blacksmith, whose sons had been slain to feed the serpents of the reigning tyrant, he raised his leather apron on a spear, and with that for a standard excited a revolt; the revolt proved successful, and the apron became the standard of the new dynasty, which it continued to be till supplanted by the crescent.

Garbo, Greta (Greta Louisa Gustafsson), Swedish film-actress, born in Stockholm, at 14 entered a department store; attended dramatic school attached to Royal Theatre, Stockholm; began film career, 1922, appearing in *The Alonement of Gosta Berling*; afterwards went to Hollywood and starred in a number of films which brought her world-wide fame, including *Mata Hari*, *Anna Christie*, *Queen Christina*, *Anna Karenina* and *Maria Walewska*. (1905-).

Garcia, Manuel, Spanish singer and composer, born in Seville in 1775; in 1808 he went to Paris with a reputation already gained at Madrid and Cadix; later became world-famous as an operatic tenor; in 1825 he visited the United States; spent his last years in Paris as a teacher of singing; died 1832. His eldest daughter was the celebrated Madame Malibran, and his son, Manuel (1805-1904), a noted teacher of singing, was the inventor of the laryngoscope.

Gard, a dept. in the S. of France, between the Cevennes and the Rhone; slopes to the Rhone and the sea, with a marshy coast; produces wine and olives, and is noted for its silk-culture and breed of horses. Area 2,370 sq. m. Pop. 395,300.

Garda, Lago di, the largest of the Italian lakes; situated amidst beautiful Alpine scenery, between Lombardy and Venetia. It is 32 m. long, and from 2 to 10 m. broad. Its water is remarkably clear, and has a maximum depth of 1,135 ft. It is studded with many picturesque islands.

Garde Nationale, of France, a body of armed citizens organised in Paris in 1789 for the civil defence. In 1795 they helped to repress the Paris mob, and in the Revolutions of 1830 and 1848 supported the revolutionaries; in 1871 they were dissolved by the National Assembly.

Garden Cities originated in a scheme put forward in 1898 by Sir Ebenezer Howard to counteract the increasing congestion of the population in large towns, and the consequent depopulation of the countryside, by the establishment of industrial areas in rural surroundings, with ideal living conditions for the inhabitants. In addition to having proper sanitation, water, light and power, such "garden cities" were to be built on a pre-arranged plan, restricted as to size and surrounded by an agricultural zone. Letchworth, near Hitchin, established in 1903, was the first garden city, and the success of the scheme led to the founding of Welwyn, near Hatfield, in 1920.

Gardenia, a genus of trees and shrubs with large white flowers. They are indigenous to S. and tropical Africa and to Asia.

Gardening. In planning a garden it should be studied in relation to the house, as to its position, simplicity and logical construction are of first importance. Interest may be given by emphasising any dominant feature of the land to be laid out, such as a bank or a group of trees. The garden must also be so designed that the majority of

the flower-beds are not screened from the sun, as it is more difficult to cultivate flowers in shady places.

The soil must be carefully studied. It is more satisfactory to stock the garden at first with flowers that suit the soil, and later to introduce into prepared places those flowers for which there may be an individual preference. When the proposed design for the garden is complete, preferably on paper, and a list of selected plants has been made, it is necessary to prepare the soil ready for planting. This is best done between November and March. Bastard trenching is the best method of cultivation; it consists in turning over the soil two spits deep, always keeping the top spit on the surface.

To enrich the soil, stable manure may be dug into the lower spit, and may also be applied as a mulch on the surface during March. Lime is also good for the soil, as it helps to break up heavy clay and destroys insect pests, but it must not be applied at the same time as manure. Hoeing the surface of the soil in summer is also important, as it aerates the ground, prevents it from cracking, reduces the need for watering and disturbs insects.

Planting should not be done when the ground is either frozen or water-logged; early winter or early spring are preferable to mid-winter. If the garden is small, such trees as laburnum or birch are suitable, or the bush forms of larger flowering trees. Flowering shrubs are generally preferable to laurel or privet. Perennial flowers that are hardy and easy to grow in a sunny herbaceous border are lupins, delphiniums, coreopsis, gaillardias, peonies, poppies, early flowering chrysanthemums and Michaelmas daisies. These plants are tall growing; for the front of the border the choice may be pinks, catmint and violas.

It is best to group flowers in bold masses of colour, with at least three plants of one kind together. Biennials that may be included in the herbaceous border are wallflowers, forget-me-nots and sweet williams, all of which with antirrhinums and dahlias are suitable for summer bedding in formal flower-beds. Annuals that are reliable and full of colour are nasturtiums, stocks, scarlet flax, lavender, virginia stock and candytuft. In a shady border such perennials as campanula, peonifolia, lilies-of-the-valley, geranium ibericum and anemone japonica will bloom. A rock-garden is best built in a sunny, open position, and between the rocks there should be deep pockets of loam, mixed with peat and silver sand, which makes an ideal soil for most rock-plants.

Gardens generally include roses; ramblers that grow quickly and bloom well are Paul's Scarlet Climber, Alberic Barbier and New Dawn, while reliable bush roses are Caroline Testout, Hugh Dickson and Shot Silk. The small polyantha roses such as Orleans and Karen Poulsen, are the easiest class to grow, and they bloom over a long period. The lawn should be renovated in April or August, and should be mown weekly from March to November. It is also benefited by rolling, and in winter should be prodded all over with a fork. The soil in the vegetable-garden needs the same cultivation as that in the flower-garden, and to avoid impoverishing it, a regular rotation of crops should be practised. Fruit-trees may be grown in even a small garden, the cordon fruit-tree occupying only half a square yard of ground.

Gardes Suisses, a celebrated corps of the French army, formed in 1615 for defence of royalty, and numbering 2,000. During the Revolution they gallantly defended the Louvre, but were almost annihilated by the infuriated Paris mob (1792). The corps was disbanded in 1830.



GARDENIA
FLORIDA

Gardiner, Colonel James, a Scottish officer of dragoons, noted for his bravery; served under Marlborough and fell at Prestonpans. (1688-1745).

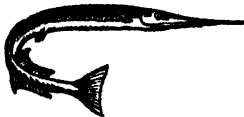
Gardiner, Samuel Rawson, English historian, born at Ropley, Hants; his chief works are those dealing with English history from the time of James I. to the Protectorate; noted for his accuracy and impartiality. (1829-1902).

Gardiner, Stephen, English ecclesiastic, secretary to Cardinal Wolsey; conducted the proceedings against Catherine of Aragon for King Henry VIII. He was later made Bishop of Winchester, was imprisoned under Edward VI, and reinstated under Mary, and made Lord Chancellor. (1483-1555).

Gare Loch, a sea loch of Dumbarton-shire, Scotland; a branch of the Firth of Clyde. It is about 7 m. long and 1 m. in width.

Garfield, James Abram, President of the United States, born at Orange, Ohio; brought up in poor and humble circumstances, he studied until he was able to enter college, graduating at William's College, Mass., in 1856; in the following year he became President of Hiram College, Ohio, and, devoting himself to the study of law, in 1859 became a member of the State Senate; he took an active part on the side of the Federalists in the Civil War, and distinguished himself in several engagements, rising to be major-general; entered Congress in 1863, and soon came to the front, becoming eventually leader of the Republican party; in 1880 he became a member of the Senate, and next year was elected President; his efforts to purify and reform the civil service made him many enemies, and on July 2 he was shot by a disappointed place-hunter, dying two months later. (1831-1881).

Gar-fish, or Sea Pike, an edible fish (*Belone belone*) found in the warmer parts of the ocean, and related to the flying-fish; its body is slender with long and pointed jaws; its bones are green.



GAR-FISH

Gargoyle,

on a building, a projecting spout, designed in the shape of a hideous or grotesque monster, and designed to carry the water from a gutter clear of the masonry. Some of the most famous gargoyles are those on the Cathedral of Notre Dame at Paris.

Garibaldi, Giuseppe, Italian patriot, born at Nice; a sailor, and an associate of Mazzini for the liberation of his country, but being convicted of conspiracy, fled to S. America, where, both as a privateer and a soldier, he gave his services to the young republics struggling there for life; returned to Europe (1848) and took part in the defence of Rome against the French, but, being defeated, fled to New York; joined the Sardinians against Austria, and in 1860 set himself to assist in the overthrow of the kingdom of Naples and the union of Italy; landing at Marsala, he defeated the Neapolitans at Calatafimi, Reggio and Volturro and entered Naples. With the country united under Victor Emmanuel, Garibaldi's mission was accomplished, but he had several more campaigns to fight; opposing the Government he had helped to establish, he was defeated and taken prisoner at Aspromonte (1862), but pardoned, and at Mentana (1867) unsuccessfully encountered the French and Papal troops; he offered his sword to France in 1870 and won several victories over the Germans. Towards the end of his life he was an invalid. (1807-1882).

Garlic, bulbous plants with radical leaves, some long and narrow, others oval and tubular; all have the distinctive garlic odour; the flower-stem bears an umbel of numerous white, yellow or blue flowers; the petals are spread out with stamens attached at their base.



GARLIC

Garnet, a precious stone of a vitreous lustre, and usually of a dark-red colour, resembling a ruby, but also found in various other shades, e.g., black, green and yellow. The finest specimens come from Ceylon, Peru and Greenland.

Garnett, Edward, English Lichfield; writer, born at Lichfield; entered the British Museum, and in 1890 became keeper of printed books; his writings include *Relics of Shelley*, *The Age of Dryden*, and biographies of Milton, Carlyle and Emerson; he was a noted literary critic. (1835-1906). His wife, Mrs. Constance Garnett, became known for her translations of Turgenev, Chekhov and other Russian authors.

Garnett, Henry, a noted Jesuit, implicated in the Gunpowder Plot; educated in the Protestant faith, he early turned Catholic and joined the Jesuit order in Italy; in 1588 he returned to England as Superior of the English Jesuits, and engaged in various intrigues; on the discovery of the Gunpowder Plot he was arrested, found guilty of cognisance of the Plot, and executed. (1555-1606).

Garnett, Richard, English philologist, born at Olney, Yorkshire; entered the Church, and in 1829 became priest-vicar of Lichfield Cathedral, but in 1838 was appointed Assistant Keeper of Printed Books in the British Museum; one of the founders of the Philological Society. (1788-1850).

Garnishee Order, an order of a creditor who has secured a judgment summons against his debtor, requiring a third party who owes money to the debtor to make payment to the first creditor instead of to the debtor. The third party concerned is known as the Garnishee.

Garonne, a river of SW. France which rises in the Val d'Aran, in the Spanish Pyrenees; 26 m. from its source it enters France near Pont du Roi, and after it passes Toulouse flows NW.; joined by the Save, 20 m. below Toulouse, and farther on by the Tarn and the Lot, it gradually widens into the Gironde estuary, which opens on the Bay of Biscay and at the head of which stands Bordeaux; it has a length of 357 m., and is freely navigable as far as Toulouse.

Garrick, David, English actor, born at Lichfield and for some months a pupil of Samuel Johnson; in 1737 accompanied Johnson to London, with the intention of entering the legal profession, but soon abandoned the idea and started in the wine business with his brother; in 1741 he commenced his career as an actor, making his first appearance as a 'harlequin' in the autumn of the same year he achieved immediate success as Richard III.; in 1747 he became co-patentee of Drury Lane Theatre, which he directed until his retirement from the stage in 1778; he was buried in Westminster Abbey. (1717-1779).

Garrison, William Lloyd, American journalist, nativist and abolitionist, born at Newburyport, Mass.; apprenticed to a printer, he became at 19 editor of the local *Herald*, and in 1829 joint-editor of the *Genius of Universal Emancipation*; his vigorous denunciation of slavery involved him in a charge of libel and brought about his im-

prisonment; at Boston, in 1831, he founded his celebrated *Liberator*, in which, in the face of great difficulties and violent opposition, he advocated the abolition of slavery till the cause was won in 1865. (1805-1879).

Garrotting, a form of robbery with violence of which an outbreak took place in England about 1862; the robber approached his victim from behind and half-strangled him with a scarf or similar object. A special Act passed in 1863 imposed flogging as a penalty, but the offence had practically ceased before the Act became law.

Garry Lake, a lake in the NW. Ter. in the course of the Back R. near the boundary of the Arctic Circle.

Garter, The Most Noble Order of the, a celebrated order of knighthood

instituted in 1344 by King Edward III.; the original number of the knights was 26, of whom the sovereign was head; it is the highest order of knighthood, and its initials are K.G.; the insignia of the order includes surcoat, mantle, star, etc., and especially a garter of blue velvet worn on the left leg below the knee, and bearing the inscription in gold letters *Honi soit qui mal y pense*; ribbon, Garter Blue; election to the order lies with the sovereign.



ORDER OF THE GARTER
(Star and Collar)

Garter King-of-Arms, an officer of the Garter and the principal King-of-Arms in England, by whom arms are granted under the authority of the Earl Marshal. The office was instituted by Henry V. in 1420.

Garvin, James Louis, British journalist, born at Birkenhead; began his career on the *Newcastle Chronicle*, 1891-1899, becoming known as an Irish Nationalist; joining the *Daily Telegraph*, he became a Tory and a prominent supporter of Joseph Chamberlain; editor of *The Outlook*, 1905-1906 and of *The Observer* from 1908; editor *Pall Mall Gazette*, 1912-1915, and of the 13th and 14th editions of the *Encyclopædia Britannica*. (1868-).

Gascoigne, Sir William, English judge, born at Gawthorpe, Yorkshire; appointed King's Serjeant in 1397 and Chief Justice of the King's Bench in 1400; his impartial devotion to justice was strikingly exemplified in his refusal to pass sentence of death on Archbishop Scrope; the story of his committing Prince Henry to prison, immortalised by Shakespeare (*Henry IV.*, pt. 2), is unauthenticated; nor was he continued in office after Henry IV.'s death, a successor being appointed 9 days later. (c. 1350-1419).

Gascony, an ancient province of SW. France, lying between the Atlantic, the Pyrenees, and the Garonne; it included several of the present departments; the province was of Basque origin, but from 1360 to 1451 was under English sovereignty; it was added to the territory of the French crown in 1598; the Gascons are of dark complexion and small in stature, vivacious and boastful, but have a high reputation for integrity.

Gas Engine, an internal combustion coal-gas, producer-gas, or the waste gases from blast furnaces; the first practical gas engine was built by Lenoir, a Frenchman, in 1860; improvements appeared in the designs of the Otto engine (1876), the Clerk engine (1886), and later in the Stull engine.

Gases, *Pneuma*, general name for gases, which have been or may be used in warfare to disable or incommode the enemy forces. They may be classified in four groups:

(1) Lung-irritant gases, such as chlorine and phosgene; (2) nose-irritant gases, chiefly compounds of arsenic, such as D.A. (diphenyl-chloroarsine), and others known as D.M. and D.C.; (3) tear gases, such as C.A.P. (chloroacetophenone), K.S.K. and B.B.C.; (4) blister gases, the chief of which are mustard gas (dichloroethyl sulphide) and Lewisite (chlorovinylidichloroarsine). Such gases were first used in the World War, and they have been employed in various conflicts since 1918, although international conventions restricting their use have been made. The development of methods to counteract their results is an increasingly important part of defensive war preparation.

Gaskell, Mrs. Elizabeth, *née* Stevenson, English novelist, born in Chelsea, and brought up at Knutsford, in Cheshire, a place which inspired her masterpiece *Cranford* (1851-1853). Her remaining works include *Mary Barton*, *Sylvia's Lovers* and the *Life of Charlotte Brontë*. (1810-1865).

Gas Laws, the laws underlying the behaviour of gases when subjected to changes of temperature and pressure, etc. Boyle's law states that the volume of a given mass of gas varies inversely as the pressure upon it, if the temperature is

constant ($V \propto \frac{1}{P}$ if T is constant); thus if a certain weight of gas occupies 10 c.c. at a pressure of 1 atmosphere (760 mm. of mercury), it will occupy 5 c.c. at 2 atmospheres, 2 c.c. at 5 atmospheres, 1 c.c. at 10 atmospheres, 20 c.c. at half an atmosphere, and so on—provided always that the temperature remains unchanged.

Charles's law states that the volume of a given mass of gas varies directly as the absolute temperature (*i.e.*, centigrade temperature + 273°) if the pressure is constant. A third law may be deduced from the first two—viz., that the pressure exerted by a given mass of gas varies directly as the absolute temperature if the volume remains constant. Combining the three laws into one equation, we may write (for a given mass of gas) $PV = T \times a$ constant, where P = the pressure, V = the volume, and T = the temperature in degrees (absolute). The constant is usually written R , so that the "gas equation" becomes $PV = RT$. If the weight of gas concerned is the molecular weight in grams, the value of R (the "gas constant") is approximately 2.

The gas equation in this simple form is true only for a "perfect" gas—that is, a gas which shows no deviation whatever from the gas laws of Boyle and Charles. It need hardly be said that no such gas actually exists, although at low pressure and high temperatures most gases approach "perfection." The equation $PV = RT$ is therefore only an approximation, but describes the behaviour of normal gases under ordinary conditions sufficiently well for most purposes.

Gay-Lussac's law, or the law of gaseous volumes, states that when gases react the volumes in which they do so are in a simple numerical relation to one another, and to the volume of the product if that is gaseous. Thus 1 volume of nitrogen combines with 3 volumes of hydrogen to form 2 volumes of ammonia, and 1 c.c. of carbon monoxide will combine with 0.5 c.c. of oxygen, yielding 1 c.c. of carbon dioxide.

Avogadro's hypothesis states that equal volumes of all gases, under the same conditions of temperature and pressure, contain equal numbers of molecules. This has been approximately verified in numerous cases by direct experiment, and is therefore sometimes

described as *Avogadro's law*. *Graham's law* states that the rates at which different gases diffuse (through unglazed porcelain, etc.) are inversely proportional to the square roots of their respective densities.

Gas Manufacture. At the present day the gas-works in the British Isles alone use 18,000,000 tons of coal and produce over 320,000,000,000 cu. ft. of gas annually. The coal is heated strongly in iron or fireclay retorts, in the absence of air, and four main products are formed—viz., coal-gas, coal-tar, gas-liquor (ammoniacal liquor) and coke. Of these, the coke is left in the retorts, while all the others are at first in the gaseous state. The crude gas leaving the retort-house is passed into a water-cooled condenser, where the gas-liquor and coal-tar condense to the liquid state and flow down into underground liquor- and tar-wells.

The coal-gas, now partly purified, still contains hydrogen sulphide ("sulphuretted hydrogen") and some residual ammonia; it is therefore passed through washers, commonly consisting of large cases containing thin strips of wood kept constantly damp with water. Since ammonia is very soluble in water, the coal-gas is washed clean of this substance, and the ammonia solution is run off into the liquor-well. The hydrogen sulphide, which is removed both because it has an unpleasant smell and because the sulphur it contains is valuable, is extracted in the "purifier." This consists of a large cast-iron vessel filled with trays each carrying a layer of moist bog-ore (iron oxide, Fe_2O_3). The iron oxide reacts with the hydrogen and is itself converted into iron sulphide, from which sulphuric acid may be manufactured. The purified gas now passes through the main meter and thence into the gasholder.

The composition of typical coal-gas is roughly as follows: hydrogen, 50 per cent.; methane or marsh-gas, CH_4 , 32 per cent.; carbon monoxide, CO, 8 per cent.; ethylene, C_2H_4 , 4 per cent.; nitrogen, 6 per cent.; but the proportions vary considerably. Of these gases, all except nitrogen are inflammable. Hydrogen, methane and carbon monoxide burn with bluish, non-luminous flames. The luminosity of the ordinary coal-gas flame is chiefly due to the ethylene.

In modern practice, coal-gas is usually mixed with water-gas before delivery to the customer, but since water-gas (a mixture of carbon monoxide and hydrogen made by passing steam over white-hot coke) has less heating value than coal-gas, it is frequently enriched by spraying crude petroleum into it in a superheater; the product is called carburetted water-gas.

Coal-gas is principally required as a source of heat, and is therefore now sold on the basis of the therm, which is the amount of heat required to raise the temperature of 100,000 lb. of water through 1 Fahrenheit degree—i.e., one therm = 100,000 British Thermal Units. The combustion of 1,000 cu. ft. of the gas commonly supplied yields about 5 therms.

Gasolene, another name, used chiefly in America, for petroleum motor spirit or benzine.

Gaspé Peninsula, an eastern section of Quebec, Canada, between the Gulf of St. Lawrence and Chaleur Bay. It is largely forest land, and there are rich fisheries. Area 4,550 sq. m. Pop. 40,500.

Gassendi, Pierre, French mathematician and philosopher, born in Provence; lecturer in Theology at Digne (1613), professor of Philosophy at Aix (1617) and of Mathematics at Paris (1645); declared against scholastic methods in favour of empiricism; became the head of a school opposed to Descartes; adopted in part the

philosophy of Epicurus, contributed to the science of astronomy, and was the friend of Kepler, Galileo and Hobbes. (1592-1655).

Gasteropods, a class of molluscs, having a ventral muscular process which serves as a foot; they include snails, slugs, whelks, etc.

Gastritis, inflammation of the lining of the stomach; it may be caused by excessive drinking of tea or alcohol, etc., taking cold drinks when over-heated, by unsuitable diet generally or by poisons; it may also follow injury. The symptoms include a feeling of heaviness after meals, vomiting, heartburn and costiveness. Treatment varies to some extent with the cause, but, in general, warm fomentations applied to the stomach give relief, while an emetic and an aperient may be administered with benefit.

Gate of Tears, the strait of Bab-el-Mandeb, in the Red Sea, so called from the shipwrecks associated with it.

Gates, Horatio, an American general, born in England, at Maldon, Essex; served as an English officer in America till the peace of 1763, and then retired to Virginia; in the War of Independence he fought on the side of America, and, as commander of the northern army defeated the English at Saratoga in 1777, but in 1780 he suffered a crushing defeat by Cornwallis at Camden, and was court-martialled, though eventually acquitted. (1728-1806).

Gateshead, borough and seaport of Durham, England, situated on the S. bank of the Tyne, opposite Newcastle, with which it is connected by five bridges; it has extensive ironworks, foundries, and shipbuilding yards, and soap, glass and chemical manufactories. Pop. 122,000.

Gath, a city of the Philistines, prominent in the story of David. Its site is not certain, but remains on a cliff 12 m. N.E. of Ashdod have been identified with it.

Gatling, Richard Jordan, American inventor, born in Hertford County, N. Carolina; graduated in medicine, but devoted his attention to inventing agricultural machinery, including a steam plough and machines for sowing and thinning cotton and grain; in 1862 he evolved the machine gun known by his name. (1818-1903).

Gatun, a town in the Panama Canal Zone, where part of the canal works are situated. Gatun Lake, in the vicinity, has been converted into a reservoir by the construction of the Gatun dam. The latter is over 1½ m. long and ½ m. wide at its broadest point.

Gatwick, a racecourse 6 m. from Reigate, Surrey, England, with a station on the Southern Railway; in 1934 Gatwick Airport, near by, was opened, with a separate station.

Gauchos, a name bestowed upon the natives of the pampas of S. America; they are of Indo-Spanish descent, and are chiefly engaged in ranching, being dextrous horsemen, and skilled users of lasso and bolas; the wide-brimmed sombrero and loose poncho are characteristic features of the dress which they wear.



GASTEROPOD (Whelk)



GAUCHO

Gaudeamus, the first word of the German student song "Gaudeamus igitur, juvenes dum sumus" (Let us then rejoice while we are young).

Gauden, John, Bishop of Worcester; protested against the trial of Charles I. and claimed to be the author of the celebrated *Eikon Basilike* or the *Portraiture of his Sacred Majesty in his Solitudes and Sufferings* which had previously been attributed to the King himself. (1605-1662).

Gauge, an instrument of measurement of which there are many kinds. The wire or plate gauge is a steel plate numbered with panelled-aided notches of various widths round the edge. The "number" of a wire is ascertained by trying which notch is just sufficiently wide to allow it to pass. The carpenter's gauge is a sliding measure for striking a line parallel to the straight side of a piece of wood. The term gauge is also applied to the width between the inside of the metals of a railway track. In England 4 ft. 8½ ins. is the standard gauge for passenger railways.

Gauguin, Paul, French painter, born in Paris; travelled in Peru and Martinique, and about 1888 became a leader of the Impressionists in Brittany; in 1895 settled for good in the South Seas, living as one of the natives. A pioneer of Post-Impressionism, his paintings, woodcuts and carvings caused a sensation. (1848-1903).

Gaul, the name the ancients gave to two distinct regions: Cisalpine Gaul, a province on the Roman side of the Alps, embracing the N. of Italy, as being long inhabited by Gallic tribes; and Transalpine Gaul on the other side of the Alps, and extending from the Alps to the Pyrenees, from the Atlantic to the Rhine; subdued by Julius Cæsar 58-50 B.C., and divided by Augustus into four provinces.

Gaunt, John of, Duke of Lancaster, fourth son of Edward III., born at Ghent; in 1362 succeeded to the estates of his father-in-law, the Duke of Lancaster; having in 1372 married, as his second wife, the daughter of the King of Castile, he made an unsuccessful attempt to seize the Castilian throne; in the later years of Edward III.'s reign he took an active part in public affairs, and by his opposition to the national party and everbearing conduct towards the Commons made himself obnoxious to the people; for selfish motives he supported Wycliffe for a time; in 1386 made another ineffectual attempt to gain the crown of Castile; in later years was engaged in France. (1340-1399).

Gauntlet, a steel glove of mail or plate to protect the hands and

wrists in battle. Gauntlets were first introduced as separate portions of armour in the 14th Century. There were a number of patterns. In the "Forbidden Gauntlet" the plate over the fingers was prolonged and locked to the wrist when the hand was shut, thus preventing the weapon from being wrenched from the grasp.

Gaur, or *Lakhsaui*, the ancient capital of Bengal, now in ruins, but with Hindu remains of exceptional interest, is situated 8 m. S. of English Bazar, between the rivers Ganges and Mahanadi; the city is believed to have been founded in the 11th Century; it fell into decay after the Mogul conquest in 1575, and pestilence and the deflection of the Ganges into a new channel accelerated its fate.

Gauss, unit used in electricity for the measurement of magnetic induction, named after K. F. Gauss.



GAUNTLET

Gauss, Karl Friedrich, German scientist, born at Brunswick; was director of the observatory at Göttingen for nearly 50 years; his researches and writings covered the fields of astronomy, physics, mathematics, electricity and optics; he made important discoveries in magnetism, and was pronounced by Laplace the greatest mathematician in Europe. (1777-1855).

Gautama, the name of the family of Buddha, belonged to, a Rajput clan which at the time of his birth was settled on the banks of the Rohina, a small affluent of the Gogra, about 140 m. N. of Benares.

Gautier, Théophile, French poet, novelist and critic, born at Tarbes; began life as a painter, but, turning to literature, soon attracted the attention of Sainte-Beuve by some studies in the old French authors; joined the romantic school, and in 1830 published his poem *Albertus*, and in 1835 his famous novel *Mademoiselle de Maupin*; for many years was art critic for Paris newspapers; his greatest works include the novels *Captain Fracasse* and *La Momic* and the lyrics *Emaux et Camées* (Enamels and Cameos); known for his exquisite literary style. (1811-1872).

Gavarni, Paul, the *nom de plume* of Sulpice Guillaume Chevallier, French caricaturist, born in Paris; began life as an engineer's draughtsman, but soon became a cartoonist; most of his best work appeared in *Le Charivari*, but some of his bitterest and most earnest pictures, the fruit of a visit to London, appeared in *L'Illustration*; he also illustrated Balzac's novels, and Sue's *Wandering Jew*. (1804-1866).

Gavazzi, Alessandro, Italian anti-papal agitator, born in Bologna; admitted into the order of Barnabite monks, he later became professor of Rhetoric at Naples; an energetic supporter of Pius IX. in his liberal policy, he afterwards withdrew his allegiance; joined the Revolution of 1848, and ultimately fled to England; served Garibaldi as chaplain, 1860; as an anti-papal lecturer he showed considerable oratorical powers. (1809-1889).

Gavelkind, a tenure obtaining in Kent, Northumberland and Wales (principally in the first-named), which provided for descent of property to all the sons alike, the oldest to have the horse and arms and the youngest the homestead; said to represent the socage tenure common to the country previous to the Norman Conquest. It was abolished by the Law of Property Act, 1925.

Gaveston, Piers, Earl of Cornwall, the pernicious favourite of Edward II., was the son of a Gascon knight; made an earl in 1307, he was regent in 1308 and viceroy of Ireland, 1308-1309; twice banished at the instance of the nobles, because of his evil influence over the King and his arrogance; captured at Scarborough by the Earl of Pembroke, he was seized by the Earl of Warwick and beheaded. (d. 1312).

Gavotte, a French dance of the 17th-18th Centuries similar to the minuet, but quicker.

Gay, John, English poet, born at Barnstaple; wrote *Rural Sports*, *Fables in Verse* and the lyrical drama *The Beggar's Opera* (1728), his masterpiece, which was received with great enthusiasm, and has been frequently revived; a sequel, *Polly*, gave great offence at Court; he was buried in Westminster Abbey. (1685-1732).

Gaya, chief town of a district of the same name in Bengal, on the Phalgu, 57 m. S. of Patna; it is a great centre of pilgrimage for Hindus, and has associations with Buddha; 100,000 pilgrims visit it annually. Pop. 88,000.

Gay-Lussac, **Joseph Louis**, French chemist and physicist, born at St. Leonard, Haute-Vienne; at the Polytechnic School, Paris, his abilities attracted the attention of Berthollet, who appointed him his assistant in the government chemical works at Arcueil; in 1809 he became professor of Chemistry at the Paris Polytechnic School; in 1829 he had become chief assayer to the Mint; in 1832 was elected to a similar chair at the Jardin des Plantes; seven years later was created a peer of France; his name is associated with many notable discoveries in chemistry and physics. (1778-1850).

Gaza, a town of Palestine, 50 m. SW. of Jaffa, situated on a mound at the edge of the desert, 3 m. from the sea, it is the capital of the S. province and an airport. In Biblical times it was a Philistine town of which Samson carried away the gates (Judges xvi. 3). Pop. 19,000.

Gazelle, a group of graceful, medium-sized antelopes, with slender legs, short tails, and usually short-haired, light-coloured coats; their horns curve gracefully in various shapes, but the females are hornless in some of the genera.

Gazette, **The**, an official newspaper in which government and legal notices are published, issued on Tuesdays and Fridays; the first "gazette" was a Venetian newspaper, issued in 1536 and so called because a "gazetta," a Venetian coin a little less than a farthing in value was charged for attending a public reading of the news-sheet.

Gdynia, a seaport of Poland, 12 m. NW. of Danzig. It was established in 1920 as a port of the corridor allotted to Poland after the World War, and is a serious rival to Danzig. Pop. 30,000.

Gean. See **Wild Cherry**.

Gearing. Belt, chain and toothed gearing are forms of mechanism for converting a rotary motion about a given centre into a rotary motion about another centre. In the case of a belt, the power is transmitted through the friction between the belt and the pulleys, and in the case of toothed gearing the power is transmitted through the stresses in the material of the teeth. Chain gearing is similar to belt gearing, except that in place of the friction drive there is positive drive between the teeth on the sprocket wheels and the links of the chain.

Gecko, the name of a family of lizards, known also as wall-lizards. The skin is soft and covered with small, hard granules; the tail is delicate, readily broken and quickly regenerated, and the claws are well developed; a sucker-like apparatus on the feet enables geckoes to run along smooth walls and ceilings with ease; they are natives of warm climates.

Ged, **William**, the inventor of stereotyping, born at Edinburgh, where he worked as a goldsmith; endeavoured to push his new process of printing in London but, disappointed in his workmen and his partner, returned to Edinburgh

and died in poverty; an edition of Sallust and two prayer-books were stereotyped by him. (1690-1749).

Geddes, **Rt. Hon. Sir Auckland**, British politician, born at Edinburgh, studied medicine and prior to the World War was Professor of Anatomy in Dublin and at McGill University, Montreal; became successively Director of Recruiting, 1916, Minister of National Service, 1917, Minister of Reconstruction, 1918, President of the Board of Trade, 1919, and Ambassador to U.S.A., 1920-1923. (1879-).

Geddes, **Rt. Hon. Sir Eric**, British politician, brother of the preceding. Born in India, he went to America early in life to do railway work; in 1906 he became general manager of the North-Eastern Railway Co., and in the World War was appointed Deputy Director-General of Munitions and, later, Director-General of Military Railways. He then entered Parliament, and became successively Controller of the Navy, First Lord of the Admiralty and Minister of Transport. In the post-war Coalition Government he was entrusted with "the axe" to cut departmental expenditure. He abandoned politics for commerce in 1922. (1875-1937).

Geddes, **Jenny**, an Edinburgh worthy who on July 23, 1837, immortalised herself by throwing her stool at the head of Laud's bishop as he proceeded from the desk of St. Giles's to read the *Collect* for the day, exclaiming as she did so, "Beil collic the wame o' thee, fause loon, would you say Mass at my lug!" which was followed by great uproar.

Geddes, **Sir Patrick**, British botanist and biologist, after being professor of Botany at Dundee (1883-1920), he was appointed to the chair of Sociology and Civics at Bombay in 1919; known for his researches in evolution, biology and sex; an advocate of town-planning and projects for social reform. (1854-1932).

Geelong, a city of Victoria, Australia, on Corio Bay, 45 m. SW. of Melbourne. The gold discoveries of 1851 gave a stimulus to the town, which is now a busy centre of the wool trade, and has tanneries and paper works, etc. The harbourage is excellent, and in summer the town is a favourite resort. Pop. 40,000.

Gefle, a seaport of Sweden, capital of the province of Gefleborg; situated on an inlet of the Gulf of Bothnia, 60 m. NNW. of Uppsala; has an interesting old castle and a school of navigation, and, since a destructive fire in 1869, has been largely rebuilt. Pop. 39,000.

Gehenna, the valley of Hinnom, to the S. of Jerusalem, for which it served as a vast refuse-pit; became the symbol of hell from the fires perpetually burning to consume the rubbish.

Geikie, **Sir Archibald**, Scottish geologist, born in Edinburgh; at the age of 20 he joined the Geological Survey, and in 1867 became Director of the Survey for Scotland; in 1871 he became Murchison professor of Geology at Edinburgh, and in 1881 was appointed chief director of the Geological Survey of the United Kingdom; in 1891 he was knighted; President of the British Association in 1892 and of the Royal Society, 1908-1913; wrote many works on geology. (1835-1924).

Geikie, **James**, Scottish geologist, brother of the preceding, born in Edinburgh; in 1882, after serving 21 years in the Geological Survey of Scotland, he succeeded his brother in the chair of Geology at Edinburgh; his principal work as a scientist is *The Great Ice Age* (1874); his literary sympathies appear in his admirable translations of *Songs and Lyrics of Heine*. (1839-1915).



GAZELLE



GECKO

Gelatine, an albuminoid protein obtained from bones, skins and other animal tissue. It is widely employed in industry and commerce, the purer forms, for example, being used for jellies, confectionery and other foodstuffs, while the coarsest varieties yield glue.

Gelderland, a province of the Netherlands, bounded by Prussia on the S. and E. and by the Zuider Zee on the NW. The chief rivers are the Rhine, Yssel, Maas and Waal. It is an agricultural and fruit-growing district. Area 1,941 sq. m. Pop. 891,000.

Gelignite, a gelatinised explosive, the composition of which is nitro-glycerine 60 per cent., nitro-cellulose 4 per cent., wood meal 8 per cent., and nitrate of potash 28 per cent. It is largely used for blasting.

Gellert, or Killhart, a famous dog which figures in Welsh tradition of the 13th Century, and whose devotion and sad death are celebrated in a fine ballad written by the Hon. William Robert Spencer (1796-1834). The story is as follows: Prince Llewellyn on returning one day from the chase discovered the cradle of his child overturned and bloodstains on the floor. Immediately concluding that Gellert, whom he had left in charge of the child, had been the culprit, he plunged his sword into the breast of the dog and laid it dead. Too late he found his child safe hidden in the blankets, and by its side the dead body of an enormous wolf. Gellert's tomb is still pointed out in the village of Beddgelert on the S. of Snowdon.

Gellert, Christian, a German poet, fabulist and moralist, born in Saxony; professor of Philosophy at Leipzig, 1751; distinguished for his influence upon German literature, which he helped to broaden and free from pedantic formalities, thus foreshadowing the romanticism of Schiller and Goethe. (1715-1769).

Gellius, Aulus, a Latin author, born at Rome; author of *Noctes Attice* a miscellany in twenty books which ranges discursively over learned topics of all kinds, and is valuable as abounding in extracts from ancient writings no longer extant. (c. 130-180).

Gelon, tyrant of Syracuse from 485 to 478 B.C.; rose from the ranks, gained a victory in 480 B.C., on the day of the Battle of Salamis, over a large host of Carthaginians who had invaded Sicily; d. 478 B.C., leaving behind him an honoured memory.

Gem, a precious stone, especially when cut and polished. Beauty, durability and rarity are the three most desirable qualities in gems. They may be divided into three groups: transparent, translucent and opaque. The transparent form the largest group, and this may again be divided according to the presence or absence of colour.

Among stones having colour, the diamond holds first place. Other stones, such as "fired" zircon, white sapphire, white topaz and rock-crystal, may reflect light from the surface or from the interior, but none of them glows like the diamond. No colour other than a trace of steel-blue can be tolerated in stones of this category.

In order to reveal the beauty of the stone, the lapidary requires to exercise much skill in the disposition of the facets. A coloured stone depends for its attractiveness rather on its intrinsic hue than on the cutting. The tint must not be too light nor too dark in shade. The lapidary can to some extent control these shades by cutting the former deep and the latter shallow.

Of the small group of translucent stones—those which pass light, but are not clear enough to be seen through—the most important is

the opal, which, together with certain others of the group, owes its merit to the same optical effect as that characterising soap-bubbles, tarnished steel and so forth, and not to any intrinsic coloration.

The last group, comprising opaque stones, has but a single representative among ordinary gem stones—namely, turquoise. In this stone light is scattered and reflected from layers immediately contiguous to the surface, and the colour is due to the resulting absorption.

Gemini, the third sign of the zodiac, which the sun enters about May 21. The constellation of Gemini, which contains the two bright stars Castor and Pollux—named after the twin heroes of the ancient Greeks—does not now correspond with the zodiacal sign, owing to the precession of the equinox.

Gemsbok, the S. African name of the *Oryx gazelle*, an antelope of the Kalahari desert and Damaraland. It is fawn colour with white on the face, legs and flanks. The horns are straight and about 3 ft. or more in length.

Gendarmes

(i.e., men-at-arms), a military police force in France charged with maintaining the public safety. The gendarmierie is considered a part of the regular army, and is divided into legions and companies, but the pay is better than that of an ordinary soldier. In the 14th and 15th Centuries the name was applied to the heavy French cavalry, and later to the royal body-guard of the Bourbons.

Gender, in grammar one of the categories into which words are divided according to the sex, natural or figurative, of the objects which they represent. In English, words denoting males are said to be of the masculine gender, those denoting females of the feminine gender, and those denoting inanimate objects or abstract ideas of the neuter gender.

Genealogy is the science by which the origin of families is traced. Its chief use is in connection with questions of heritage and the right of ownership of property. Genealogical records carefully preserved by private families may often be of great historical interest.

General, the title of an officer in the British Army ranking immediately below a field-marshal. In descending order come the titles of lieutenant-general and major-general. The rank of Brigadier-general formerly followed, but "brigadier" alone is now retained.

General Assembly, the governing body and highest ecclesiastical court in the Presbyterian Church of Scotland, Ireland and the United States of America. It is composed of both clerics and laymen, and possesses both judicial and legislative power. The Assembly is presided over by an elected minister known as the Moderator.

General Paralysis of the Insane

(G.P.I.), a serious disease marked by degenerative changes of mind and body and resulting from syphilitic infection. The progress of the disease is gradual, the symptoms including progressive loss of muscular power, with inability to co-ordinate the muscles, squinting and double vision, slurred speech and tremulous and altered handwriting; paralytic seizures may



GEMSBOK

secur, and the gait becomes stumbling and unsteady, until finally the patient is entirely bedridden. Meanwhile the character alters for the worse; grandiose and wildly extravagant ideas may be expressed, or, more generally, there may be acute depression, ending in complete insanity. All these symptoms are brought about by destructive changes in the brain tissue caused by the poisons of the syphilitic germs. G.P.I. was formerly an inevitably fatal disease, but a recently evolved method of fever therapy gives a fair chance of recovery in a large proportion of cases; it consists of injecting the patient with malaria, which leads to the destruction of the syphilitic germs in the brain, in conjunction with the administration of certain compounds of arsenic.

General Strike, The, the strike of all unions belonging to the Trades Union Congress which started on May 4, 1926, and which was designed to coerce the Government into agreeing to the terms of the miners in the coal stoppage which had begun three days before. After eleven days, singularly free from real disturbance, the strike was unconditionally called off.

Genesis, the first book in the Bible, so called in the Septuagint as containing an account of the origin of the world, of the human family and of the Jewish race.

Genetics and Heredity.

The term genetics was applied by William Bateson in 1906 to that department of biology which deals with the transmission of hereditary characters and with the origin of variations in species and individuals. It is thus wider in its connotation than heredity, which Sir J. Arthur Thomson defined as "the relation of genetic continuity between successive generations" or "the arrangements which make like beget like, or tend to beget like."

In other words, heredity seeks to understand why offspring are like their parents, while genetics is also concerned with why they are not exactly alike. The resemblance of a general character between parents and offspring is due to the fact that when the fertilised egg-cell begins to divide to form an embryo, some of the daughter cells retain a close similarity to the egg-cell and give rise to the reproductive organs; in due course, at sexual maturity, the reproductive organs set free some of their undifferentiated germ-cells, which, after fertilisation with similar cells from an individual of the opposite sex, begin the cycle of changes over again.

It is, however, not merely in the early setting-apart of the germ-cells that the mechanism of heredity lies; more minute particulars are also concerned. The nucleus of a cell (see Cell) contains protoplasmic material known as the chromatin network, and when the cell is about to divide, a noteworthy sequence of changes begins to take place. The chromatin network unravels itself and splits up into a number of short, thick rods called chromosomes. Each chromosome then divides accurately into halves, and one half of each passes towards one end of the cell, the remaining half passing with its fellows towards the other end.

Having reached their destinations, one bundle of half-chromosomes joins up to form one daughter-nucleus, while the other bundle forms a second; so that, in the production of the two new nuclei, there has been a most careful and thorough-going division of the original nuclear material. Each daughter-nucleus takes half of the main protoplasm (cytoplasm) of the parent cell, and thus two daughter-cells are formed.

The minute exactness with which the division of the chromatin network is effected

has led to the inescapable conclusion that the chromosomes are the carriers—or at least the main carriers—of the hereditary character, and this conclusion has been amply confirmed by the work of Mendel and others upon the artificially controlled inter- and cross-breeding of plants and animals. The results are in very close agreement with those which, on the mathematical theory of probability, we should expect on the assumption that the chromosomes carry independent factors or "genes," each of which is responsible for one or more definite hereditary feature (see Mendelism).

Whether acquired characters—i.e., modifications acquired by an individual and not possessed by its parents—can be transmitted to offspring is a question still hotly debated by biologists, as it has been for the last century. It is probable that the solution may be found in the recognition of other factors as concerned in heredity—such, for example, as the hormones. Thus sex inheritance seems to be controlled by the chromosomes, yet in many cases the sex of a male animal has been altered by administration of hormones obtained from the reproductive organs of a female of the same species, and *vice versa*.

Geneva, (1) a canton of Switzerland, situated at the western extremity of the Lake of Geneva; the surface is hilly, but not mountainous and is watered by the Rhône and Arve; the soil is unfertile, but the patient industry of the inhabitants has made it fruitful; the cultivation of the vine, fruit-growing and the manufacture of watches, etc., are the chief industries; a large majority of the people speak French. Area 109 sq. m. Pop. 171,000. Also the name of the capital of the canton, situated at the SW. end of the lake, at the exit of the Rhône; the town existed in Caesar's time, and after being subject in turn to Rome and Burgundy, long won its independence in conjunction with Bern and Freiburg. In Calvin's time it became a centre of Protestantism, and its history, down to the time of its annexation by Napoleon in 1798, is mainly occupied with the struggles between the oligarchical and democratic factions. On the overthrow of Napoleon it joined the Swiss Confederation (1815). Since 1847 the town has been largely rebuilt and handsomely laid out. Among many fine buildings are the Cathedral of St. Peter (1124), and the academy founded by Calvin. The Rhône flows through it, and encompasses an island which forms part of the city. It has many literary and historical associations, and was the birthplace of Rousseau. In 1919 it became the headquarters of the League of Nations and the International Labour Office, located in the magnificent new Palace of the Nations. Pop. 121,000.

Geneva, Lake of, or Lake Lemán, stretches in crescent shape between Switzerland and France, curving round the northern border of the French department of Haute-Savoie; length, 45 m.; greatest breadth, 9 m.; maximum depth, 1,022 ft. On the French side precipitous rocks descend to the water's edge, and contrast with the wooded slopes of the north. Many streams pour into it, notably the Rhône, which flows out at Geneva.

Geneva Conventions,

international agreements arising out of conferences held at Geneva in 1864, 1888 and 1906 with the object of lessening the sufferings of those wounded in war, an important result of which was the establishment of the Red Cross Society in 1870.

Geneviève, the patron saint of Paris, by her prayer the city, then called Lutetia, was saved from the ravages of Attila and his Huns. She is buried in the Church of St. Etienne-du-Mont at St. Denis. (a. 422-512).

GENGHIS KHAN

Genghis Khan (*i.e.*, Very Mighty Ruler), a celebrated Mongol conqueror, born near Lake Balkal, the son of a Mongol chief; his career as a soldier began at the age of 13, when he boldly assumed the reins of government in succession to his father; by his military skill and daring example he raised his people to a position of supremacy in Asia, and established a kingdom which, at his death, stretched from the Volga to the Pacific, and from Siberia to the Persian Gulf. (1162-1227).

Genista, a genus of plants of the natural order Leguminosae, comprising some 90 species found in Europe, North Africa and the Western parts of Asia, 3 in Britain, including the Needle-gorse or petty whin (*Genista anglica*) which has large thorns, and the Dyer's Greenwood (*G. tinctoria*) which has no thorns. The pollen is conveyed to insects by an explosive mechanism released by the weight of an insect.

Genius, in Roman mythology, was the tutelary spirit which accompanied every man throughout his life and presided over his destiny. It was related to the principle of reproduction and the continuation of families, and was worshipped by each individual on his birthday. The corresponding tutelary spirit of females was known as Juno, while each place also had its presiding genius, visualised as a snake.

Genlis, Stephanie Félicité, Comtesse de, celebrated French novelist, born at Champcéry, near Autun, Burgundy. At the age of 15 she was married to the Comte de Genlis, who was afterwards a victim of the Revolution. In 1770 she became lady-in-waiting to the Duchess de Chartres, and in 1781 the Duke appointed her governess to his sons, among whom was the future King, Louis-Philippe. She was a voluminous writer of moral tales, comedies, etc., and her works amount to about 90 vols., among them being the celebrated *Memoirs* of her life and times. (1746-1830).

Genoa, a city and the chief commercial seaport of Italy, at the foot of the Apennines as they slope down to the Gulf of Genoa. The encircling hills behind form a fine background to the picturesquely laid-out city. There is excellent harbourage, as well as three dry-docks, a graving-dock, and large shipbuilding yards, while an active export and import trade is carried on. There are iron-works, cotton and cloth mills, match factories, etc.; the streets are narrow and irregular, but many of the buildings, especially the ducal palaces and the cathedral, are of great historical and architectural interest; there is an excellent university, a public library and an Academy of Fine Arts. Pop. 625,000.

Genre Painting, the term applied to painting which seeks to portray scenes and figures from everyday life, the interest of which does not lie in a dramatic or historical direction.

Gens, the name in use among the Romans for what we understand by the word clan, consisting of a group of families bearing the same name and tracing their descent from a common ancestor.

Genseric, King of the Vandals, son of Godigisel, founder of the Vandal kingdom in Spain, and half-brother of Gunderic, whom he succeeded in A.D. 428; from Spain he crossed to Africa, annexing the land lying W. of Carthage, and later Carthage itself; he next organised a naval force, with which he systematically pillaged Spain, Italy, Greece, and parts of Asia Minor, sacking Rome in 455; until his death in 477 he continued master of the seas, despite strenuous efforts of the Roman emperors to crush his power. (428-477).

GEOGRAPHY

Gentian, the common name of herbaceous plants of the genus *Gentiana*,

supposedly named after King Gentius of Illyria, who is said to have discovered their medicinal qualities. The gentians are mostly perennials, and are either dwarf alpinists or erect tufted plants. The flowers are generally bright blue, and more rarely yellow and white. The root of several species is used in medicine as a bitter stomachic. Native British species include *Gentiana Amarella*, *G. campestris*, *G. verna*, and *G. Pneumonanthe*.



GENTIANA
AMARELLA

Gentiles, a term applied to those not belonging to the Jewish race. The Mormons apply the term to those not belonging to their church.

Gentlemen-at-Arms, next to the Yeomen of the Guard the oldest corps in the British army, is the bodyguard of the sovereign. Formed by Henry VIII. in 1509, it now consists of a captain, lieutenant, standard-bearer, adjutant, harbingers and 39 members, whose duties are limited to attendance at State ceremonies.

Gentz, Friedrich von, German politician and author, born at Breslau; while in the Prussian civil service he warmly sympathised with the French Revolution, but his zeal was modified by perusal of Burke's *Reflections* a treatise he subsequently translated, and in 1802 he entered the Austrian public service; in the capacity of a political writer he bitterly opposed Napoleon; he was secretary at the Congress of Vienna and many of the subsequent congresses. (1764-1832).

Genus, in biology is a subdivision of the animal or vegetable world ranking next above species, and containing a number of species having like characteristics.

Geoffrey of Monmouth,

a celebrated British chronicler and ecclesiastic born in Monmouth, where he was educated in a Benedictine monastery; in 1151 he was made Bishop of St. Asaph; his Latin *Chronicon sive Historia Britonum* contains a circumstantial account of British history compiled from Gildas, Nennius, and other early chroniclers, interwoven with current legends and pieced together with additions from his own fertile imagination, the whole professing to be a translation of a chronicle found in Brittany; this remarkable history is the source of the stories of King Lear, Cymbeline, Merlin, and of Arthur and his knights as they have since taken shape in English literature. (c. 1100-1154).

Geoffroy Saint-Hilaire,

Etienne, French zoologist and biologist, born at Etampes; professor of Zoology in the Museum of Natural History in Paris (1793); accompanied Napoleon to Egypt as a member of the scientific commission, returning with rich collections; went on a scientific mission to Portugal in 1808; professor of Zoology in the Faculty of Sciences at Paris (1809), the main object of his scientific writing was to establish, in opposition to the theories of his friend Cuvier, his conception of a grand unity of plan pervading the whole organic kingdom. (1772-1844).

Geography, the study of the earth and man's reaction to them. The science is divided into various branches. Mathematical geography examines and explains the size and shape of the earth, its movement and place in the solar system and its representation by cartography or map-making. It is an exact

science, undertaken only by experts, and requiring the use of accurate and delicate instruments.

Physical geography deals with the earth's physical features—i.e., contours or land-heights, rivers, shapes of land-masses and oceans, climate, etc., while the last-named embraces meteorology, or the study of weather systems and wind movements in conjunction with barometric air-pressures. The study of the earth's crust is a separate science—geology.

Biogeography is the study of the living things of the earth, and includes phytogeography, which is concerned with the distribution of living plants on the earth's surface, and zoogeography, dealing with the distribution of animals; while anthropogeography treats of the distribution and condition of mankind on the earth, and this branch leads to the most important aspect of geography—i.e., political and economic geography.

Political geography is the organised knowledge of States and boundaries, different races and their manner of living, language and government, etc. Economic geography deals with the distribution of the earth's resources of food, clothing, fuel, raw materials and the consequent industries of mankind, as well as commerce, transport, etc.

The beginnings of geography were made chiefly by the early explorers who explored the coast of Africa from the Mediterranean lands of the Greek and Roman Empires, and by later adventurers who continued the quest for knowledge of unknown territory. Scientific geography began in Egypt and Greece with the study of the seasons and the necessity of fixing boundaries between States.

The size of the earth was roughly determined by Eratosthenes of Cyrene (276-194 B.C.) as a result of his land survey of the distance between Alexandria and Syene (Assuan). Since then the search for further information has continued, and except chiefly for some areas in the Arctic and Antarctic Circles, the geographical knowledge of the earth's surface is almost complete.

The modern teaching of geography is assisted greatly by wireless talks by experts and by the use of film-projectors, while the subject is approached as much with the aim of discovering the reasons for geographical data as for the mere acquisition of the latter. It must be remembered that geography which considers man and his relationship to the earth is liable to constant change as the natural causes which lead to the concentration of large and densely crowded masses of people within certain areas may cease to operate should a change, say, in climate or configuration of the earth's surface take place.

Geology, the science which deals with the structure and history of the earth, and more particularly with the nature and origin of the rocks which compose the earth's crust or lithosphere; it also includes the study of past forms of life—both animal and vegetable—as evidenced by their fossilised remains.

The chief types of rocks of which the earth's crust is composed are: (1) sedimentary, or those rocks, such as chalk, limestone and sandstone, which have been dissolved from the original plutonic rocks by denudation or other means, and deposited upon the beds of streams and oceans in successive flat layers or strata; (2) igneous or plutonic, comprising the original rocks, such as granite, which crystallised into their present form upon the cooling of the molten or plastic material of which the earth was at one time composed; and (3) metamorphic, the last being formed by the alteration or metamorphosis of both igneous and sedimentary rocks.

The sedimentary rocks, in order of age and beginning with the oldest, are classified as

follows: Pre-Cambrian, Cambrian, Ordovician, Silurian, Devonian and Old Red Sandstone, Carboniferous and Permian (constituting together the Archæan and Primary Series); Triassic, Jurassic and Cretaceous (constituting together the Secondary Series); Eocene, Oligocene, Miocene, Pliocene and Pleistocene (constituting together the Tertiary Series). The Pleistocene rocks are therefore the most recent, apart from those deposits which are still in course of formation and which are described as Holocene or Quaternary.

Paleontology is the branch of geology concerned specifically with fossils, which are of interest not merely in themselves, but as "daters" of the strata in which they occur. Petrology, in its two divisions of petrography and petrogenesis, deals with the composition and mode of origin of rocks, respectively; it makes wide use of chemical and physical methods, and was greatly advanced by H. C. Sorby (1826-1908), who introduced the microscopic examination of thin sections of rocks.

Geometry, one of the principal branches of mathematics, dealing with the properties of space. It probably originated in ancient Egypt, where frequent surveys, necessitated by the obliteration of boundaries by the Nile floods, resulted in the evolution of empirical rules for the construction of angles, etc., and the calculation of areas. This rudimentary knowledge was elaborated and extended by the Greeks, eventually culminating in a logical system of geometry which was epitomised for posterity in the famous *Elements* of Euclid (c. 300 B.C.).

The Greek method of demonstrating a proposition was, essentially, to proceed by a series of logical sequences from certain assumptions which, though incapable of being proved, may be considered as truths self-evident to a normal intellect; these assumptions are known as axioms. A proposition, having once been proved, may be used in the solving of fresh propositions, but no unproved statement may be taken for granted unless it is self-evident and incapable of definition.

Euclidean, or pure geometry, is conventionally divided into elementary and higher geometry. Elementary geometry is itself divided into two branches: (1) plane geometry, which investigates the properties of space in a plane of two dimensions; it treats the definition, construction and properties of lines, angles and figures (such as squares, rectangles, triangles, circles, etc.) and the solving of problems involving them; and (2) solid geometry, which is concerned with space of three dimensions—that is to say, with bodies having thickness—and therefore substance or solidity—as well as area; such are the cube, pyramid, prism, etc.

Higher Euclidean geometry is largely concerned with conic sections, or the particular curves arising from the division of a cone in various ways, and having the form of an ellipse, parabola or hyperbola. Projective geometry, evolved early in the 19th Century, is an extension of the geometry of Euclid, and is concerned with the properties and behaviour of straight lines and planes projected to infinity.

Analytical geometry, devised about 1637 by René Descartes, consists essentially of the application of algebraic methods to geometry. The position of a point on a given line may be represented by means of a number, or co-ordinate, which expresses the distance of the point from some other given point on the line. To denote the position of a point in a given plane two co-ordinates are required, three lines at right angles to one another can be drawn in space, and to denote the position of a point in space three co-ordinates are required. When the positions of points are thus re-

presented by sets of co-ordinates, curves and surfaces are represented by algebraic equations, and the properties of the latter can be investigated by solving the equations.

Starting from a set of axioms such as those laid down by Euclid, it is possible to build up, by logical deduction, a system of geometry which is entirely consistent in itself. The validity of such a system, however, when applied to the physical world, depends on the validity of the axioms as applied to the physical world. Until the 18th Century it was not doubted that actual space was of such a nature that Euclidean geometry applied to it consistently. Since then, however, other systems of geometry have been devised—associated with the names of Lobachevski, Riemann, Beltrami, Minkowski and Einstein, among others—each consistent in itself, and founded upon postulates different from, and inconsistent with, those of Euclidean geometry.

George I., King of Great Britain from 1714 to 1727, and first of the

Hanoverian line; son of Ernest Augustus, Elector of Hanover, and of Sophia, granddaughter of James I. of England; born in Hanover. In 1682 he married his cousin, the Princess Sophia Dorothea of Zell, and in 1698 became Elector of Hanover. He co-operated actively with Marlborough in opposing the schemes of Louis XIV., and commanded the Imperial forces (1707-1709). In accordance with the Act of Settlement, he succeeded to the English throne on the death of Queen Anne. His ignorance of English prevented his taking part in Cabinet councils, a circumstance which had important results in the growth of constitutional government, and the management of public affairs during his reign devolved chiefly upon Sir Robert Walpole. The abortive Jacobite rising of 1715, the South Sea Bubble (1720), and the institution of Septennial Parliaments (1716), are among the main events of his reign. In 1694 he divorced his wife on account of an amour with Count Königsmark, and kept her imprisoned abroad till her death in 1720, while he himself during these years lived in profligacy with his mistresses. (1660-1727).



GEORGE I.

George II., King of Great Britain from 1727 to 1760, and Elector of Hanover, born in Hanover, son of preceding; in 1705 he married Caroline of Anspach, and in 1714 was declared Prince of Wales; distinguished himself at the Battle of Oudenarde (1708). The period of his reign is one of considerable importance in English history; Walpole and subsequently Pitt were the great ministers of the age; war was waged against Spain and France; the last Jacobite rising was crushed at Culloden (1746); English Power was established in Canada by the brilliant victory of Wolfe at Quebec (1759); an empire was won in India by Clive; the victory of Minden (1759) was gained in the Seven Years' War; Methodism sprang up under Wesley and Whitefield; while a great development in literature and art took place. Against these, however, must be set the doubling of the National Debt, mainly due to the Seven Years' War, and a defeat by the French at Fontenoy (1745). (1683-1760).

George III., King of Great Britain from 1760 to 1820, and King of Hanover (Elector from 1760 to 1815), eldest son of Frederick Lewis, Prince of Wales, and grandson of preceding, born in London. In 1761 he married Princess Charlotte Sophia of Mecklenburg-Strelitz, by whom he had

fifteen children. More English in sentiment and education than his two predecessors, George's main interest was centred in his English kingdom, and never during his long life did he once set foot in his Hanoverian possessions. The purity of his domestic life, his devotion to England, and the pathos attaching to his frequent fits of insanity, won him the affections of his people, an affection, however, sorely tried by his obstinate blundering. The 60 years of his reign present a succession of domestic episodes, far-reaching in their consequences to England and to the civilised world; the conclusion of the Seven Years' War left England predominant in North America, and with increased colonial possessions in the West Indies, etc., but under the ill-guided and obstinate policy of Lord North she suffered the loss of her American colonies, an event which also involved her in war with France and Spain. In 1788 the famous trial of Warren Hastings began, and next year came the French Revolution. The great struggle with Napoleon followed, and gave occasion for the brilliant achievements of Nelson and Wellington. During these long years of war the commercial prosperity of England never slackened, but through the inventions of Hargreaves, Arkwright and Crompton increased by leaps and bounds; freedom of the press was won by Wilkes; and in 1800 the union with Ireland took place. The majestic figure of Pitt stands out amidst a company of brilliant politicians that included Burke, Fox and Sheridan. Literature is represented by a line of brilliant writers that stretches from Johnson to Keats, and includes the names of Burns, Cowper, Scott, Coleridge, Shelley and Byron. (1738-1820).

George IV., King of Great Britain from 1830 to 1830, eldest son of the preceding, born in London; in consequence of his father's insanity he became Regent in 1811; a tendency to profligacy early displayed itself in an intrigue with Mrs. Robinson, an actress; and in 1793, in defiance of the Royal Marriage Act, he secretly married Mrs. Fitzherbert a Roman Catholic; in 1795 he publicly espoused Princess Caroline of Brunswick, whom later he endeavoured to divorce; a Burmese War (1824-1826), the victory of Admiral Codrington at Navarino (1827), the Repeal of the Test and Corporation Acts (1828), and the passing of the Catholic Emancipation Bill (1829), were occurrences of some importance in a somewhat uneventful reign. (1762-1830).

George V., King of Great Britain, Ireland and of the British Dominions beyond the Seas, Emperor of India, etc.; born at Marlborough House, London, on June 3, 1865, the second son of Edward VII. and Queen Alexandra; entered the Navy in 1877 and in 1890 became a commander, but gave up his active career at sea on becoming heir-apparent to the throne by the death of his elder brother, the Duke of Clarence, in 1892; the same year he was made Duke of York, and in July 1893 married Princess Victoria Mary of Teck; in 1901, after a tour of the Empire, was made Prince of Wales; succeeded to the throne on the death of his father, May 6, 1910, and was crowned on June 22, 1911, the same year visiting India with the Queen. The outstanding event of his reign was the World War, with its aftermath of social and economic turmoil, through which the popularity of the throne and personal affection for the King and Queen steadily increased, as was shown by the anxiety manifested during the King's critical illness in 1928, the unprecedented enthusiasm which attended the Silver Jubilee in May 1935, and the great outburst of national grief following the death of the King, which took place on Jan. 20, 1936, at Sandringham. It was one of the most important events of his

men, apart from the World War, were the granting of votes to women, the establishment of the Irish Free State (1922), the formation of the first Labour Government (1924), the General Strike (1926), the economic crisis (1931), and the introduction of the new Indian constitution (1935). (1895-1936).

George VI. (Albert Frederick Arthur George) King of Great Britain, Ireland and the British Dominions beyond the Seas, Emperor of India, etc.; born at Sandringham on Dec. 14, 1895, second son of George V.; was trained for the Navy, and was present at the Battle of Jutland in 1916; in 1918 he became a captain in the Royal Air Force; on April 26, 1923, married Elizabeth, daughter of the Earl of Strathmore; was created Duke of York in 1920; conspicuous before his accession for his interest in Industrial Welfare and in Boys' Clubs, visiting every year a boys' camp at Southwold, which he established—an activity with which not even his accession to the throne was permitted to interfere. In Dec. 1936 ascended the throne on the abdication of his brother, Edward VIII.; was crowned at Westminster Abbey on May 12, 1937. (1895-).

George II. King of Greece; upon the deposition of his father, King Constantine, by the Allied Powers in 1917, he was excluded from the succession on account of his pro-German sympathies and in favour of his younger brother. However, Constantine was restored to the throne in 1920, and on his abdication in 1923 Prince George succeeded him; he was himself forced to abdicate in 1924, but was restored to the throne by plebiscite in Nov. 1935. (1890-).

George, Henry, American author and political economist born at Philadelphia; in 1858 settled in California as a printer; his views on the question of land reform were set forth in *Our Land and Land Policy* published in 1871, and in 1879 appeared his most celebrated work, *Progress and Poverty*, in which he promulgated the theory that to the increase in economic rent and land values is due the lack of increase in wages and interest which the increased productive power of modern times should have ensured. He proposed the levying of a tax on land so as to appropriate economic rent to public uses, and the abolition of all taxes falling upon industry and thrift. He lectured in Great Britain, Ireland and Australia. (1839-1897).

George, St., the patron saint of chivalry and of England; adopted as such in the reign of Edward III.; believed to have been born in Armenia, and to have suffered martyrdom under Diocletian in A.D. 303. He is represented as mounted on horseback and slaying a dragon, conceived as an incarnation of the evil one.

George Lake, (1) a lake in the U.S.A., 33 m. long and 1 m. in average breadth. It is 2 m. S. of Lake Champlain, with which it is connected by a stream. (2) A salt-water lake in New South Wales, Australia, about 35 m. SW. of Goulburn. It is 25 m. long and 8 m. broad, but occasionally in dry seasons it is diminished. It is 2,180 ft. above sea-level. (3) A lake in Uganda, with an outflow into Lake Edward.

George Town, capital of the island Settlements, of Penang, Straits Settlements. It ranks as the first port of the Straits Settlements after Singapore; large quantities of sugar, tin and rice are exported. Pop. 101,000.

Georgetown, (1) capital of British Guiana, Guiana; situated at the mouth of the Demerara R., it was founded by the Dutch in 1784; the town is neatly

laid out, and has some handsome buildings, but is considered unhealthy; there are manufactures of cigars, soap, boots and chocolate. Pop. 67,000. (2) A former city of the district of Columbia, U.S.A., now included (since 1878) in the city of Washington; it stands on the Potomac, at its confluence with Rock Creek and is a terminus of the Chesapeake and Ohio Canal.

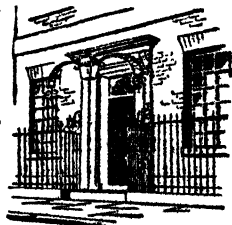
Georgia, one of the 13 original States to the S., fronting the Atlantic between Florida and S. Carolina; is divided into 151 counties; Atlanta being the capital and Savannah the chief port. It has numerous rivers, and is low and swampy for some miles inland, but rises into plateaux in the interior; the Appalachians and Blue Mts. intersect it in the NW. Excellent crops of wheat and fruit are grown among the hills, and rice in the lowlands, while immense quantities of cotton are raised on the islands skirting the coast. Tobacco is an important crop, and the vast forests of pitch-pine supply an increasing lumber trade. The mountain lands are rich in minerals, including manganese, bauxite, clay, fuller's earth and stone. The State was named after George II. in 1733 by the founder, James Oglethorpe. Area 59,000 sq. m. Pop. 2,909,000.

Georgia, a Republic in the Caucasus, a Bounded N. and NE. by the Caucasus Mts., S. by Armenia and Turkey, E. by the Azerbaijan Republic and W. by the Black Sea, it has an area of 26,000 sq. m. It is intersected by steep valleys and watered by numerous streams draining from the Caucasus Mts., including the Kura and Rion and their affluents, several of which have been harnessed for irrigation and hydro-electric schemes. Tea is an important crop, cotton, tobacco, wine and silk are produced for export, and there are large and valuable forests. The chief mineral is manganese, while coal is also mined and there are oil-wells and mineral springs. Georgia was a kingdom for 2,000 years, during which time it suffered from Macedonian, Turkish, Mongol and Russian incursions. Annexed by Russia in 1801, it remained a Russian province until 1918, when it became an independent republic. In 1921 soviet government was established and Georgia joined the Transcaucasian Federation. The chief towns are Tiflis, and other large towns are Batumi, Kutais, Sukhum and Poti. Pop. 3,000,000.

Georgian Architecture.

In general, the smaller Georgian and Queen Anne house is frequently set back from the road behind simple iron railings, and displays a straight, two-storied front raised upon a basement flat. The principal features are the sash-windows symmetrically arranged with wooden bars, the central doorway with consoles, entablature and pediments, and a boldly projecting consoled cornice protecting the walls from rain. The house has generally a plain hipped roof, with simple dormer windows.

Georgian Bay, the NE. arm of Lake Huron, Canada. It is almost enclosed by Manitoulin I. and Saugueen Peninsula, in Ontario Province, and is about 120 m. long and 50 m. broad.



GEORGIAN ARCHITECTURE (10 DOWNING STREET)

Gera, a town of Germany, situated on the white Elster, 35 m. SW. of Leipzig; has broad streets and fine buildings, with a castle and an ancient Town Hall; there is a large woollen industry, as well as manufactures of machinery, musical instruments, iron and leather goods. Pop. 84,000.

Geranium, a genus of plants belonging to the natural order Geraniaceae; they are chiefly annual or perennial herbaceous plants with palmately lobed leaves and regular five-petalled flowers. A characteristic elongated beak-like process attached to the ovary gives the genus the popular name of "Crane's-bill." The Geraniums are widely distributed, species being found in all climates; several occur naturally in the British Isles, of which perhaps the most familiar is Herb Robert, or Stinking Crane's-bill, from its pungent odour.

The common garden "geraniums" are not correctly so called, being in reality members of the genus *Pelargonium*, which, however, is also included in the order Geraniaceae.

Gérard, François Pascal Simon, Baron, French painter, born in Rome; came to Paris when a youth, where he studied painting under David; in 1795 his "Blind Belshazzar" brought him to the front, whilst subsequent work as a portrait-painter raised him above all his contemporaries; his masterpiece, "Entry of Henri IV. into Paris," procured him a barony at the hands of Louis XVIII. (1770-1837).

Gerizim, a mountain 2,848 ft. in height, on the S. of the valley of Shechem, opposite Ebal, upon the slopes of which half the tribes of Israel assembled to hear the blessings and cursings read to them by Joshua, upon their arrival in Canaan (Josh. vii. 30-35); on the mountain are ruins of a Byzantine basilica, built on the site of an ancient Samaritan temple.

German, Sir Edward (Edward German Jones), British composer, born at Whitchurch, Shropshire; attended Royal Academy of Music, 1880-1887, and was an orchestral violinist before becoming known as a composer; among his best-known works are: music to *Henry VIII.*, 1892; the operas, *Merrie England*, 1902, *The Princess of Kensington*, 1903 and *Fallen Fairies*, 1909; and King George V's Coronation March, 1911; knighted, 1928. (1862-1936).

German Catholics, a sect formed by secession from the Catholic Church of Germany, under the leadership of Johann Ronge; it arose from a controversy following the exhibition of the Holy Coat of Trier and the superstitious influence ascribed to it.

Germanicus Caesar, Roman general, son of Nero Claudius Drusus and Antonia, daughter of Mark Antony; he served with distinction under his uncle Tiberius in Dalmatia and Pannonia and in A.D. 12 was elected consul; a brilliant campaign against the Germans provoked the jealousy of Tiberius, who transferred him to the East, where he died near Antioch; his youngest son Caligula succeeded Tiberius as emperor. His wife Agrippina was put to death, together with two sons. His daughter Agrippina was mother of Nero. (15 B.C.-A.D. 19).

Germanium, a metallic element, belonging to the same sub-group as carbon, silicon, tin and lead. Symbol Ge, atomic number 32, atomic weight 72.60. Its existence, under the name of *eka-silicon*, was predicted in 1871 by Mendeleeff, but it was not discovered until 1886.



HERB ROBERT

German Measles, an infectious disease resembling a mild form of measles and scarlet fever and chiefly affecting children. The symptoms are slight fever, headache, shivering and enlargement of the glands of the neck, accompanied by a rash appearing first on the face and spreading downwards. The rash lasts from 24 to 48 hours. Treatment consists in confinement to bed with a light and nourishing diet.

German Silver, an alloy composed of copper, nickel and zinc in varying proportions; used for the manufacture of small objects, such as spoons and forks, and also for electrical resistances.

German Volga Republic,

an autonomous Republic of the U.S.S.R., formed chiefly of portions of the old provinces of Saratov, Samara and Astrakhan. The chief industry is agriculture, which has to be assisted by irrigation from the Volga, which intersects the Republic. Wheat, barley, maize and other cereals, and sunflower-seeds are the chief crops, and there are manufactures of flour, tobacco, leather and motor tractors. The area is 27,000 sq. km.; capital, Pokrovsk. The territory was settled in 1760 by German colonists, invited by Catherine the Great, and Germans still comprise the bulk of the population; it became an autonomous Republic in 1924. Pop. 571,000.

Germany, Republic of Central Europe; it is bordered by Switzerland, Italy and Czechoslovakia on the S., by the North Sea, the Baltic and the Danish frontier on the N., by France, Belgium and Holland on the W., and on the E. by Poland and Lithuania. The area is 181,700 sq. m.; pop. 65,000,000. After the World War, Germany lost Alsace-Lorraine to France, East Prussia and Posen to Poland, part of Silesia to Poland and Denmark, while part of Danzig became a free city.

The main physical divisions are: (1) the great lowland plain stretching from the centre to the Baltic and North Sea, well watered by the Elbe, Weser, Elbe, Oder and their tributaries, in which agriculture employs a large number of workers, and cereals, tobacco and beetroot are raised; (2) the mountainous district in the interior, of which the Fichtelgebirge is the central knot, in which vast forests abound, and where rich deposits of coal, fire-clay, iron and other metals give rise to iron-works and potteries; (3) the basin of the Rhine, on the W., where the vine is largely cultivated, and extensive manufactures of silks, cottons and hardware are carried on; the district of Westphalia, in this region, is the centre of the steel and iron works, and includes the industrial towns of Essen, Dortmund, Düsseldorf and Krefeld. Throughout Germany there were in 1937 137,000 m. of roads, and 36,000 m. of railway lines, chiefly State property; 63 per cent. of the people are Protestants; education is compulsory and very highly developed.

Until 1918, when the Emperor, Wilhelm II., abdicated, the constitution of the Empire was based upon a decree of 1841. The presidency of the empire belonged to the crown of Prussia, to which was attached the title of German Emperor; the latter, in addition to his normal prerogatives, assumed supreme control of the Navy and Army. He was almost absolute, and appointed the Imperial Chancellor, who was responsible to him alone. Legislation was in the hands of the Bundesrath (Federal Council) and the Reichstag (Imperial Diet), elected by universal suffrage.

At the revolution of 1918 Germany became a Republic, and in the following year elections were held for a National Assembly. Under the new constitution all power was vested in the

State and derived from the people. Besides the Reichstag (or Parliament), there is a Council consisting of representatives of the various federated States. The first president was Ebert, and on his death in 1925 Field-Marshal von Hindenburg was elected.

During 1929, owing to severe economic depression and consequent unrest a National Socialist party led by Adolf Hitler was formed (now known as the Nazi party). In 1933 the Nazis came into power, and Hitler was made Chancellor. Von Hindenburg died the next year, and the office of president was united with that of chancellor in the person of Hitler, who chose to be known as "Führer," or Leader. He confiscated the funds of the Communist Party, to which he was bitterly opposed, expelled Jews from key positions and began a persecution of that race in an attempt to secure an "Aryan" population. In 1936 the Nazis, in contravention of the Locarno Treaty, re-occupied the demilitarised Rhineland zone, and in 1937 they repudiated the Peace Treaty of Versailles, claiming equality with the other Great Powers (especially with regard to the question of armaments); in the same year Hitler launched a campaign for the restoration of Germany's colonies.

Further strength was added by the unification of the Reich, by which local powers of States such as Bavaria practically disappeared. In economic and social policy, the capitalist framework was retained, and labour was organised to take its place in a "corporate" or totalitarian state, while in 1937 an attempt was made to make the country economically independent by the manufacture of synthetic substitutes for such vital raw materials as rubber and petroleum. In March 1938 Hitler seized upon a political crisis in Austria (q.v.) as a pretext to annex that country, which was incorporated in the "Greater Reich." In October 1938 large areas of Czechoslovak territory, including all mainly German-speaking areas were secured under threat of war, the new boundaries being settled without plebiscite by an International Committee of Ambassadors.

Germiston, a town in the Transvaal, Union of S. Africa, situated in a gold-mining area, 9 m. E. of Johannesburg. Pop. (European) 33,000.

Germs. See Bacteria.

Gérôme, Jean Léon, French painter, born at Vesoul; he studied at Paris, travelled in Italy and the East, and in 1863 was appointed professor of Painting in the Paris School of Fine Arts; among his most famous pictures are "The Age of Augustus and the Birth of Christ," "Roman Gladiators in the Amphitheatre," "Cleopatra and Cæsar" and many oriental and dramatic subjects. (1824-1904).

Gerry, Elbridge, American politician, born at Marblehead, Mass.; member of the Massachusetts Congress, 1774-1775; advocated war with Great Britain; entered the National Congress as anti-federalist, 1789; envoy to France, 1797; Governor of Massachusetts, 1810-1812, in which capacity, by an unfair redistribution of the electoral districts in the State, he gave undue advantage to his own party, which led to the coining of the word "gerrymander"; He was Vice-President of the Republic, 1812. (1744-1814).

Gerstæcker, Friedrich, German author and traveller, born at Hamburg; for six years led a wandering life in America, a narrative of which he published on his return to Germany; in 1849 he undertook a journey round the world; in 1860-1868 travelled extensively in Africa and America. (1816-1872).

Geryon, a King of Erythra (i.e., red island), on the western borders of the world, with three bodies and three

heads. His herd of oxen and their guard, a giant shepherd and his dog, the two-throated Orthros, were carried off by Hercules at the behest of his fate.

Gesta Romanorum ("the Exploits of the Romans"), a collection of short didactic stories—not, however, solely Roman—written in Latin probably towards the close of the 13th Century; their authorship is unknown. The stories are characterised by naive simplicity, and have served as material for many notable literary productions; thus Shakespeare owes to this work the plot of *Pericles* and the incidents of the caskets and the pound of flesh in *The Merchant of Venice*, Chaucer *The Man of Law's Tale* and Longfellow his *King Robert of Sicily*.

Gethsemane, an enclosed garden or orchard on the E. of the brook Kidron, half a mile from Jerusalem, at the foot of Mount Olivet, the scene of the Agony of Christ.

Gettysburg, a town in Pennsylvania, 35 m. SW. of Harrisburg; pop. 5,600; during the American Civil War it was the scene of General Meade's famous victory over the Confederates under General Lee on July 3, 1863. Here, on November 19, 1863, Lincoln delivered his famous Address at the dedication of the National Cemetery, and on one of the hills stands a Statue of Liberty.

Geum, a genus of herbaceous perennial plants of the order *Rosaceae*, including some 40 different species, of which the water avens (*Geum rivale*), with small orange flowers, and the wood avens (*Geum urbanum*), are found in Britain. The water avens and several other species are cultivated in gardens (borders and rockeries) for the sake of their foliage and flowers.

Geysers, volcanic fountains which from time to time, under the expansion of steam, eject columns of steam and hot water. The most remarkable examples occur in Iceland (*Geum urbanum*) land, N. America and New Zealand. The celebrated Great Geyser, 70 m. N. of Reykjavik, in Iceland, ejects a column of water 60 ft. in height, but this performance is far exceeded by those of some of the geysers in Yellowstone National Park, U.S.A., which frequently emit jets of 250 ft. or more.

Ghats, or *Ghauts*, Eastern and Western, two mountain ranges running parallel with the E. and W. coasts of S. India; the latter skirts the Malabar coast between 30 and 40 m. from the sea, rising to nearly 5,000 ft., and exhibiting fine mountain and forest scenery; and the former which has a much lower mean level borders the E. of the Deccan, of which tableland it here forms the buttress; the two ranges converge into one a short distance from Cape Comorin.

Ghazi, King of Iraq (Mesopotamia) from 1933, succeeding his father, the first King, Faisal; was educated in Europe; in 1933 married Aliyah, daughter of King Ali of the Hejaz. (1912-).

Ghazipur, a town of India, on the Ganges, 44 m. NE. of Benares, capital of the district of Ghazipur, in the United Provinces; the headquarters of the Government Opium Department, it has a trade in rose-water, sugar and tobacco; here are the ruins of the Palace of Forty Pillars. Pop. 25,000.

Ghaznevids, a Mohammedan dynasty, numbering 19 monarchs, that began their rule at Ghazni, Afghanistan,



WOOD AVENS (*Geum urbanum*)

and rapidly extended it so that at its height it stretched from the Tigris to the Ganges and from the R. Darya (Jaxartes) to the Arabian Sea. Their first monarch was a Turkish ex-slave named Alptagin, who about A.D. 962 wrested the stronghold of Ghazni from the Samani rulers of Bokhara. The third and greatest of the Ghaznevids, Mahmud, reigned 997-1029, and completed the extension of their empire. In the reign of their 18th monarch, Khusru Shah, Lahore became their capital, their former territories outside India having been overrun by the Ghori, who in 1186 took Lahore from Khusru Malik, the last Ghaznevid.

Gheel, a town in Belgium, 26 m. S.E. of Antwerp; it has been for centuries celebrated as an asylum for the insane, who are boarded out among the peasants; these cottage asylums are under government control, and the board of the patients in most cases is guaranteed. Pop. 18,000.

Ghent, a city of Belgium, capital of E. Flanders, situated at the junction of the Scheldt and the Lys, 34 m. N.W. of Brussels. Rivers and canals divide it into numerous quarters, connected by more than 200 bridges. In the older part are many quaint and interesting buildings, notably the cathedral of St. Bavo (13th Century). It is the first industrial city of Belgium, and is a great emporium of the cotton, woollen and linen trades; there are foundries and manufactures of soap, paper, tobacco and machinery; flowers are grown on a large scale, and the flower-shows, held every five years, are famous; a ship-canal connects the city with Terneuzen, on the Scheldt, 22 m. to the N. Ghent figures in history from the 7th Century; in the Flemish and Burgundian wars it fought against Charles the Bold; it was incorporated in the Netherlands in 1814, but became a Belgian possession in 1830. Pop. 165,000.

Ghetto, an Italian word applied to the street or district set apart in Italian cities for the Jews, to which in former times they were restricted; the term is now applied to the Jews' quarters in any city; equivalent to the English "Jewry."

Ghibellines, a political party in Italy of the 14th Centuries, maintained the supremacy of the German emperors over the Italian States in opposition to the Guelphs (q.v.).

Ghiberti, Lorenzo, Italian sculptor and designer, born at Florence; his first notable work was a grand fresco in the palace of Malatesta at Rimini in 1400, and subsequently he helped to beautify churches in Florence and Siena, but his most famous achievement was the execution of two doorways, with bas-relief designs, for the baptistery at Florence, which Michelangelo declared fit to be the gates of Paradise. (c. 1378-1455).

Ghilan, a province of NW. Persia, between the SW. border of the Caspian Sea and the Elburz Mts. It is low-lying, swampy and unhealthy towards the Caspian, but the rising ground to the S. is more salubrious. Wild animals are numerous in the vast forests. The soil, where cleared, is fertile and well cultivated. The Caspian fisheries are valuable. The people are of Iranian descent, and speak a Persian dialect.

Ghirlandajo (i.e., Garland-maker), nickname of Domenico Cazzodi, an Italian painter, born at Florence; began his career as a designer in gold, but later devoted himself to fresco and mosaic work. Of his many great frescoes important specimens are "The Massacre of the Innocents," at Florence, and "Christ calling Peter and Andrew," at Rome; Michelangelo was for a time his pupil. (1449-1494).

Giants, in Greek mythology, were a great stature and strength, who thought by their violence to dethrone Zeus, but, with the assistance of Hercules, were overpowered and buried under Etna and other volcanoes. They were distinct from the Titans, though often confounded with them.

Giant's Causeway, a promontory of columnar basaltic rock in N. Ireland, projecting into the North Channel from the Antrim coast at Bangor Head, 7 m. N.E. of Portrush; an unequal surface 300 yds. long and 30 ft. wide is formed by the tops of the 40,000 closely packed, vertical columns of basalt, left by a prehistoric volcanic outpouring.

Giant Stars, are those of large volume and brightness and low density like Arcturus, Betelgeuse and Aldebaran.

Giaour, the Turkish name for one who is not a Mohammedan, and especially for a Christian.

Gibbon, the name of a family of anthropoid apes, native to the Malay

peninsular and parts of China. A s s a m and neighbouring regions. They are generally black or grey in colour, are of slender, delicate build with attenuated limbs, and devoid of tails. They are agile tree-dwelling, feeding upon leaves and fruit.



Gibbon,

GIBBON

Edward, English historian, born in Putney; his early education was hindered by a nervous complaint, but a wide course of desultory reading in a measure repaired the lack of regular schooling, and when at the age of 15 he was entered at Magdalen College, Oxford, he possessed, as he himself quaintly puts it, "a stock of erudition which might have puzzled a doctor, and a degree of ignorance of which a schoolboy might have been ashamed"; 14 months later he became a Roman Catholic, and in consequence was obliged to quit Oxford; in the hope of reclaiming him to the Protestant faith he was placed in the charge of a Calvinist minister at Lausanne; under the latter's kindly suasion he speedily discarded Catholicism, and during five years' residence established his learning on a solid foundation. Shortly after his return to England in 1758 he published in French an *Essay on the Study of Literature*; in 1774, having inherited his father's estate, he entered Parliament, and from 1779 to 1782 was one of the Lords Commissioners of Trade and Plantations; in 1776 appeared the first volume of his great history, *The Decline and Fall of the Roman Empire*; in 1787 his great work was finished at Lausanne, where he had resided since 1783. (1737-1794).

Gibbons, Grinling, English woodcarver, born at Rotterdam; through the influence of Evelyn he obtained a post in the Board of Works, and his marvelous skill as a woodcarver won him the patronage of Charles II., who employed him to furnish ornamental carving for the Chapel of Windsor; the ceiling of a room at Petworth is considered his masterpiece; he also did some notable work in bronze and marble. (1646-1725).

Gibbons, Orlando, English composer, born at Cambridge. In 14 he obtained the post of organist in the Royal, London, and in 1623 filled the

post at Westminster Abbey. In 1825 he was in official attendance at Canterbury on the occasion of Charles I.'s marriage, but he did not live to celebrate the ceremony, for which he had written the music. (1583-1825).

Gibbs, Sir Philip, English journalist and author, was a famous war correspondent in the Balkan Wars and the World War; best known for his novels, *The Street of Adventure*, *The Unchanging Quest* and others; and has also written on foreign affairs and social subjects. (1877-).

Gibeon, an ancient town of Palestine on the northern slopes of a hill 6 or 7 m. S. of Bethel. It is remembered as the spot over which Joshua bade the sun stand still; its inhabitants, for a trick they played on the invading Israelites, were condemned to serve them as "hewers of wood and drawers of water." (Joshua ix. and x.).

Gibraltar, British Crown colony and fortress, situated on a promontory of rock, in the S. of Spain; the rock is about $\frac{1}{2}$ m. in length and about $\frac{1}{4}$ m. in average breadth, and has a maximum height of over 1,400 ft.; it is connected with the mainland by a spit of sand $\frac{1}{2}$ m. long; the British lines and the Spanish lines, or La Línea, on the mainland, are separated by a neutral zone. The town of Gibraltar lies at the NW. corner of the Rock, and is a trade entrepôt for N. Africa; the Rock is hollowed into tunnels and galleries, and comprises a network of heavy batteries. Gibraltar was annexed to Great Britain by Admiral Sir George Rooke in 1704, and successfully withstood many attempts to recover it. Apart from its enormous strategic value, commanding as it does the entrance to the Mediterranean, it is an important coaling-station and naval base. Pop. 21,000 (including naval and military).

Gibson, Charles Dana, American artist, born at Roxbury, Massachusetts. As a black-and-white artist became famous for his drawings of "the Gibson girl," a type of American womanhood; later turned to oils and has been successful in portraiture; has illustrated the *Prisoner of Zenda* and published books of drawings. (1867-).

Gibson, John, English sculptor, born at Gylfin, near Conway, Wales, of humble parentage; after serving an apprenticeship to a cabinet-maker in Liverpool, he took to carving in wood and stone, becoming a pupil of Canova and afterwards of Thorwaldsen in Rome; and of his best work mention may be made of "Theseus and the Robber," "Amazon thrown from her horse," and statues of George Stephenson, Peel and Queen Victoria. (1790-1866).

Gide, André, French novelist and critic, born in Paris. First publication, *Les Cahiers d'André Walter*, 1891. Other works include: *Les Nourritures Terrestres*, 1897; *L'immoraliste*, 1902; *Si le Grain ne Meurt*, 1924. Once conducted the *Nouvelle Revue Française*. (1869-).

Gidea Park, district of Essex; it lies between Hare Street, and forms a garden suburb of Romford, from which it is about a mile distant.

Gideon, one of the most eminent of the Judges of Israel, famous for his defeat of the Midianites at Gilboa, and the peace of 40 years' duration which it ensured to the people under his rule. (Judges vi. to xii.).

Gielgud, John, British actor-producer, born in London; son of Frank Gielgud and his wife Kate Terry Lewis; educated at Westminster, Lady Benson's School and Royal Academy of Dramatic Art, Old Vic, 1921. His production of *Hamlet* at the New Theatre, 1934, if in the title-role, ran to 155

performances. He has had numerous other personal successes, an outstanding one being as Richard II. in *Richard of Bordeaux*, 1933. (1904-).

Giesen, town of Germany, the capital of the province of Upper Hesse. Situated at the confluence of the Wieseck and the Lahn, 40 m. N. of Frankfurt-on-the-Main, it has a number of old buildings and a university, founded in 1607. There are foundries and engineering-shops and manufacturing of rubber, leather, tobacco and beer. Pop. 36,000.

Gifford, William, an English man of letters, born at Ashburton, Devonshire; left friendless and penniless at an early age by the death of his parents, he first served as a cabin-boy, and subsequently for four years worked as a cobbler's apprentice. Through the generosity of a local doctor, and afterwards of Earl Grosvenor, he obtained a university training at Oxford, where in 1792 he graduated. A period of travel on the Continent was followed in 1791 by his celebrated satire the *Baviad*, and in two years later by the *Mariad*. His editorship of the *Anti-Jacobin* (1797-1798) procured him favour and office at the hands of the Tories. The work of translation, and the editing of Elizabethan poets, occupied him till 1809, when he became the first editor of the *Quarterly Review*. His writing is vigorous, and marked by strong partisanship, but his bitter attacks on the new literature inaugurated by Wordsworth, Shelley, Keats and others reveal a prejudiced and narrow view of literature. (1757-1826).

Giggleswick, a parish and village in the W. Riding of Yorkshire, 16 miles NW. of Skipton; chiefly known for its celebrated public school, founded in 1512. Pop. 786.

Gijon, seaport of Spain, on the Bay of Biscay, 20 m. NNE. of Oviedo; it has two harbours, protected by moles, and is a favourite bathing-resort; it is an important industrial centre. Pop. 37,000.

Gila Monster, a lizard, found in the S.W. United States,

especially Arizona, about 15 in. long, with thick tail; its colour is dark green, with marked bands of yellow.



GILA MONSTER

Gilbert, Sir Alfred, British sculptor, born in London; studied at South Kensington, Florence and Rome; exhibited at Royal Academy, 1882; R.A., 1892, knighted 1932. His notable works include the statue of Queen Victoria at Winchester, 1888; and the tomb of the Duke of Clarence, Windsor, 1927; also the statue of "Eros" in Piccadilly Circus; as a goldsmith, he produced some outstanding designs. (1854-1934).

Gilbert, Sir Humphrey, English colonist and navigator, born near Dartmouth, Devon, half-brother of Sir Walter Raleigh; served in the army, and in 1569 was made Governor of Munster, Ireland; later, fought in the Netherlands; in 1578 made an unsuccessful voyage in search of the North-West Passage to the Indies; nothing daunted, he repeated the attempt in 1583, and this time annexed Newfoundland and established the first English colony in America, at St. John's; perished in a shipwreck off the Azores, on the return journey. (c. 1530-1583).

Gilbert, Sir John, English artist, born commerce for art; became an A.R.A., 1872, and R.A., 1876; known for his historical and genre pictures in oil and water-colours, and especially for his splendid illustrations in editions of Shakespeare, Cervantes, Scott and other authors. (1817-1897).

Gilbert, Sir William Schwanck, English playwright, born in London; entered the Civil Service, but deserted it for the Bar, being called in 1864; published *The Bab Ballads*, with his own illustrations, 1869; next wrote several successful comedies and dramas, and in 1871 began to collaborate with Sir Arthur Sullivan in the popular series of Savoy operas which includes *The Mikado*, *The Yeomen of the Guard*, *The Gondoliers*, *Iolanthe*, *Trial by Jury*, *H.M.S. Pinafore*, *Patience*, *Ruddigore*, *Princess Ida*, *The Sorcerer*, *Utopia Limited*, etc.; he was knighted in 1907. (1836-1911).



SIR W. S. GILBERT

Gilbert Islands, or Kingsmill Group, a group of coral islands in the Pacific, lying on the equator between 176° and 180° E. long.; they are 16 in number, and together have an area of 166 sq. m.; discovered in 1788, they were declared a British protectorate in 1892, and in 1915 were annexed as part of the Gilbert and Ellice Is. colony; copra and phosphates are the chief products. Pop. 4,200.

Gilead, a region of Transjordan, extending along the E. of the Jordan, at a general level of 2,000 ft. above the sea, the highest point, near Ramoth-Gilead, being 3,597 ft.

Giles, the patron saint of cripples, beggars and lepers whose feast falls on Sept. 1; was himself a cripple due to his refusal to be cured of a wound, that he might learn to mortify the flesh; is reputed to have once had a long interview with St. Louis, without either of them speaking a word. (Lived in the 6th or 7th Century).

Gilgamesh Epic, an old Babylonian epic the fragmentary remains of which were found inscribed on 12 tablets in Assurbanipal's library at Nineveh. It narrates the adventures of Gilgamesh, ruler of Erech and Enkidu, a kind of Caliban, and in some respects the story resembles that of Nimrod.

Gill, a term used in connection with the wine, measurement of spirit and sometimes wine, and denoting 1 pint.

Gill, Eric, British sculptor, born at Chichester Art School; served apprenticeship to an architect. His first sculpture was "Mother and Child," 1910; executed "Stations of the Cross" in Westminster Cathedral, 1913, "Christ Driving the Moneylenders out of the Temple" for Leeds University War Memorial, 1922-1923, and many other highly original designs, including decorations for a number of modern buildings, such as Broadcasting House, London; also notable as a wood-engraver and type-designer. (1882-).

Gillingham, market town of Dorset, England, on the R. Stour. The district has flour-mills and bacon factories, and brewing and brickmaking industries. Pop. 3,300. Also the name of a municipal borough of Kent, including within its boundary Old and New Brompton and a portion of High Street, Chatham; situated on S. bank of R. Medway, it has an interesting old church, and was formerly the site of an archbishop's palace. Pop. 61,000.

Gillray, James, English caricaturist, born in Chelsea; successively a letter-engraver and an actor, he became a caricaturist after studying the works of Hogarth, and from about 1789 onwards produced numerous patriotic caricatures directed

against France, and keenly satirical cartoons ridiculing, in particular, George III. and his court. (1757-1815).

Gin, a spirit distilled from maize, barley, rye or other grain. Its alcoholic content is 40-50 per cent. The characteristic flavour is derived from oil of turpentine or juniper, though manufacturers of different brands have their own secret methods of flavouring.

Ginchy, a village of France 7 m. E. of Albert, which figured in the Battles of the Somme in 1916. A British war memorial to the Guards was erected here in 1928.

Ginger, the rhizome of *Zingiber officinale*, a reed-like perennial plant, native to the warmer regions of Asia, which has been introduced into most of the tropical parts of the world. The rhizome has a pleasant aroma, and is used as a spice, in medicine, and in making wine and sweetmeats.

Ginseng, the root of a plant of the genus *Panax*, a native of Korea and Manchuria. It is valued, particularly by the Chinese, for its medicinal qualities, which are probably more imaginary than real.

Gioberti, Vincenzo, an Italian philosophical and political writer, born at Turin; in 1825 he was appointed to the chair of Theology at Turin, and in 1831 chaplain to the Court of Charles Albert of Sardinia; two years later was exiled on a charge of complicity in the plots of the Young Italy party; in 1847 he returned to Italy, and shortly afterwards became Prime Minister of a short-lived government; his later years were spent in diplomatic work at Paris; in his philosophical writings he reveals Platonic tendencies, while his political ideal was a confederated Italy, with the Pope at the head and the king of Sardinia as military guardian. (1801-1852).

Giolitti, Giovanni, Italian statesman, born at Mondovì; educated at Turin, where he became King's Procurator. After holding various official posts, he became a deputy in 1882; Minister of Finance, 1889-1900; Premier, 1892-1893; suffered impeachment in consequence of Banca Romana scandal, Premier again for several periods up to 1921; neutralist in World War; instrumental in carrying through the treaty of Rapallo (1920); welcomed Fascism, but later turned against it. (1842-1928).

Giordano, Luca, Italian painter, born at Naples, Rome and other places; studied at Naples, Rome and other places; in 1692 he received a commission from Charles II. of Spain to adorn the Escorial; he was famous in his day for marvellous rapidity of workmanship, but this fluency combined with a too slavish adherence to the methods of the great masters has somewhat robbed his work of individuality; his frescoes in the Escorial and others in Florence and Rome are his finest work. (1632-1705).

Giorgione (i.e., Great George), the sobriquet given to Giorgio Barbarelli, one of the early masters of the Venetian school, born near Castelfranco, in the NE. of Italy. At Venice he studied under Giovanni Bellini, and had Titian as a fellow-pupil. His portraits are among the finest of the Italian school, and exhibit a freshness of colour and conception and a firmness of touch unsurpassed in his day. His works deal chiefly with scriptural and pastoral scenes, and include a "Holy Family" in the Louvre, "Virgin and Child" in Venice. (c. 1478-1510).



GINGER PLANT

Giotto, Italian artist, born near Florence; he was a shepherd's boy, and at 10 years of age, while tending his flock and drawing pictures of them, was discovered by Cimabue, who adopted him as his pupil. Among the finest of his existing works, which are practically all religious in character, are frescoes at Assisi, illustrating the life of St. Francis, at St. Peter's in Rome and Santa Croce in Florence, and above all, those in the chapel of the Arena at Padua. While other artists of the time still painted in the old conventional style, Giotto went to Nature for his types, and led the way for a transition in art; in architecture, his masterpiece is the Campanile, or bell-tower, at Florence. (c. 1267-1337).

Gippsland, a district of SE. Victoria, Australia, which took its name from Sir George Gipps, who was governor of New South Wales, 1838-1846. It has an area of 13,900 sq. m., much of which is agricultural; mining is carried on for coal, lead, gold, silver and copper. The district has absorbed large numbers of settlers from the United Kingdom. The chief town is Sale.

Giraffe, an African hoofed mammal, characterised by a long neck, long legs and short body. It has two unbranched horns, covered with soft fur, which, though not the outgrowth of the skull, become joined to the frontal and parietal bones in the adult; these horns are sometimes lacking in the female. In colour the giraffe is usually light fawn with darker spots. An adult specimen may stand nearly 19 ft. in height, and thus it can readily browse upon the leaves of trees, being assisted by the length (18 in.) of its flexible tongue. Giraffes inhabit open country S. of the Sahara, and congregate in herds.



GIRAFFE

Girgenti, a town in Sicily, on the side stood the acropolis of Agrigento, about 58 m. S. of Palermo. Porto Empedocle, its port, has a large trade in sulphur. Pop. 33,000.

Girl Guides, an international organization for girls run on the lines of the Boy Scouts and founded by Sir Robert (afterwards Lord) Baden-Powell in 1910, and incorporated by charter in 1915. The aim of the movement is the development of character culminating in happy citizenship, and it provides girls with the opportunity of undergoing a course of education outside the school on four particular lines, viz., character and intelligence, skill and handicraft, physical health and hygiene, and service for others and fellowship. The movement has three branches; Brownies, for those between eight and eleven years; Girl Guides, for those between eleven and sixteen; and Rangers, for those over sixteen. It has spread over thirty-three countries and has a membership of over 1,300,000.

Gironde, a maritime department of France, facing the Bay of Biscay on the W. and bordering Charente-Inférieure and Landes on the N. and S. respectively; area, 4,140 sq. m.; the Garonne and the Dordogne flow through it, forming the Gironde estuary; sand dunes fringe the coast, interspersed with lagoons and salt marshes. Wheat, rye, maize and oats are grown, as well as some tobacco, but the chief product is wine, which includes such famous vintages as Graves, Médoc and Sauternes. Bordeaux is the capital. Pop. 851,000.

Girondins, or Girondists, a party holding moderate republican opinions in the French Revolution. The leaders of it were from the Gironde district, whence their name; they were in succession members of the Legislative Assembly and of the Convention, and numbered among them such names as Condorcet, Brissot, Roland and Carnot. Overpowered by the Jacobins in June 1793, they were arraigned before the Revolutionary tribunal on Oct. 24, and on the 31st twenty-one of them were guillotined; the remainder, with few exceptions, perished later either in the same way or by suicide.

Girton College, one of the two university colleges for women at Cambridge; founded in 1869 at Hitchin and moved in 1873 to Girton, a village 2½ m. NW. of Cambridge; the students attend all the university lectures and sit for the examinations; they are now allowed to proceed to the B.A. degree under the same conditions as men students.

Girvan, burgh and seaport of S. Ayrshire, 63 m. SW. of Glasgow, on the left bank of the R. Girvan, near its confluence with the Clyde. It has a safe harbour, with a good fishing industry, and is a well-known holiday resort. Pop. 5,300.

Gisborne, a port of New Zealand, situated on Poverty Bay, in Cook county, N. Island. Captain Cook landed near here in 1769. There is a steamer service and a daily motor service between Napier and Gisborne, a distance of 148 m. Pop. 15,900.

Gissing, George Robert, British novelist, born at Wakefield; he published his first book, *Workers in the Dawn*, at the age of 22; tried work as a clerk, emigrated to America, returned to tramp the streets of London, and told of his experiences in *New Grub Street*, 1891; his remaining works include *Thyrza*, *Demos*, *The Whirlpool*, *The Nether World* and *The Private Papers of Henry Ryecroft*. Most of his work is pervaded by gloom and pessimism. (1857-1903).

Givenchy, a village in France, 6 m. from Bethune. Pop. 400. This village and the town of La Bassée, 2 m. to the E., formed an important strategic position throughout the World War. It was heavily bombed by the Germans on Oct. 16, 1914, and the British who were forced to fall back some 1,300 yds., retook it three days later. In 1915 and again in 1918 it was the centre of fierce fighting.

Gizeh, or Giza, a town in Egypt, on the left bank of the Nile, opposite Old Cairo, to which it is joined by a suspension bridge spanning the river, and 3 m. S. of modern Cairo. It has a palace built by the Khedive, while in the neighbourhood are the Pyramids, the Sphinx and the ruins of Memphis. Pop. 27,000.

Glace Bay, town and seaport of Cape Breton Island, Nova Scotia; on the NE. coast, it has a large shipping trade, principally in coal and iron, which are extensively mined in the district. Pop. 20,700.

Glacial Period, the geological epoch preceding that in which we now live; it is also known as the Pleistocene period. During this age, which lasted for many thousands of years, the distribution of temperature over the earth's surface was much different from the present, and the greater part of Northern Europe and N. America, including at any rate most of Britain, experienced Arctic conditions and was covered by an ice-field.

Glacier, a mass of ice and compacted snow, occupying a valley and moving slowly down its bed, being fed by snow at the top and forming streams at the bottom. It has been defined by Prof. J. D.

Forbes as "a viscous body which is urged down slopes of a certain inclination by the mutual pressure of its parts." In the Alps alone there are over 1,000 glaciers. Their influence in moulding the configuration of the earth has been very great.

Gladiator, a professional combatant who fought in the arena at

Rome with men or beasts for the amusement of the people, originally in connection with funeral games, under the belief, it is said, that the spirits of the dead were appeased by the sight of blood. Exhibitions of the kind were common under the emperors, and were generally held on ceremonial occasions. There were various kinds of gladiators, some, for example, fighting with two swords, others on horseback or from chariots; some were armed from head to foot, while others (retiarli) wore only a tunic and were armed with a net and a trident. They were trained under rigorous conditions, in special schools, the ruins of one of which may be seen at Pompeii.



ROMAN
GLADIATOR

Gladiolus, a genus of plants of the family Iridaceae. They grow from corms, have leaves long and sword-shaped—hence the name (Lat. *gladius*, a sword)—and the flowers are borne on one-sided spikes. They are natives of the Mediterranean regions and tropical S. Africa. The *Primulinus* variety is found in the spray of the Victoria Falls on the Zambesi.

Gladstone, Herbert John Gladstone, first Viscount, English politician; the youngest son of W. E. Gladstone, he was educated at Eton and at University College, Oxford; Liberal M.P. for Leeds, 1880-1886, and for West Leeds, 1885-1910; Junior Lord of the Treasury, 1881-1885; Financial Secretary to War Office, 1886; Under-Secretary, Home Office, 1892-1894; First Commissioner of Works, 1894-1895; Home Secretary, 1905-1910. In 1910 he was created a viscount, and was first Governor-General of S. Africa, 1910-1914. (1854-1930).

Gladstone, William Ewart, British statesman, orator and scholar, was born in Liverpool, Dec. 29, 1809; educated at Eton and Oxford; entered Parliament in 1833 as Tory member for Newark; delivered his maiden speech against slavery emancipation; accepted office under Sir Robert Peel in 1834, and again in 1841 and 1845; and as member for Oxford University, separating from the Tory party, took office under Lord Aberdeen; in 1859, under Lord Palmerston, became Chancellor of the Exchequer. Elected for S. Lancashire, 1865, he became leader of the Commons under Lord John Russell; elected for Greenwich, he became Premier (1868-1874). After a brilliant campaign in Midlothian, he was returned for that county in 1880, and was once more Premier, as also in 1886, and again in 1892. He introduced and carried a great number of important measures, but failed from desertion in the Liberal ranks to carry his measure of Home Rule for Ireland, whereupon he retired in 1895; his last days were spent chiefly in literary work. He died at Hawarden, May 19, 1898, and was buried at Westminster Abbey. (1809-1898).



W. E. GLADSTONE

Glaisher, James, meteorologist and founder of the Royal Meteorological Society, born in London. In 1836 after service on the Ordnance Survey in Ireland and at the Cambridge Observatory he went to Greenwich, and from 1840 to 1874 superintended the meteorological department of the Royal Observatory. In connection with atmospheric investigations he made a series of 28 balloon ascents, rising on one occasion to a height of 7 m. the greatest elevation that had then been attained (1869-1903).

Glamis, village of Forfar, Scotland, 6 m. S.W. of the town of Forfar. About 1 m. to the N. is Glamis Castle, seat of the Earls of Strathmore, originally built in the 11th Century, and once the home of Macbeth. Pop. 1,200.

Glamorgan, a maritime county in Bristol Channel, between Monmouth and Carmarthen; amid the hilly country of the N. lie rich coal-fields and ironstone quarries; the southern part—the garden of Wales—is a succession of fertile valleys and wooded slopes; dairy-farming is extensively engaged in, and also various branches of agriculture; the large towns are engaged in the coal trade and in the smelting of iron, copper lead and tin; some interesting Roman remains exist in the county. Area 813 sq. m. Pop. 1,226,000.

Gland, the name given to various structures of epithelial cells, the function of which is the secretion and excretion of substances necessary to the working of the body and the elimination of waste products. There are three classes: the lymph glands, glands with ducts and external secretion (stomach and intestinal glands, salivary glands, sweat and tear glands, liver, pancreas, etc.), and the ductless glands.

Glanders, a contagious disease of horses by the bacillus mallei which enters the blood stream through scratches, by inhalation, or if infected food; and is communicated in discharge from the nostrils. Glanders is compulsorily notifiable and is curable by inoculation with mallein. It is communicable to man. See Farcy.

Glanvill, Ranulf de, Chief-Justiciar of England in the reign of Henry II., born at Stratford, in Suffolk; became sheriff of Yorkshire in 1163, and of Lancashire in 1174, in which year he defeated the Scot at Alnwick; appointed chief-justiciar in 1180 but deposed and imprisoned by Richard I. later joined the Crusades and died at Acre; he wrote the earliest treatise on the laws of England, in 14 books. (d. 1190).

Glarus, a mountainous canton of central Switzerland, between St. Gall, Schwyz, Uri and Grisons; it is mainly pastoral. Its chief town is Glarus. Area 265 sq. m. Pop. 35,700.

Glasgow, city and seaport of Scotland situated on the Clyde, in the counties of Lanark, Renfrew and Dumbarton 47 m. W. of Edinburgh and 465 m. from London. It is in the heart of a rich coal and iron district; spinning and weaving, ship building, foundries, chemical and iron works and all manner of industries flourish. The city is spacious and handsomely laid out after the cathedral, dedicated in 1197, the municipal buildings and the Royal Exchange are among the chief buildings of historical and architectural interest. There are several fine bridges over the Clyde; there is a university (1450) and a variety of other colleges besides several public libraries and schools. Glasgow returns fifteen members to Parliament. At Bellahouston Park, a great Empire Exhibition, covering 160 acres, was held in 1938. Pop. 1,133,000.

Glasnevin, village of Ireland (Eire), in Dublin Co. Dublin, 1½ m. N. of Dublin. It has a cemetery where many celebrated Irishmen are buried, also an agricultural college and botanical garden. Pop. 3,000.

Glass was known to the Egyptians in very remote times, and was probably an Egyptian invention; but the art of blowing glass—as opposed to the older method of moulding it—was probably invented by the Phœnicians in Sidon about the beginning of the Christian era.

Glass is a homogeneous mixture of two or more silicates, the most common of which are the silicates of sodium, calcium, potassium and lead. It has no definite melting-point or crystalline structure; on heating, it gradually becomes softer and more mobile, but there is no sharp change from solidity to fluidity. Ordinary glass is made by melting together sand (silicon dioxide, SiO_2), soda-ash (sodium carbonate, Na_2CO_3) and lime (calcium oxide, CaO) or limestone (calcium carbonate, CaCO_3); a little charcoal is usually added as well, as this gives a better product, and "cullet" or broken glass is also included, to act as a flux. The product after fusion consists of a mixture of sodium silicate and calcium silicate with an excess of silicon dioxide, and is the common soda-glass, such as is used for glazing windows and for making glass tubing.

A harder type of glass is made by using potassium carbonate instead of sodium carbonate, while "crystal glass," from which cut-glass jugs, tumblers, vases, etc., are made, is prepared by melting together sand, red lead, potassium carbonate and cullet. "Pyrex" glass, which expands but little on heating, and therefore shows little tendency to crack when subjected to sudden fluctuations of temperature, contains boric oxide. Glass used for optical purposes frequently contains lead oxide and zinc oxide, or, in Crookes's glass, compounds of the rare element neodymium, which cut off the ultra-violet rays; while bottle-glass is a mixture of the oxides of silicon, sodium, calcium, magnesium and iron.

In making white glass, the best white sand has to be used, and iron must be absent or must be neutralised, or the glass will be greenish. Coloured glass is made by adding to the main materials, before fusion, small quantities of other substances. "Safety" glass, in its simplest form, has wire-mesh of various kinds embedded in it, the effect of which is to prevent the glass from shattering on being broken. Laminated safety glass such as that known as "Triplex," is composed of a sheet of hardened glass cemented with collodion to either side of a sheet of cellulose acetate, which holds the fragments together on impact, instead of allowing them to scatter; it is used chiefly for motor-car windows and windcreens.

Glasswort, the popular name for seashore plants (order Chenopodiaceae) widespread in S. Europe and N. Africa; there are two British species, *S. herbacea* (crab-grass) and *S. radicans*. Soda can be obtained from glasswort by burning, and formerly was often obtained in this way for the manufacture of glass and soap.

Glastonbury, market town of Somersetshire, England, situated 35 m. S. of Bristol on the R. Arne. It has several interesting old churches and other buildings, as well as a



GLASSWORT

R.C. missionary college and a museum of local antiquities. Especially notable are the remains of the ancient abbey founded by Henry II. upon the site of an earlier church which had been built, according to legend, by Joseph of Arimathea. Glastonbury is the "Avalon" of the legend of King Arthur, who was supposed to have been interred here. A large Celtic lake-dwelling was uncovered near by in 1928. Pop. 4,500.

Glauber's Salt, a crystalline salt Rudolf Glauber (1604–1688), a German chemist by whom it was first described. It consists of decahydrated sodium sulphate, and occurs in the mineral waters of Carlsbad, Cheltenham and elsewhere. As a safe and gentle aperient, it should be taken before breakfast—1 oz. in a glass of water.

Glaucoma, a disorder of the eye, often resulting in blindness, caused by increased pressure of the fluid within the eye. It is most common in elderly persons, and begins with neuralgic pains in the eye and side of the head, with impairment of vision. It is curable by an operation.

Glazounov, Alexander Constantino-vich, Russian musical composer, born at St. Petersburg (Leningrad); studied under Rimsky-Korsakov, and early began to compose symphonic and chamber music, his first symphony being performed at Weimar in 1884; conducted his own works in London in 1897, and in 1900 was appointed professor at the St. Petersburg conservatoire, of which he became director in 1906. A number of symphonies (especially No. 6), a violin concerto, the ballet *Raymonda*, the orchestral suite *The Seasons* and the symphonic poem *Stenka Razin* are among his best-known works. (1865–1936).

Glebe Land, land belonging to a parish church, forming part of an original endowment of the church. In early times endowments generally took the form of land, and a parson may profit from the glebe land within his parish, either by farming it himself or by renting it to a farmer.

Glenalmond, a picturesque valley of the Almond R. in Perthshire, Scotland. In it stands Trinity College, an Episcopalian school modelled on the English public school system.

Glencoe, a wild and desolate glen in the N. of Argyllshire, Scotland, running 10 m. towards the E. from Ballachulish. It is shut in by two lofty and rugged mountain ranges, while the Coe flows through the valley and enhances its lonely grandeur. There is a motor road through the glen, which is celebrated as the scene of the treacherous slaughter of the Macdonalds in Feb. 1692, in consequence of the belated submission of their chief to William and Mary, after the Revolution. The perpetrators of the deed were soldiers led by Campbell, hereditary enemy of the Macdonalds.

Glencoe, village of Natal, S. Africa, 243 m. N. of Durban, the scene of the earliest operations of the S. African War, 1899.

Glendalough, mountain valley of Wicklow, Ireland (Eire) in Co. Wicklow. Through it flows the R. Gleneale, forming two lakes. Here are St. Kevin's hermitage, the ancient ruins of the "Seven Churches," a round tower and a cross—remains of a former settlement.

Glendower, Owen, Welsh chief and patriot, claiming descent from the old Welsh princes; in 1400 he stirred up a rebellion against the English under Henry IV. and defeated them repeatedly; league with the Percies of Northumberland and with the Earl of Mortimer for an invasion

of England, but Glendower and Percy were separately defeated at Carmarthen and Shrewsbury respectively by Henry in 1403; continued the rebellion with French aid, but with less and less success. (c. 1359-1415).

Gleneagles, a beautiful glen of S. Perthshire, Scotland, 11 m. S. of Crieff, through which flows the Ruthven. Agricola is thought to have passed along it when marching on Ardoch. There are excellent golf links.

Glenfinnan, hamlet and glen of Inverness-shire, Scotland, on Loch Shiel, 18 m. W. of Fort William. A tower marks the spot where the Young Pretender raised his standard in 1745.

Glenariff, village and beauty spot of Ireland (Eire) in Co. Cork, 8 m. NW. of Bantry. It stands at the head of Glenariff Harbour, a beautiful, island-studded arm of Bantry Bay.

Glenarroy, valley of the Garry in Inverness-shire, Scotland, a picturesque wooded vale. It was the property of the Macdonells, and gives its name to the Highland bonnet or cap.

Glenlivet, a valley in Banffshire, Water runs, about 20 m. SW. of Huntly; famed for its whisky.

Glenmore, or Great Glen, a great Inverness-shire, Scotland, which cuts right across the country from Moray Firth to Loch Linne. It contains the Caledonian Canal and Lochs Ness, Lochy and others.

Glenroy, a narrow glen 14 m. long, Inverness-shire, Scotland. The Roy flows through the valley, the steep sides of which are remarkable for three regular and distinctly formed shelves or terraces running parallel almost the entire distance of the glen, the heights on either side exactly corresponding—probably the margins of a former loch which gradually sank as the barrier of glacial ice damming up the waters slowly melted.

Gliding, the art of navigating an aeroplane unprovided with propeller or engine, by means of ascending currents of air. In early days contrivances to imitate the flight of birds played some part in the development of human flight, but the progress of motor aviation eclipsed gliding. In late years, however, gliding by means of sail-planes has become popular both as a sport and for the study of air conditions, while several modifications in motor-aeroplane design are due to the knowledge gained by this means.

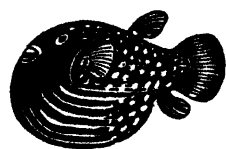
Gliding is far more than a slow descent from a high taking-off ground. Soaring flights are possible if the pilot takes advantage of ascending currents of air. These are caused either by deflection of the wind over hills, high buildings, forests, etc., or by the expansion of air warmed by the sun; moreover, it is found that upward currents of air increase in speed and strength as they approach cumulus clouds. Soaring flights are possible even without wind, and return flights without landing have been made. In Great Britain gliding is subsidised by a Government grant.

Glinka, Mikhail Ivanovich, Russian composer, born at Smolensk; entered the civil service in 1824, but in 1830 removed to Italy to study music, completing his studies at Berlin. His celebrated historical opera *A Life for the Tsar* was produced at St. Petersburg, 1836, and was followed by *Ruslan and Lyudmila*, based on Pushkin's poem, in 1849. In these, his principal works, Glinka emancipated Russian music from slavish imitation of Western models and laid the foundation of a truly national opera. (1803-1857).

Globe Fish,

Plectognathi. The teeth are united forming a sharp plate on each side of the jaw which resembles a parrot's beak. When alarmed, the Globe Fish inflates itself with air or water and the spines covering the skin stand erect.

or Puffer, a tropical marine fish of the order



GLOBE FISH
(INFLATED)

Globe Flower, or Golden Ball, popular names for the genus *Trollius*, perennial, erect plants of the order Ranunculaceae, with 9 or 10 species. The commonest British species is *T. europæus* with pale yellow globular flowers.

Globes, spherical maps, representing either the heavens or the earth. They are usually made to rotate on an axis, and are often encircled with a graduated meridian. Celestial globes were probably made before those representing the earth. Archimedes is believed to have made a planetarium about 212 B.C., and a celestial globe is said to have been brought from Egypt to Greece in 368 B.C. Metal celestial globes were also made by the Arabs. The oldest existing terrestrial globe is probably one made at Nuremberg in 1492. In the 16th Century globes were made showing the discoveries of Columbus and Magellan's route round the world. The earliest English globes were those made by Molyneux at Lambeth at the end of the 16th Century.

Globe Theatre, a playhouse built in 1599 on Bankside, Southwark, where several of Shakespeare's plays were first produced; it was burnt down during a performance of *Henry VIII.* in 1613.

Globigerina, a marine species of *Foraminifera*. At the bottom of the sea a thick mud formed of the shells of dead globigerina is called the "globigerina-ooze," which eventually contributes to the formation of chalk and other rocks.

Globular Clusters, dense groups of stars at great distances; 63 are known and each contains several thousand stars. These groups are believed to be outside our galaxy and to form isolated stellar systems comparable to ours. The best known cluster is that in the constellation Hercules.

Globularia, a genus (order Selaginaceae) of perennial herbs, shrubs, and sub-shrubs; cultivated for rock-gardens; the flowers are blue or white, and globular.

Glogau, a town of Silesia, Prussia, on the Oder, 35 m. NW. of Liegnitz; a place of considerable historic interest, it has an ancient Gothic castle and a cathedral, the latter built upon an island in the river; there are manufactures of machinery, tobacco, starch, sugar and chemicals, and a trade in wine and books. Pop. 28,000.

Glommen, or Stor-Elv (i.e., Great River), the largest river in Norway; has its source in Lake Aursund, and, after a southward course of 350 m., broken by many falls, and for the most part unnavigable, discharges into the Skagerrak at Fredrikstad. Timber is floated down the stream.

Gloss, an explanation of an unusual word in the margin or between the lines of a text. In the copying of manuscripts glosses were frequently included in the text by mistake, or the text may have been corrupted by the substitution of the gloss word for the less-known word in the text. The Alexandrian period of Greek

literature (4th Century), when the creative impetus was largely spent, was devoted to the work of commentators and "glossatores." Glossaria or collections of glosses, had been produced in preceding ages. The study of the Scriptures also led to the compilation of glosses, the most famous being Walafrid Strabo's *Glossa Ordinaria* (9th Century) and the *Glossa Interlinearia* by Anselm, Dean of Laon (11th Century). Among glossaries of later and modern literature mention should be made of Du Cange's glossary of Middle and Late Latin (1733-1776), Tyrwhitt's glossary to Chaucer (1776) and Nares's to Shakespeare.

Glossitis, inflammation of the tongue being digestive disturbances, alcoholism and excessive tobacco-smoking. Long-standing glossitis may result in the tongue being covered with hard patches separated by fissures. Treatment consists of removal of the irritant cause and the use of bland antiseptic mouth-washes, such as borax and glycerine.

Glossop, municipal borough and market town of Derbyshire, England, in the Peak District, 13 m. SE. of Manchester; it has cotton-mills and coal-mines. Glossop Hall, a castellated mansion, is near by. Pop. 20,000.

Gloucester, county town of Gloucestershire, England, standing on the Severn, 38 m. NE. of Bristol. It is a handsomely laid-out town, the main lines of its ground-plan testifying to its Roman origin. Conspicuous among several interesting old buildings is the cathedral, begun in 1072. The river, here tidal, is spanned by two stone bridges; by means of the Berkeley Ship Canal, the town communicates with Sharpness Docks on the Severn estuary. There are manufactures of machinery, flour, ropes, chemicals and matches. Pop. 53,000.

Gloucester, city and seaport of Massachusetts, U.S.A., 30 m. NE. of Boston, with which it has rail and steamer communication. It is a favourite holiday resort, and has a fine harbour and an important fishing industry. Granite is quarried, and there are manufactures of glue and other fish products, and of shoes, cigars and machinery. Pop. 24,000.

Gloucester, Gilbert de Clare, Earl of, Hampshire, England; married a niece of Henry III. and threw in his lot with Simon de Montfort and the barons; fought at the Battle of Lewes, 1264, and took the King prisoner, but later joined the royal party and fought against de Montfort at Evesham, 1265; took up the cause of the disinherited barons and captured London from the royalists, 1267; was again reconciled with Henry, joined the Crusades and spent the rest of his life in warfare and contention. (1243-1295).

Gloucester, Henry William Frederick, Albert, Duke of, third son of George V.; born March 31, 1900; educated at Eton; adopted the Army as a career, and entered the King's Royal Rifle Corps, 1919, but later changed to the cavalry; married, Nov. 6, 1935, Lady Alice Scott, daughter of the seventh Duke of Buccleuch; promoted Major-General, 1937, and left the army to assist King George VI.; known as Prince Henry until 1938, when he was created a Duke.

Gloucester, Humphrey, Duke of, fourth son of Henry IV.; fought in the French wars, being wounded at Agincourt; deputed for Bedford as regent, 1420, and again in 1422; claimed the regency upon the death of Henry V., but received only the lesser position of protector; quarrelled with the Council and nearly provoked civil war, 1425; invaded Flanders, 1436; lost his influence over Henry VI. upon the conviction

of his wife, formerly Eleanor Cobham, for witchcraft, 1441, and at the instigation of Suffolk, was arrested, Feb. 1447, and died four days later. He was a munificent patron of literature and the Church. (1391-1447).

Gloucester, Thomas of Woodstock, Edward III.; married Eleanor de Bohun, daughter of the Earl of Hereford, and in 1376 became Constable of England; fought successfully against the French and Spanish; suppressed a peasant rising, 1381; opposed the royal advisers, especially the Earl of Suffolk, whom he helped to condemn (1386), and became virtual ruler of England; sought to depose Richard II., but was arrested and executed at Calais. (1355-1397).

Gloucestershire, a West Midland England, which extends from the border of Warwickshire, roughly in the centre of the country, SW. to the estuary of the Severn. It presents three natural and well-defined districts: the Hill, formed by the Cotswold Hills in the E.; the Vale, through which the Severn runs, in the centre; and the Forest of Dean in the W., where there are two large coal-fields. Agricultural and dairy-farming are the main industries. The principal rivers are the Wye, Severn, Lower and Upper Avon, and Thames. Bristol is the largest town. Area 1,343 sq. m. Pop. 786,000.

Glow-worm (*Lampyris noctiluca*), a coleopterous insect, related to the firefly. The female is wingless and emits a greenish-white light from the hinder part of the abdomen. The luminous cells of the winged male are less highly developed.

Gloxinia, a genus of bulbous plants of which there are six species, all natives of tropical America. The plants stand about 1 ft. high, bear rosettes of broad, downy leaves and handsome, trumpet-shaped flowers of a variety of colours. They are very popular in England in warm greenhouses, many cultivated varieties having been derived from the *Gloxinia speciosa*. They can be grown from seeds or from tubers.

Gluck, Christoph Willibald, German musical composer and reformer of the opera; born near Neumarkt, in the Palatinate; studied at Prague, removed to Vienna in 1736, and later studied under G. B. San Martini at Milan; first opera *Artaserse*, 1741, followed by several others in the conventional Italian style. Invited to London (1745), he studied Handel, attained a loftier ideal, and returned to the Continent, where, at Vienna in 1762, he produced *Orfeo ed Euridice*, in which first appeared those revolutionary ideas which may be said to have created the modern opera as an art-form. It was followed by *Alceste*, 1766, and *Iphigenie en Aulide*, Paris, 1774. In Paris, Gluck had a rival in Piccini, but the public opinion was for a time divided, but his last opera *Iphigenie en Tauride*, 1779, established his superiority. (1714-1787).

Glucose, otherwise known as dextrose or grape-sugar, is a sugar of the chemical formula $C_6H_{12}O_6$. It occurs in the juice of grapes and other sweet fruits, and can be made artificially from starch and from sucrose (cane or beet sugar). It is less sweet but more easily digestible than sucrose, and is often administered in cases of debility or exhaustion. Glucose is present in normal human arterial blood to the extent of about 0.1 per cent.; in cases of diabetes mellitus this proportion is greatly exceeded and glucose then is excreted heavily.

Glucosides, a group of organic compounds, many vegetable tissues. By hydrolysis they are resolved into a sugar (glucose) and another

simpler non-saccharine compound. The hydrolysis is effected by the action of enzymes, dilute acids, alkalis or bacteria.

Glue, a preparation of crude gelatin with adhesive properties, obtained from bones, animal skins, hoofs, fish skins, etc. The skins, cleaned and treated with milk of lime, are washed in running water, slightly acid, and then boiled. The glue liquor thus obtained is heated until concentrated, and then dried in slabs.

Gluten, a protein of wheat, consisting of gliadin and glutenin; obtained by kneading wheat-flour under a flow of water which washes away the starch and other soluble matter. Gluten forms a sticky dough and is used to make starch-free bread for diabetics.

Glutton, a name given to the powerful, heavily-built, bear-like, wolf-like (*Gulo luscus*) of Arctic N. America. It is a burrowing mammal of the family Mustelidae (the Weasel family), related to the badger, has a bushy tail and is prized for its fur.



GLUTTON

Glycerine,

or **Glycerol**, a colourless, syrupy liquid (formula $C_3H_7(OH)_3$) with a sweet taste, miscible with water or alcohol in all proportions; it was discovered by C. Scheele in 1779. It boils, with slight decomposition, at $290^\circ C.$, and can be frozen to a white, crystalline solid which melts at $17^\circ C.$ Glycerine enters into the composition of animal and plant fats and oils, which are the glyceryl esters of organic acids such as stearic acid, palmitic acid and oleic acid. It is obtained as a by-product in the manufacture of soap, being left in the "sweet water" or "spent lye" from which the soap has been removed. The "sweet water" is purified by chemical means, decolorised by filtration through animal charcoal, and evaporated, when the glycerine remains.

Glycerine is used medicinally, as an ingredient of bacteriophage and other lins, and for many other industrial purposes; mixed with water, it is used in motor-car radiators to prevent freezing in cold weather, the solution having a low freezing-point; it plays an important part in the manufacture of nitro-glycerine, which is an oily liquid formed by the action of a mixture of nitric and sulphuric acids upon glycerine. Dynamite is made by absorbing nitro-glycerine in kieselguhr.

Glycogen, the form in which the body stores carbohydrates (starch), principally in the liver, which converts glycogen into glucose (blood-sugar), releasing it as required into the blood. It is also stored in the muscles, and during exercise it is broken down and released into the blood as lactic acid.

Glycosuria, a condition, common in nearly an indication of that disease, in which the concentration of blood-sugar in the blood is abnormally high and is passed into the urine.

Glyptodon, a genus of extinct of mammals known as edentate, and closely related to the living armadillos, but distinguished by the possession of a thick, bony shield or carapace composed of polygonal plates fused together in one piece. The name means "sculptured tooth" and indicates the deep flutes of the teeth. The shield of the back reached a size of 11 ft. 6 in. long and

nearly 8 ft. broad. Its fossil remains, of the Pleistocene age, are found in N. and S. America.

Gnat, the name given to various small species of flies which form the family Culicidae, of the dipterous (two-winged) order of insects. They are characterised by a minute hairy fringe on the wings; the adult females bite and suck blood; the larvae are aquatic. The larger species are known as mosquitoes.

Gneiss, an altered form of igneous or sedimentary rocks in which the minerals are separated into bands or "foliated"; it occurs abundantly amongst all ancient rocks, and in some cases is hardly distinguishable from granite.

Gnomes, a race of imaginary beings, mis-shapen in form, of diminutive size and usually with long beards, who are supposed to guard jealously the precious metals and other hidden treasure within the earth.

Gnostics, followers of a religious movement at the beginning of the 2nd Century. They sought to extract an esoteric meaning out of the letter of Scripture and the facts of the Gospel history. They set a higher value on Knowledge than Faith, and thus their understanding of Christianity was speculative, not spiritual, and their knowledge of it the result of thinking, not of experience. Like the Jews, they denied the possibility of the Word becoming flesh.

Gnu, the black wildebeest (*Connochaetes* resembling an ox; black in colour, with tall and neck like those of a horse, it has long horns, curving forwards and upwards. The fine wildebeest, or brindled gnu (*Gorgonotaurus*), of Bechuanaland, is larger and grey in colour; the neck is striped, the tail black, while the horns spread sideways like those of a buffalo.

GNU
(BLACK WILDEBEEST)

Goa, a Portuguese possession on the W. coast of India, lying between the Western Ghats and the sea-coast, 250 m. S.E. of Bombay; area 1,300 sq. m.; is hilly on the E. and covered with forests. Large quantities of rice are grown, as well as coconuts, betel nuts and fruit. Iron, manganese and salt are among the minerals. The settlement was captured in 1510 by Albuquerque. Pop. 308,000. Old Goa, the former capital, has fallen from a populous and wealthy city into utter decay, its place being taken by Nova Goa, or Panjim (pop. 7,400), on the Mandavi, 3 m. from the coast.

Goat, a ruminant mammal of the Bovidae family, forming with the ibex, markhor and others the genus *Capra*, allied to sheep. The horns are hollow and generally curved backwards; they are ridged in the male, smoother and smaller in the female. The male is bearded and at rutting time emits a characteristic odour.

Various species occur wild in the mountains of S. Europe, N.E. Africa, Asia Minor, Persia, and the Central Asian uplands. The wild-goat or Pashu (*C. caprus*), from which the common domesticated goat is descended, is native to Asia Minor and other parts of the East; its horns are scimitar-shaped. The Caucasian ture and the Himalayan and Arabian tahr, and the chamois, are closely allied species. The Angora and the "Shawl,"

or Cashmere, goats are valuable for their fine, silky hair.

Goathland, a picturesque moorland village of Yorkshire, England, in the N. Riding, 8 m. SW. of Whitby. Pop. 700.

Goat-moth (*Cossus ligniperda*), a large moth of Europe and Asia Minor; its fore-wings (span 2-3 ins.) are greyish-brown, marked with black streaks; hind-wings brown. Its eggs are deposited in the bark of oak and willow, and the caterpillar eats into the wood where its chrysalis stage is passed.

Goatsucker, a popular name for the birds (the Caprimulgidae) of widespread distribution, comprising about 80 species. The name Goatsucker came from the popular belief that the birds suck the milk from goats.

Gobelins, Gilles and Jean, brothers, celebrated dyers, who in the 15th Century introduced into France the art of dyeing in scarlet, subsequently adding tapestry-weaving to their activities. Their works in Paris were taken over by the government in Louis XIV.'s reign, and the beautiful tapestry that was produced became known as Gobelins. The works are still in operation, and a second State establishment for the manufacture of Gobelins exists at Beauvais.

Gobi Desert, a vast desert tract of Central Asia, extending from the Pamirs to the Khyngan range and occupying chiefly the regions of Sin-Kiang and Outer Mongolia. From E. to W. it is about 1,500 m. in length, with an average breadth of 400 m. and an area of roughly 30,000 sq. m. Large stretches, especially the Ala-Shan region, are entirely waterless, while the remainder supports thorns and scrub, which suffice to sustain the flocks and herds of Mongolian nomads. The desert is crossed by a number of ancient caravan tracks; Marco Polo traversed it in the 13th Century, while a more recent explorer of this region was Sven Hedin.

Goby, a family of carnivorous fish of the blenny, sub-order Gobioidae, allied to the pelvic fins form a cup-shaped sucker, by means of which the goby can attach itself to objects. Gobies are inshore fish, and are found in most tropical and temperate seas, and also in estuaries; in length they vary from $\frac{1}{2}$ in.—in the case of one species inhabiting a lake in the Philippine Is., and ranking as one of the smallest of all vertebrates—to 3 ft. Several species, including the Mud-skipper, are found in British waters.



GOBY

God, a conception universal among mankind, of an ideal explanation of the moving force of existence. Among primitive people, God was a deification of natural phenomena, and this tendency towards anthropomorphism resulted in a hierarchy of gods, identified not only with the forces of nature, but also with various human activities. Later philosophic thought tended to simplify and unify these many aspects of God into one self-sufficient, self-explanatory, necessary prime cause and mover, whether regarded in a material or spiritual form. In Christianity there is a further aspect of God as absolute love, revealed in the person of Christ as perfect humanity as well as perfect divinity.

Godalming, a municipal borough and picturesque old town of Surrey, England, on the R. Wey, 4 m. SW. of Guildford. Here is the Charterhouse School, which until 1872 was in London. Paper, leather and harness are made, and stone is quarried near by. Pop. 10,400.

Godavari, an important river of India, which rises on the E. side of the Western Ghats, traverses the Deccan in a SE. direction, and, forming a large delta, falls into the Bay of Bengal by seven mouths after a course of 900 m. Its mighty volume of water supplies irrigating and navigable canals for the whole Deccan. It is one of the 12 sacred rivers of India, and once in 12 years a bathing festival is celebrated on its banks.

Godavari, district of India, on the NE. coast of Madras Presidency. It has an area of 2,500 sq. m., and is watered by the R. Godavari and its affluents. The main products are agricultural and include rice, oil-seeds, tobacco and sugar; timber and graphite are also exported. The capital is Cocanada, on the coast. Pop. 1,470,000.

Godetia, a genus of plants sometimes Primrose, which it resembles, in the genus *Oenothera*, of the order Onagraceae. It comprises some 25 species, native to the west of America, but popular in England as hardy annuals out-of-doors and in cool greenhouses.

Godfrey of Bouillon, a renowned son of Eustace II., Count of Boulogne; he served with distinction under the Emperor Henry IV., being present at the storming of Rome in 1084; a leader of the first Crusade, 1096; took a prominent part in the capture of Jerusalem in 1099, and was proclaimed ruler of that city; defeated the Egyptians at Ascalon later in same year; after his death he became the popular ideal of a Christian knight and the hero of many tales and legends. (c. 1060-1100).

Godiva, Lady, wife of Leofric, Earl of Coventry, who, according to a legend first quoted by the monastic chronicler Roger of Wendover (d. 1236), pleaded in vain with her husband to relieve the people of Coventry from heavy taxes, till one day he promised to grant her request if she would ride through Coventry naked. This she did, not one soul of the place peering through a window at her save Peeping Tom, who paid for his curiosity by being smitten with blindness. (1040-1080).

Godmanchester, a municipal borough and market town of Huntingdonshire, England, on the Ouse, 1 m. SE. of Huntingdon. An ancient town with agricultural interests, it stands on a Roman site. Pop. 2,000.

Godolphin, Sydney Godolphin, Earl of, English statesman, born near Helston, Cornwall; in 1662 became a royal page in the Court of Charles II., in 1668 entered Parliament and in 1678 was engaged on a political mission in Holland; in the following year he was appointed First Lord of the Treasury, of which five years later, he became First Commissioner, being at the same time made a baron; under James II. was again at the head of the Treasury, and at the Revolution supported James until his flight, when he voted in favour of a regency; on the elevation of William to the throne was reinstated at the Treasury, where he continued until 1696, when the Whig ascendancy brought about his dismissal; for six months in 1700 he once more assumed his former post; under Anne was made Lord High Treasurer (1702) and created earl in 1706; on the fall from power of his political allies, the Marlboroughs, he was dismissed (1710). (1645-1718).

Godoy, Manuel de, Spanish statesman, born at Badajoz; while serving in the royal guards he became the favourite of the wife of the future King Charles IV., and after that Prince came to the throne he rapidly attained influence and position; was made Duke of Alcudia and in 1798 Minister of State; played a conspicuous part in the

affairs of Spain during the French Revolution and the Empire; received the title of Prince of the Peace for a treaty he concluded with France in 1796, in opposition to the general wish of the nation; forced to flee from Spain in 1808, and died in exile. (1767-1851).

Godunov, Boris Fedorovich, Czar of Russia (1598-1605), was brother-in-law and one of the guardians of Fedor I.; in 1593 he became sole regent, with absolute power, and in this capacity he strengthened the empire, defeated the Crimean Tartars, re-colonised Siberia, and bound the serfs to the soil by depriving them of the right of transfer; in 1598, on the death of Fedor, he was elected Czar; the young Czarovich Dmitri had died suddenly in 1591, and it has often been supposed that Boris brought about his death in order to remove the lawful heir to the throne. (1552-1605).

Godwin, Earl of the West Saxons, a father of Harold II.; first came into prominence in the reign of Canute; became related to the King by marriage, and was made Earl of Wessex (1020); was instrumental in raising Edward the Confessor to the throne (1043), to whom he gave his daughter Edith in marriage; in 1051 his opposition to the growing Norman influence brought about his banishment and the confiscation of his estates; in 1052 he returned to England and was restored to favour, but shortly afterwards was taken fatally ill at the King's table. (d. 1053).

Godwin, Francis, English ecclesiastic, historian, and author of a book, *The Man in the Moon*, the ultimate source of some of Swift's *Gulliver's Travels*. (1562-1633).

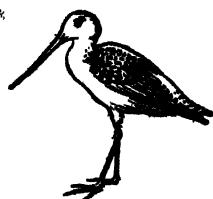
Godwin, Mary Wollstonecraft, English authoress, born in Hoxton of Irish parentage. At 19 she began to support herself by teaching, and continued to do so till 1788, when she established herself in London to make her way as a writer, having already published *Thoughts on the Education of Daughters*. In 1791 she replied to Burke's *Reflections*, and in the following year appeared her famous *Vindication of the Rights of Women*, which was of great and enduring assistance to the cause of feminine emancipation. While in Paris in 1793 she formed a liaison with an American, Captain Imlay, whose desertion of her two years later induced her to attempt suicide by drowning. In 1797 she married William Godwin, the writer; their daughter Mary, born the same year, was Shelley's second wife. (1759-1797).

Godwin, William, English political writer and novelist, born at Wisbech, Cambridgeshire; was educated for the Church, and was for five years in the ministry, but by 1782, when he entered upon a literary career, he had become a republican and a freethinker. Various works had come from his pen, including three novels, before his celebrated *Political Justice* appeared in 1793, *Caleb Williams* a novel, being published in the following year. In 1797 he married Mary Wollstonecraft, who died the same year, and four years later he married a widow, Mrs. Clairmont, whose daughter Clara later became the mistress of Byron. His writings are clear and vigorous in expression, if visionary and impracticable in theory. (1756-1836).

Godwin-Austen, second highest mountain in the Mustagh range of the Himalayas; named after H. H. Godwin-Austen (1834-1923), the mountaineer, it was formerly designated K2.

Godwin-Austen, Robert Alfred Clayne, British geologist, educated at Oxford; a supporter of the fresh-water theory of the origin of the Old Red Sandstone formations. F.R.S., 1849. Mt. Godwin-Austen (q.v.) was named after him. (1808-1884).

Godwit, a long-beaked wading bird of the curlews, sandpipers, etc. The black-tailed godwit was at one time native to the Fen District, England, but breeds there no longer, though it is known as a bird of passage. The bar-tailed godwit, which, as its name denotes, has its tail barred with black and white, breeds in Lapland, but flies south in the winter. The godwits are conspicuous for the seasonal differences in their plumage, which turns from grey and white in winter to bright chestnut-red in summer.



BAR-TAILED GODWIT

Goebbels, Paul Josef, German politician; one of the earliest members of the Nazi party; editor of *Der Angriff*, 1927; director of Nazi propaganda from 1929, and from 1933 Reich Minister of Propaganda. (1897-).

Goeben, a battle-cruiser (displacement 22,640 tons, speed 25.5 knots), built for the German navy in 1912. In 1915, the *Goeben*, together with the light-cruiser *Breslau*, eluded the British Mediterranean fleet under Admiral Troubridge and succeeded in reaching Constantinople. The two ships were sold to Turkey, this being an encouragement to Turkey to enter the war against the Allies. The *Goeben* has been renamed the *Yavuz*, mounting ten 11-in. guns and four torpedo tubes.

Goering, Hermann, German statesman, under the Nazi régime; president of the Reichstag during the World War; one of Hitler's earliest followers and principal colleagues; distinguished himself in the German Air Force during the World War; took part in Hitler's abortive rising in Munich, 1923; President of Reichstag, 1932; in 1933 he became Prime Minister of Prussia and, soon afterwards, Minister for Aviation, and Commander-in-Chief of the Air Force which has been considerably expanded under his direction. In 1934 he assisted Hitler in extinguishing "Left" tendencies in the Nazi movement. In 1935 he married Frau Sonnemann, a leading German actress, who is regarded as typifying the best of German womanhood. (1893-).

Goethe, Johann Wolfgang von, German poet and dramatist, was born at Frankfurt-on-Main, on Aug. 28, 1749; entered the faculty of law at Leipzig in 1765 and five years later that of Strasbourg. Here he entered upon a romantic love affair—by no means the first, as it was far from being the last, in his long life—which inspired some beautiful lyrics, and came under the influence of Herder, who first interested him in old German poetry. This new interest bore fruit in *Gods von Berchtingen* (1771), a romantic drama based on Shakespearean models which set a new fashion for the German stage. The romantic and sentimental *Werther* (1774) established Goethe as a leader of the Romantic movement, and about this time he first became interested in the legend of Faust.

In 1775 he was invited to Weimar by the Prince, and that town thenceforth became his home; he was made Privy Councillor and minister of State, and showed great capacity for political and administrative work. In 1786 he paid his first visit to Italy; this had a deep and refining influence upon his art, which was now directed into the paths of classicism, as was evidenced by the beautiful dramas *Iphigenia in Tauris* (1787), on the Greek model, *Tasso*, breathing the spirit of the Renaissance, and *Egmont*.

There followed the novel *Wilhelm Meister*, which had a profound effect upon European literature, and the village idyll *Hermann and Dorothea* (1796). In 1808 Goethe produced the first part of his masterpiece, *Faust*, the composition of which had occupied him at intervals for 35 years; the second part, elevated to a loftier and more spiritual plane, appeared in 1831. The next year, on March 22, the poet died, and was buried next to Schiller, his close friend since 1794. Goethe was not only the greatest of German poets, but a universal genius. In addition to his vast literary labours, he was constantly engaged in the study of science, making notable discoveries in botany, comparative anatomy and optics. (1749-1832).

Gogol, Nikolai Vasilievich, Russian novelist and dramatist, born in Poltava. In 1839 he started as a writer in St. Petersburg, but met with little success till the appearance of his *Evenings on a Farm near Dikanka* (1831). In 1842 appeared his masterpiece, *Dead Souls*, in which all his powers of pathos, humour and satire are seen at their best. The Cossack epic *Taras Bulba* and other brilliant sketches of Ukrainian life, the pathetic *Cloak*, and the two comic dramas *The Marriage* and the *Inspector General*, a satirical masterpiece of its type, comprise the best of his remaining work; for some time he tried public teaching, being professor of History at St. Petersburg, and from 1836 to 1848 lived chiefly at Rome. (1809-1852).

Goidels, a Celtic tribe which invaded Neolithic Britain, driving the original inhabitants into W. Ireland. Later they were themselves displaced by Brythonic invaders. See *Gael*.

Goitre, an abnormal swelling of the thyroid gland, which in simple goitre is due to a deficiency of iodine in the diet or its absence in the drinking-water; occurs mostly in countries far from the sea. Goitre is also a characteristic of hyperthyroidism, or over-action of the thyroid, the disorder known as *Grave's Disease*.

Golborne, urban district of Lancashire, shire, England, 5 m. SE. of Wigan. Cotton-spinning is carried on, and near by are collieries. Pop. 7,300.

Golcar, urban district of Yorkshire, England, in the W. Riding, 3 m. SW. of Huddersfield; it is a centre for woollen manufacture, and has a mineral spring. Pop. 9,800.

Golconda, a decayed town in Hyderabad, 7 m. W. of the city of Hyderabad, India; famous for its former industry of diamond-cutting; adjoining it are the remains of the ancient city, the former capital of an old kingdom; they include the ruins of huge royal mausoleums; the fort is garrisoned, and is the treasury of the Nizam; it is also a State prison.

Gold, a metallic chemical element belonging to the same group as copper and silver. Symbol, Au; atomic number, 79; atomic weight, 197.2. For the most part, it occurs native as nuggets or grains in rock or alluvial sand, the chief goldfields being in S. Africa (particularly in the Transvaal), Australia, N. America (Klondike, etc.), and Russia; but it is also found in combination with other minerals, while seawater contains about one grain of gold in each 40 tons.

Gold is a heavy metal (its density is 19.3 grammes per c.c., i.e., it is 19.3 times as dense as water) and possesses an attractive yellow colour. It is a good conductor of heat and electricity, and melts at 1,063° C., the liquid metal being of a greenish-blue tint. It is remarkably ductile and malleable, and can be beaten out into leaves less than one one-hundred and fifty-thousandth of an in. in

thickness; such a leaf is translucent and transmits a greenish light.

Gold is very resistant to the atmosphere and to most chemical reagents; it will, however, dissolve in *aqua regia* (a mixture of nitric and hydrochloric acids), in hot selenic or telluric acid, in an aqueous solution of chlorine, or of potassium or sodium cyanide, and in mercury. Since gold is by itself too soft for most practical uses, it is usually alloyed with silver or other metals, the fineness of the alloy being expressed either in carats or in parts per thousand by weight. Pure gold is of 24 carats fineness, while "standard" gold consists of 22 carats of pure gold to 2 carats of alloy. A "bar" of gold weighs 200 oz. troy.

The attempt to make gold from base metals was the age-long goal of alchemy. Such a transmutation was entirely beyond the powers of the alchemists, however, and although modern work on the structure of the atom indicates that the problem is by no means insoluble, it is unlikely to become a commercial proposition, at any rate in the near future. The world production of gold fluctuates, but is in the neighbourhood of 27 million fine oz. annually.

Gold Coast, a British colony on the Gulf of Guinea, W. Africa, with a coastline of 330 m.; from the low and marshy foreshore the country slopes upward and inward to Ashanti, which, together with the Northern Territories and mandated Togoland (formerly German), is attached to it administratively; the total area is 91,800 sq. m., of which 23,500 sq. m. belong to the Gold Coast proper; the climate is very unhealthy; cocoa, copra, manganese, mahogany, kola nuts, palm-oil, rubber and gold dust are exported; Accra is the capital. A deep-water harbour was completed in 1928 at Takoradi. The Portuguese established themselves on the Gold Coast in 1482, but were supplanted by the Dutch in 1642; meanwhile British traders had exploited the region, and after more than two centuries of close rivalry, the Dutch were bought out in 1871. Pop. 3,500,000 (3,000 whites).

Golden Age, the age of happy innocence under the reign of Cronos or Saturn, in which, as fabled, the earth yielded all fulness without toil, and every creature lived at peace with every other; the term is applied to the most flourishing period in the history of a nation.

Golden Bull, an imperial edict, issued by the Emperor Charles IV. in 1356, which determined the law in the matter of the Imperial elections, and provided that only one member of each electoral house should have a vote; so called from the gold case enclosing the Imperial seal (Latin, bulla) attached.

Golden Calf, an idol set up by Aaron in Egypt, during the exodus from Israel, when Moses was absent on Mount Sinai (Exod. xxxii.). Jeroboam, King of Israel set up two golden calves, one in Bethel and the other in Dan, at the extremities of his kingdom, possibly in imitation of the worship of the bull Apis by the Egyptians (1 Kings xii.).

Golden Fleece, the fleece of a ram which Phryxos, after he had sacrificed it to Zeus, gave to Aëtes, King of Colchis, who hung it on a sacred oak, and had it guarded by a monstrous dragon. It was the object of the Argonautic expedition under Jason to recover and bring back the fleece to Greece, an object which they achieved. See *Argonauts*.

Golden Fleece, Order of the, an institution by Philip III., Duke of Burgundy and the Netherlands in 1430, for the protection of the Church.

Golden Gate, channel in California, U.S.A., connecting San Francisco Bay with the Pacific Ocean. It is now crossed by a bridge 6,600 ft. long.

Golden Horn, an opening of the Bosphorus, Turkey, separating the suburbs of Galata and Pera from the rest of Constantinople (Istanbul). It is of great beauty.

Golden Legend, a collection of lives of saints and other tales, such as that of the *Seven Sleepers* and *St. George and the Dragon*, made by Jacques de Voragine (1230-1298), a Dominican and Archbishop of Genoa; Caxton printed a version of it.

Golden Number, the number of the year in a cycle of 19 years; based on Meton's discovery (about 432 B.C.) that the moon is new on the same date every 19 years; used to calculate the date of Easter.

Golden Rod (*Solidago Virgaurea*), a hardy perennial plant, of the order Compositae, and the only British representative of its genus. It grows in clumps and bears spikes of small golden flowers from July to September. It grows easily in any soil, and is propagated by seeds or by division. This and other species of the same genus are grown in shrubberies for ornamental purposes.

Golden Rose, a perfumed cluster of roses on a thorny stem, made of gold and ornamented with gems; blessed by the Pope on the fourth Sunday in Lent, and sent to that individual or community who is deemed during the year to have shown most zeal for the Church.

Golders Green, residential suburb near London, Middlesex, England, between Hampstead and Hendon. Here is the Crematorium for N. London.

Goldfinch (*Carduelis carduelis*), a bird of the Finch (Fringillidae) family, with red forehead, yellow-barred black wings, black head and white ear-coverts, found in Britain, where it is the most beautiful representative of its family.

Goldfish (*Carassius auratus*), a species of carp of the genus *Cyprinus*,

native to Far-Eastern waters. By careful breeding goldfish lose their natural black and brown colour and take on gold, red-gold or silver colouring. They were introduced into England in 1691.



GOLDFISH

Gold-leaf, sheet gold beaten to a thickness of one one-hundred and fifty-thousandth part of an in. or less, used for gilding. It is chiefly used in bookbinding and gilt-lettering. The best gold-leaf is manufactured in Germany, the industry having been carried on there since the 12th century. For many years "English-Gold" was the finest finish for gilt picture frames, mirror-mouldings, etc.

Goldoni, Carlo, the founder of modern Italian comedy, born at Venice; in his youth he studied medicine and subsequently law, but in 1734 appeared as a dramatist with his tragedy *Belshazzar*. In 1736, after a wandering life, he returned to Venice, and, finding his true vocation in comedy-writing, turned out a rapid succession of sparkling character plays after the manner of Molière. In 1761 he went to Paris as manager of the Italian theatre, and became Italian master to Louis XV.'s daughters. His comedies displaced the burlesques and farces then in vogue on the stage in Italy. (1707-1785).

Goldsborough, a small village of Yorkshire, England, in the W. Riding, on the Nidd, 2½ m. S.E. of Knaresborough. It has a fine Elizabethan mansion, the seat of the Earl of Harewood.

Goldschmidt, Madame. See Lind, Jenny.

Goldsmith, Oliver, English author and poet, born at Pallas or Pallasmore, Co. Longford, Ireland; essayed unsuccessfully the Church, the law, and medicine in turn; after some years of poverty and dissipation set out to travel on the Continent without a penny, supporting himself by playing the fute; returned in 1768 and became a hack writer in London and a friend of Dr. Johnson and his circle; published a poem, *The Traveller*, 1764, which brought him immediate fame, followed by *The Vicar of Wakefield*, 1766, one of the most famous of all novels, and the poem, *The Deserted Village*, 1770; the comedy *She Stoops to Conquer*, 1773, was a triumph and still holds the stage; died in debt and poverty, owing to his own extravagance. (1728-1774).

Goldsmiths. The art of ornamental working in gold reached a high degree of skill in very early times, especially among the ancient Egyptians, the Minoans and the Greeks, and has continued to develop without interruption to the present day. In England the Goldsmiths' Company was founded in the 14th Century, in the days when goldsmiths acted also as bankers. In early days each goldsmith had a maker's mark; in the 16th Century the crown became a standard hall-mark.

Gold Stick, a colonel of one of the regiments of Life Guards or Horse Guards, who keeps the password and countersign, attends the King on State occasions, and acts as liaison officer between the King and Army Council. His wand of office is a gold-headed ebony staff. Officers who are eligible hold the office in rotation for a month at a time.

Golf, a game played with long clubs and a small, hard, rubber-cored ball on specially laid-out grass links, in which the player who drives his ball into the greatest number of a succession of "holes" with the fewest strokes is the winner. A "course" consists of 18—or sometimes 9—holes. The game has been played since early times in Scotland, and was introduced into England by James I. The most celebrated golf club in the world is the Royal and Ancient Club at St. Andrews, which was founded in 1754; until 1834 it was known as the St. Andrew's Golf Club, its present title being assumed under the patronage of William IV. Growing rapidly in popularity after about 1850, golf is now played by women as well as men. The open championship was instituted by the Prestwick Golf Club in 1880, and is now played at Prestwick, Muirfield, St. Andrews, Hoylake, Sandwich and Deauville.

Golgotha (i.e., place of a skull), the scene of Christ's crucifixion, identified with a small hill to the N. of Jerusalem.

Goliath, a Philistine giant of Gath, slain by David with pebbles from his sling (1 Sam. xvii.). Elsewhere however we read that he was slain by Elihanan of Bethlehem (2 Sam. xxi.).

Gomersal, village of Yorkshire, Eng. included in the urban district of Spenborough. Woollens are made and there are coal-mines in the vicinity. Pop. 3,800.

Gomorrah, a city on the plain of Sodom, destroyed together with Sodom, by Jehovah with fire and brimstone rained from Heaven as a punishment for the immorality of the inhabitants. (Genesis xix.).

Goncourt, Edmond and Jules de, French novelists, born the former in Nancy, the latter in Paris. Their first real literary venture was a series of historical studies designed to reproduce, with every elaboration of detail, French society in the latter half of the 18th Century. Later they found their true province in the novel, and a series of striking works of fiction was the product of their joint labours. *Les Hommes de Lettres* (1860) was the first of these, and *Madame Gervaisais* (1869) is perhaps their best. Their collaboration was broken in 1870 by the death of Jules, but Edmond afterwards produced, among other novels, *La Fille Elisa* (1878); the *Journal* of the brothers appeared in 1888. The Academy Goncourt was founded at the request of Edmond, as expressed in his will; it annually awards the Prix Goncourt of 5,000 francs to the author of an outstanding work of fiction. (Edmond, 1822-1896; Jules, 1830-1870).

Gondar, town of Abyssinia (Italian East Africa), situated on a basaltic ridge 7,500 ft. high, in the Wogra Mountains, 23 m. N.E. of Lake Tzana; there are ruins of an old castle, churches and mosques, and some of the architecture exhibits European medieval influences. The town was at one time the capital of Abyssinia, and in the mid-eighteenth Century was large and prosperous, but is now very much decayed. Pop. 3,000.

Gondola, a long, narrow boat propelled by a single oar wielded by the gondolier who is stationed in the stern. The prow and stern are pointed and curve upwards out of the water. Gondolas have been used on the Venetian canals since the 11th Century.

Gonorrhea, a venereal disease of the mucous membranes due to the activity of a bacillus called the gonococcus. It is highly contagious, and frequently produces serious after-effects. It is not infrequently contracted by children in the course of birth, affecting especially their eyes, and often leading, unless immediately treated, to blindness.

Gonzaga, the name of a princely family of Mantua, Italy, to which belonged the marquises and dukes who ruled the territory of Mantua from 1328 to 1708; one of the family, Luigi (1568-1591), was canonised as St. Aloysius.

Gonzalvo di Cordova, a renowned Spanish soldier, born at Montilla, near Cordova; he first became prominent in the wars with the Moors of Granada and with Portugal. In 1498 he so distinguished himself in assisting Ferdinand II. of Naples against the French that he became known henceforth as "El Gran Capitán," and was created Duke of San Angelo. His subsequent heroic achievements in Naples which won that kingdom for Spain (1503) were ill-requited, and he died in neglect. (1453-1515).

Good Friday, the Friday before Easter, held sacred by the Church in commemoration of the Crucifixion of Christ. It originated in the annual celebration of the Passover by the Jews, which was adopted at an early date by the Church, though with a Christian significance.

Good Hope, Cape of, or The Cape, promontory of S. Africa, the S. extremity of Table Mountain. It is 1,000 ft. in height, and is distant about 30 m. from Cape Town.

Goodrich, a small village of Herefordshire, England, on the Wye, 3 m. SW. of Ross. It has a ruined castle, a fine example of the Norman border style.

Good Templars, a total abstinence fraternity organised in New York in 1851, which has lodges,

subordinate, district, and grand, all over the world; they exact a pledge of lifelong abstinence from intoxicating drink, and advocate the suppression of drink by statute; there is a juvenile section pledged to abstinence from tobacco, gambling and bad language, as well as drink.

Goodwill, a commercial term, representing the business advantages of an established reputation and a standing connection. When a business is transferred as a "going concern," the goodwill represents an asset in estimating the value of the business, provided the transferee intends to carry on the business on the same lines. The goodwill may be protected by the transferor agreeing not to start another similar business within a certain radius.

Goodwin Sands, a sandbank along the E. coast of Kent, about 5½ m. from the shore, notorious as the scene of innumerable wrecks, but providing a splendid breakwater for the Downs, an anchorage stretching between the Goodwins and the shore. The sands are supposed to be the remnants of an estate which belonged to the Saxon Earl Godwin, and which was swallowed up by the sea in 1099.

Goodwood, Sussex residence of the Dukes of Richmond and Gordon, 3½ m. N.E. of Chichester. On the Downs adjoining the park is the Goodwood racecourse, where horse-races are held annually at the end of July.

Goodyear, Charles, the inventor of vulcanised rubber, born at New Haven, Connecticut. Having failed in business as an iron-founder, he became interested in the hardening of rubber for commercial purposes, and devoted 10 years of his life to the problem, with little result, until accidentally, in 1839, he was led to the discovery of the vulcanising process, which he patented in 1844. The rest of his life was passed in litigation in defence of his invention. (1800-1860).

Goole, urban district and river-port of Yorkshire, England, in the W. Riding, on the Ouse and the Don, 25 m. SW. of Hull. There are large docks, shipbuilding yards, flour mills, engineering and chemical works, etc. Pop. 20,000.

Goose, the name given in common to a large number of birds of the family Anatidae, which also includes the mergansers, swans and ducks, especially to those of the genera *Anser* and *Branta*. Geese are characterized by a beak with a more downward slope than that of a duck. The edges of the beak are corrugated with horny, conical structures, adapted to feeding on vegetation. Geese feed mainly on land. The feet are webbed. There are many species, varying in coloration. The British domestic goose may be descended from the Grey Lag (*Anser ferus*), the only wild goose to nest in this country, a very few pairs only of this species doing so in N. Scotland and the Hebrides. Visitors to Britain in winter are Bean, Pink-footed, White-fronted, Brent (the commonest of our visitors), and Bernacle Geese.

Gooseberry (*Ribes Grossularia*), a shrub of the natural order Saxifragaceae, native to temperate climates of Europe and Asia, including Great Britain, where it is extensively cultivated for its fruit, from which at one time a sauce was made for eating with geese. It is closely related to the red and black currant. It may be propagated by cuttings or layering. The fruit of *Physalis peruviana*, a plant of the order Solanaceae, known as Cape Gooseberry, Strawberry Tomato or Gooseberry Tomato, is also edible.

Goose-step, a military march for maintaining a rigid balance and employed on

ceremonial occasions, especially in the German army. The legs are kept stiff and lifted high off the ground at each step. As the "Roman step," it has been adopted officially in Fascist Italy.

Goossens, Eugene, British composer and conductor. Born in London, of Belgian parentage, he studied music at Bruges, Liverpool and London, and later joined the Queen's Hall Orchestra; conducted the Beecham Opera Company in 1916, and was afterwards associated as conductor with many famous orchestras in England and America; his works include interesting chamber and orchestral music, as well as the operas *Judith* and *Don Juan*. (1893-).

Gopher, a kind of small burrowing rodent, native to N. America, where it does much damage to crops. The pocket gopher of the Mississippi valley is so called on account of its pouched cheeks; the northern pocket gopher occurs W. of the Rockies; the gophers, which are members of the squirrel tribe, make burrows branching and intersecting in all directions. The "striped gopher" is another name for the chipmunk.



POCKET GOPHER

Gopher Turtle, a land turtle (*Gopherus polyphemus*) inhabiting the S. states of N. America, where it sometimes constitutes a nuisance owing to its burrowing propensities.

Gorbals, a suburb of Glasgow, lying S. of the Clyde; until 1846 a separate municipality; it includes Gorbals Cross, a poor and crowded part of the city.

Gordian Knot, a knot by which the pole of the chariot of Gordius, King of Phrygia, and which no one could untie except the man who was destined to be the conqueror of Asia; Alexander the Great, according to legend, cut it with his sword and marched on to conquest.

Gordianus, the name of three Roman Emperors, father, son and grandson. **Marcus Antonius Gordianus**, surnamed Africanus rose to be an edile, consul twice, and subsequently became pro-consul of Africa; on the deposition of the Emperor Maximinus in 238, he was proclaimed emperor, his son (b. A.D. 192) being associated with him; grief at the death of his son, killed in battle, caused him to commit suicide a month later; he was a man of refined and generous nature. (A.D. 159-238). **Marcus Antonius Gordianus** grandson of preceding, was early raised to the dignity of Caesar, and in 238, was proclaimed emperor; his most important achievement was driving back the Persians beyond the Euphrates; he was assassinated in 244 by his own soldiers. (224-244).

Gordius, a boor, the father of Midas King of Phrygia because he happened, in response to the decree of an oracle, to be the first to ride into Gordium during a particular assembly of the people; he rode into the city on a chariot, to which the yoke was attached by the Gordian Knot, and which he dedicated to Zeus.

Gordon, Adam Lindsay, Australian poet, born at Fayal, in the Azores; sent from Oxford in disgrace to Australia, he joined the mounted police, but relinquished the force on inheriting a fortune; published the poems *Sea Spray* and *Shkaroth*, 1867, and three years later, *Bush Ballads and Galloping Rhymes*; died by his own hand. (1858-1870).

Gordon, General Charles George, British soldier, born at Woolwich; entered the Royal Engineers, served in the Crimean War (1854-1856), and afterwards in the Chinese War of 1860, and was instrumental in suppressing the Taiping Rebellion, his exploits in the East earning him the title of "Chinese Gordon"; he was British representative on the international Danube commission during 1871-1873, and next conducted an anti-slavery expedition into Central Africa; in 1877 he was appointed Governor-General of the Sudan and, after valuable services to Egypt, relinquished this post in 1879; in 1884 the British Government resolved to evacuate the Sudan, overrun by the forces of the Mahdi, and he was commissioned to superintend the operation; in February of that year he arrived at Khartoum, which by May was isolated by the Mahdists; before a relief expedition could arrive, Gordon and his companions had fallen. (1833-1885).

Gordon, Lord George, anti-Papal agitator, born in London, son of the Third Duke of Gordon; after some years in the navy, he entered Parliament in 1774, and soon made himself conspicuous by his indiscriminate attacks on both Whigs and Tories; in 1780, as a protest against the Catholic Relief Act, he fomented the anti-Catholic riots in London, in which 450 people were killed or wounded; was tried for high treason, but acquitted; eventually, after endeavouring to escape prosecution for two treasonable pamphlets, was imprisoned in Newgate, where he died, a convert to Judaism. (1751-1793).

Gordon Highlanders, a famous regiment, formed in 1881 by uniting the 92nd Regiment with the 75th. The 92nd had been raised in 1794 by the Marquis of Huntly who later became the Fifth Duke of Gordon (1770-1836) and fought in the Peninsular War and at Waterloo. The 75th had been raised in 1787 by General Sir Ralph Abercromby, and served in India, S. Africa and Egypt.

Gore, Charles, English prelate; educated at Oxford; Vice-principal of the Theological College, Cuddesdon (1880-1883); joined the Oxford Movement and wrote several controversial works; edited *Lux Mundi*, 1890, which aroused much discussion by its modern attitude towards religion; Hampton lecturer, 1891; Bishop successively of Worcester (1902), Birmingham (1905) and Oxford (1911-1919); engaged in much humanitarian work. (1853-1932).

Görgei, Arthur, Hungarian soldier and patriot, born at Toporecz; entered the army in 1837, and on the outbreak of the Revolution in 1848 joined the revolutionists; crushed the Croats at Ozora and repeatedly defeated the Austrians under Windischgrätz; Russian assistance accorded to Austria, however, changed the fortune of war; Kossuth resigned, and Görgei became dictator; but hopeless of success, he immediately surrendered his army to the Russians; in 1851 he published a vindication of his action, and in 1885 was exonerated by his compatriots from the charges of treachery brought against him by Kossuth. (1818-1918).

Gorgons, three sisters, Medusa, Euryale and Stheno, with hissing serpents on their heads instead of hair. Medusa, the only one that was mortal, had the power of turning into stone any one who looked on her. See *Ferussa*.

Gorgonzola, a town of Italy, in the N.E. of the city of Milan. It is famed for its cheese, which is widely exported. Silk also is made. Pop. 5,000.

Gorhambury, seat of the Earls of Berkshire, Verulam, in Hertfordshire, England, 2 m. W. of St. Albans. In the

grounds are the ruins of Francis Bacon's mansion.

Gorilla, the largest of the anthropoid forests of W. Africa. It stands 5 ft. or so in height, with a weight of approximately 30 stone, and is covered with shaggy black hair; its strength is enormous, and it is very ferocious and dangerous when annoyed, being able to charge with amazing speed. Gorillas move about in small family herds, constructing temporary lodgings in the tree-tops or on the ground by trampling the undergrowth; they are mainly vegetable-feeders. The gorilla was first made known by Paul du Chailu in 1861, since when a second type has been discovered, native to high altitudes in the Belgian Congo.



GORILLA

Goring, village of Oxfordshire, England, 9 m. NW. of Reading, an angling and boating centre. It has a Norman church. Here Icknield Street crossed the Thames. Pop. 2,000. Another Goring is in Sussex, in the borough of Worthing.

Gorizia, town of Italy, on the Isonzo, 23 m. NW. of Trieste; its many old buildings include the castle, cathedral and archbishop's palace; until the World War in Austria-Hungary; it was captured by the Italians in 1916, but was lost in 1917 and recovered in 1918. Pop. 47,000.

Gorky, formerly called Nizhni-Novgorod, great city of the U.S.S.R., on the R. Volga at its junction with the Oka; famous for its great trading fairs; produces machinery of all kinds, chemicals, etc.; has a university, founded 1918. Pop. 450,000.

Gorky, Maxim, Russian author, whose real name was Alexei Maximovich Preschkov. He had little schooling, and indulged in various trades, tramping all over Russia; he published his first story in 1892, and soon achieved success by his realistic stories of lower-class life; his powerful drama *In the Depths* caused a sensation in 1903; was imprisoned in 1905 for political activities, and after the revolution acted as propagandist for the Soviet Government. (1868-1936).

Gorleston, seaside resort of Suffolk, England, forming a part of the borough of Great Yarmouth, on the northern side of the Yare.

Gorlitz, a town in Prussian Silesia, 52 m. W. of Liegnitz, on the Netze; it has some fine old churches and other historical buildings, as well as a library and an interesting museum; the neighbourhood is richly forested; the manufactures include textiles, machinery, rolling-stock, leather, tobacco and chemicals. Pop. 94,000.

Gorse, *Furze*, or *Whin*, a spiny shrub of the genus *Ulex*, order Leguminosae. The common Gorse (*U. Europaeus*), a native of heaths and downs, flowers in spring and autumn, bearing bright yellow blossoms.

Gorsedd, a term used in Wales to denote the national assembly and congress of Bards, preliminary to the Eisteddfod. The ceremony is over 1,000 years old.

Gorst, Sir John Eldon, British lawyer and politician, born at Preston; Civil Commissioner, Upper Wai-kato,



GORSE

New Zealand, 1861-1868; barrister, 1865; Conservative M.P. (at intervals), 1865-1906; member of Lord Randolph Churchill's "Fourth Party"; Solicitor-General, 1885; Under-Secretary for India, 1886; Financial Secretary to Treasury, 1891; latterly became a Free-trader and separated from his party. (1835-1916).

Goschen, George Joachim, Viscount, London of German extraction; entered Parliament as a Liberal in 1863; served in office under Lord John Russell and Gladstone, and in 1871 became First Lord of the Admiralty; was opposed to Home Rule, joined the Liberal Unionist party, and in 1886 became Chancellor of the Exchequer; in 1906 he retired and was made a peer, but returned in 1906 as a champion of Free Trade. (1831-1907).

Gosforth, urban district of Northumberland, England, 2 m. N. of Newcastle-on-Tyne. In Gosforth Park race-meetings are held. Pop. 18,000. Also a village of Cumberland, 12 m. SE. of Whitehaven, with a notable Viking cross. Pop. 800.

Goshawk, a European hawk formerly used in falconry. Dark greyish-brown on the back, and underneath white, barred with black, it has a blackish beak and a barred tail; feet and legs are yellow; it is a woodland bird, occasionally visiting the E. coast of England and Scotland during winter.

Goshen, a fertile district along a branch of the Nile, in the eastern part of the delta of Lower Egypt; assigned by Pharaoh to the children of Israel when they came to sojourn in the land.

Gospels, the name by which the four accounts in the New Testament of the character, life and teaching of Christ are designated; the first three gospels—those of Matthew, Mark and Luke—are called "Synoptic," because they are summaries of the chief events in the life of Christ and, on the whole, cover very much the same ground, while the author of the fourth gospel, that of John, follows lines of his own; the former aim mainly at mere narrative, while the object of the latter is dogmatic, as well as, probably, to supply deficiencies in the former; moreover, the interest of John's account centres in the personality and divinity of Christ and that of the others in Christ's gospel.

Gosport, seaport and borough of Hampshire, shire, England, on the W. side of Portsmouth Harbour, opposite Portsmouth, with which it is connected by a railway and floating bridge; its industrial establishments include iron-works, shipyards and the Royal Clarence Victualling Yard; on Haslar Creek is the Royal Naval Hospital. Pop. 38,000.

Goss, Sir John, British organist and composer, born at Fareham; a pupil of Thomas Attwood, who in turn had been taught by Mozart, he became organist of St. Paul's in 1838 and was knighted on his retirement in 1872; wrote some excellent anthems and other church music, and glees. (1800-1880).

Gosse, Sir Edmund, English critic, essayist, 1st and poet, born in London, entered the British Museum in 1867 and in 1904 became Librarian to the House of Lords; lecturer in English literature at Cambridge (1884-1890); he wrote much lyric verse and also the autobiographical novel *Father and Son* (1907), but was chiefly known for his critical essays on English and Scandinavian literature and his lives of Gray, Swinburne, Congreve and others. (1849-1938).

Gotha, town of Germany, formerly the northern capital of the duchy of

Saxe-Coburg-Gotha, and now a town district of Thuringia; it is situated on the Leine Canal, 17 m. WSW. of Erfurt; the many old buildings include the former ducal palace, with a fine library, and 11th-Century town-hall, a museum of oriental and other antiquities, an observatory and several ancient churches; there are extensive manufactures of machinery, rubber, sausages, pottery, tobacco and other commodities; there is also a large trade in books and maps. Pop. 47,800.

Gotha, the name of a type of aeroplane used by the Germans during the World War. They were equipped with two engines, had a speed up to 80 m.p.h. and were used in air raids on Great Britain.

Gotha, *Almanach de*, an annual publication, first issued by Perthes in 1763, which gives genealogies of royal families and members of the nobility throughout Europe, in addition to much statistical and general information; there are two editions, one in French, one in German.

Gotham, a village of Nottinghamshire, England, associated with the legends and stories of the "Wise Men of Gotham" and the "Mad Men of Gotham." The reputation for folly may have arisen in the time of King John when villagers prevented the passage of the King over their meadows. When he sent to punish them they were found occupied in building a hedge round a cuckoo to encase it, trying to drown an eel; and so escaped punishment on the grounds that they were all mad. The legends were collected in the 16th Century, under the title *Merry Tales of Gotham* by A. B.

Gothenburg (Göteborg), seaport of the R. Gotha, 284 m. SW. of Stockholm; the seaward terminus of the Göta Canal, it is a clean and modern built town, intersected by several canals; has a splendid harbour, and one of the finest botanical gardens in Europe; its industries include shipbuilding, sugar refining, dyeing, saw-milling and the manufacture of textiles, tobacco, leather, paper and beer. Its licensing system has become famous; the sale of liquor is in the hands of a company licensed by government; profits beyond a 5 per cent. dividend to the shareholders are handed to the municipality. Pop. 258,000.

Gothic Architecture, a style of architecture

which was developed in N. Europe out of the Romanesque style in the latter part of the 12th Century and prevailed until the 15th Century or later. Most of the ancient churches, cathedrals and public buildings of Europe are in this style, which, among other characteristics, is distinguished by the predominance of vertical lines, the use of pointed arches, clustered columns, buttresses and large decorated windows, and by stone-carving of the utmost richness, often in fanciful or grotesque designs.

Goths, a tribe of Teutons who invaded the Roman Empire from the E. and NE. from as early as the 3rd Century, and though they were beaten back by successive emperors eventually broke it up; portions of this great nation, who absorbed lesser tribes, overran France, Spain, Germany and Italy as Ostrogoths (East Goths) and Visigoths (West Goths), establishing powerful kingdoms that lasted until the 5th and 6th Centuries.

Göttingen, town of Germany, in the Prussian province of Hanover, situated in the valley of the Leine, 87 m. E. of the town of Hanover; it is chiefly note-

worthy on account of its university, founded in 1734, with a library of 500,000 vols. and 5,000 MSS.; the town-hall dates from the 14th Century; textiles, chemicals and scientific instruments are manufactured, and there is a big book-trade. Pop. 41,000.

Gottland, an island of Sweden, in the Baltic, 44 m. E. of the mainland; area 1,220 sq. m.; with other islands it forms the province of Gotland; agriculture, fishing and shipping are the main industries; timber, marble, stone and lime are exported; Visby is the chief town. Pop. 68,000.

Gouda, town of the Netherlands, in the province of S. Holland, 11 m. NE. of Rotterdam, with a shipping trade and an important market. It is celebrated for its cheeses. Pop. 31,600.

Gough, Sir Hubert, British soldier. Joining the Lancers in 1889, he served in the Tirah expedition of 1897, and in the Boer War. In 1914 he resigned his commission rather than lead his troops against the Ulster volunteers, but on the outbreak of the World War he went to France in command of the 3rd Cavalry Brigade. In 1916 he commanded the 5th Army in the Battle of the Somme, but was recalled in 1918 owing to the reverses suffered by his troops during the German spring offensive. He was knighted in 1916. In *The Fifth Army*, 1931, he vindicated his conduct of affairs in 1918, and this vindication was subsequently endorsed by Mr. D. Lloyd George, who, as Premier, had been instrumental in Gen. Gough's recall. (1870-).

Gough, Hugh Gough, Viscount, British soldier, born at Woodstown, Co. Limerick; served at the Cape and in the W. Indies, and fought with distinction in the Peninsular Wars; as Major-General, he took part in the Indian campaign of 1827, and in 1840 commanded the forces in China; as Commander-in-Chief of the Indian army (1843-1849) he crushed the Sikhs at Gujrat, which resulted in the annexation of the Punjab. (1779-1869).

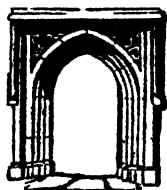
Goulburn, city of New South Wales, Australia, 134 m. SW. of Sydney, the see of an Anglican and a Roman Catholic bishop. Tanning, brewing, flour-milling and boat-building are carried on. Pop. 15,000.

Gould, Gerald, British poet and critic, educated at Norwich and Magdalen College, Oxford; from 1915 leader-writer and associate editor of the *Daily Herald*; among his works were *The English Novel of To-day* (1924), *Beauty the Pilgrim* (1927) and *The Future of Laughter* (1929). (1865-1937).

Gould, Jay, American financier, born at Roxbury, New York; was successively a surveyor, a railway manager and owner and a New York broker; as President, 1868-1872, of the Erie Railroad, introduced into the company "Boss" Tweed and other rascals, who unscrupulously enriched themselves; controlled Union Pacific, 1873-1883; made about 25 million dollars. (1836-1892).

Gounod, Charles François, French composer, born in Paris; having won the Prix de Rome at the Paris Conservatoire, he was enabled to continue his studies at Rome, where he devoted himself chiefly to the composition of religious music; on his return to France he composed several indifferent operas and other music; in 1859 his opera *Faust* met with immediate success, and his popularity was sustained by *Romeo and Juliet*, 1867; other operas followed, as well as church music, among which the most notable were the oratorios *The Redemption* 1882 and *Mors et Vita*, 1885. (1818-1893).

Gouraud, Henry Joseph Étienne, French general, born in Paris; commissioned to the infantry in 1890, he



GOTHIC ARCH

in Senegal and assisted Lyautey in conquest of Morocco; in World War he commanded a division at Argonne, and later an army corps in the Dardanelles expedition; afterwards commanded 4th Army in Champagne; High Commissioner in Syria, 1919-1923; appointed military Governor of Paris, 1924. (1867-)

Gourd, a fruit obtained from plants of the family Cucurbitaceae, which includes the pumpkin, squash, cucumber, etc. Some species have purgative qualities. The Common, or Pumpkin, Gourd is egg-shaped and sometimes weighs 70 lb., but the largest species, the Great Gourd, attains as much as 200 lb. in weight. See also Calabash.

Gourock, burgh and seaside resort of the S. shore of the Firth of Clyde, about 3 m. W. of Greenock; it has a shipping trade, and is a yachting centre. Pop. 8,300.

Gout, an inflammatory disease of the joints arising from a morbid condition of the system, and generally preceded by some digestive disorder. It is often hereditary. The symptoms begin in the small joints, especially the great toe, which becomes shiny, red, swollen and very tender. Hot fomentations will relieve the pain, and a strict diet, containing a minimum of nitrogenous foods, should be adopted. The action of the kidneys, often a contributory agent, must be regulated by the drinking of barley water, and alcohol should be avoided. The disease rarely occurs before middle age.

Govan, a former burgh of Lanarkshire, Scotland, on the S. bank of the Clyde, since 1912 a suburb of Glasgow, with which it is connected by railway and electric tramways; the chief industries are engineering and shipbuilding. Elder Park is situated here. Its pop. prior to its incorporation in Glasgow was over 90,000.

Government, a term which refers to the act of governing or the business of government; to the persons who govern and to the form of government. Forms of government were classified by Aristotle into monarchical, aristocratic and democratic; the first where government was entirely in the hands of the sovereign, the second where control was vested in a class which by birth and property were considered to be the "ruling class," and the third where the people had a choice of government—according to their wishes as revealed by popular election.

In modern Western politics monarchical government has disappeared. Where public demand has succeeded in limiting the legal powers of a government, the term constitutional government is used. Most countries to-day have this form, though there are various methods of applying it. The British Government, together with that of Belgium, France, the U.S.A. and the British Dominions, are examples of democratic government defined somewhat idealistically by President Lincoln as "government of the people, by the people, for the people." Its machinery is usually that of a cabinet of ministers—answerable to a popular chamber, such as the House of Commons, which is in turn dependent upon the approval of the electorate.

The most recent change in modern forms of government is the emergence of dictatorships in certain European countries. In Russia government is pyramidal, the apex being the Soviet Union Party Congress and the base being the village Soviets, composed of peasants or industrial workers. In theory communism was intended, but the motive force of the government became concentrated in the hands of Stalin, the chief of the Communist Party, whose power is absolute. In Italy and Germany a corporate state (see Fascism) has emerged where individual freedom as implied

in a democracy is subordinated to the will of a dictator, whose grand council or Parliament is merely an acquiescent body. Opposition and criticism are controlled either by force or by the psychological effect of mass suggestion. It is the antithesis of democracy, and depends for its success upon the dynamic personality of its leader. Such States, where the individual is a mere unit in the State machine, are called totalitarian.

The functions of government are legislative, judicial and administrative. The first is concerned with the making and applying of laws, the second with the administration of justice, and the third with the work of conducting the affairs of the country, its finances, supervision of local government, education, etc. Such work is performed by the Civil Service under the direction and control of the various departmental ministers.

Governor, the leading executive officer of a State or colony. In British colonies he is appointed by the King. In Canada, Australia and S. Africa his status is increased to that of Governor-General. There is, however, a great difference between the powers of a Governor and those of a Governor-General: the Governor of a Colony exercises almost autocratic powers both in the executive and legislative spheres; and the Governor of a constituent part of a Dominion, as, e.g., of an Australian State, is also vested with wide constitutional powers; but a Governor-General of a Dominion is merely the representative of the Crown, holding essentially the same position in regard to public administration in the Dominion as is held by the King in Great Britain and he is not in any sense the agent or representative of the British Government. In the U.S.A. each State is administered by a Governor, who is appointed by election and whose term of office ranges from two to four years.

Gow, Neil, a famous Scottish fiddler, born in Inver, near Dunkeld, of lowly origin; during his long life he enjoyed a wide popularity amongst the Scottish nobility; Raeburn painted his portrait on several occasions; he composed over a hundred strathspeys, laments, etc., giving a fresh impulse and character to Scottish music. (1727-1807). His son Nathaniel (1766-1831) was the composer of, among other songs, the popular *Callie Harris*.

Gowbarrow Park, an estate of England, N. of Ullswater, on the slopes of Gowbarrow Fell. The property of the National Trust, it contains the beautiful waterfall of Alra Force.

Gower (Welsh, Gwyr), peninsula of Glamorganshire, Wales, between Burry Inlet and Swansea Bay, and containing Swansea and Oystermouth. It was conquered by the Normans, who settled there, later inhabited by Flemings, whose descendants are still found.

Gower, John, English poet, contemporary of Chaucer and friend of Chaucer; his chief works are *Speculum Medietatis* (the Thinker's Mirror) written in French; *Vox Clamantis* (the Voice of One Crying), in Latin, an allegorical, moralising poem suggested by the Wat Tyler insurrection, 1381; and *Confessio Amantis* (Confession of a Lover), in English, illustrated by a profusion of tales; his tomb is in St. Saviour's, Southwark. (c. 1325-1408).

Gowrie Conspiracy, a mysterious episode in the reign of James VI. of Scotland; according to the account of the King himself, Alexander, Master of Ruthven, and his brother, the Earl of Gowrie, enticed the King to Gowrie House in Perth on Aug. 3, 1600, for the purpose of murdering or kidnapping him; in the scuffle Ruthven and Gowrie perished,

Historians have failed to trace any motive incriminating the brothers, while several good reasons have been brought to light why the King might have wished to get rid of them.

Goya y Lucientes, *Francisco*, Spanish painter and etcher; at 16 entered studio of José Luzán Martínez; as a result of his dissolute life, he had to flee to Madrid; thence wandered to the coast, and travelled to Italy. Returned to Madrid, 1775. His portraits include those of many royal and distinguished sitters including the Duke of Wellington. His realistic etchings, "The Miseries of War," 1808, were inspired by the excesses of the French armies in the Peninsula, while the satirical "Caprices," 1797, and "Proverbs," 1805, were merciless reflections on contemporary society. The "Tauromaquia" series, 1815, have immortalised the bull-fight. (1746-1828).

Gozo, an island in the Mediterranean Sea, which, together with Malta and Comino, forms a British crown colony; it lies 4 m. NW. of Malta, and has an area of 26 sq. m.; there are many Roman and other ancient remains; Victoria, formerly known as Rabato, is the chief town. Pop. 22,000.

Gracchus, *Calpurnius Sempronius*, Roman tribune and reformer, brother of the following, upon whose death he devoted himself to carrying out his measures; was chosen tribune in 123 B.C., and again in 122; his measures of reform were opposed and undone by the Senate, and he himself was declared a public enemy; upon the defeat of his party in a pitched battle in the Forum, he induced his slave to put him to death. (153-121 B.C.).

Gracchus, *Tiberius Sempronius*, Roman tribune and reformer, after distinguished service in the army, was made tribune in 133 B.C., and proposed a more equal distribution of the public land; the reform met with violent opposition from the aristocratic faction and Gracchus was killed in a riot started by them, his body being thrown into the Tiber. (163-133 B.C.).

Grace, the term in Scripture for that unmerited by man and of eternal benefit to him.

Grace, *Dr. William Gilbert*, English cricketer, born near Bristol; he played first-class cricket for 36 years, principally for Gloucestershire and England; at a time when wickets were in no way comparable with those of to-day he scored 51,000 runs with an average of 45 per innings, and in addition took 2,800 wickets at an average cost of 20 runs. In all he made 131 centuries, which remained a record till beaten by J. B. Hobbs in 1925. (1848-1915).

Graces, *The*, reckoned at one time two in DR. W. G. GRACE number, but originally they appear to have been regarded as being what they fundamentally are, *one*; were finally spoken of as *three*, and called *Aglaia*, *Euphrosyne* and *Thalia*; *Thalia*, the blooming one, or life in full bloom; *Euphrosyne*, the cheerful one, or life in the exuberance of joy and sympathy; and *Aglaia*, the shining one, or life in its effulgence of sunny splendour and glory. They are three sisters, as such always inseparable, and in their inseparability alone are Graces.

Gradient, a term used to indicate the variation in level of a road or railway from the horizontal. It naturally depends upon the character of the country, and is usually expressed as a proportion, thus a gradient of 1 in 70 means a rise or fall of 1 ft. to every 70 ft. horizontal distance.



Grading, the classifying of articles according to quality, more particularly applied to textile goods, especially silk, in which the quality and weight of the raw material govern the sorting; also to foods of various kinds, such as milk, jams, etc. In some cases definitions of grading standards have been laid down by Act of Parliament.

Graeco-Turkish War (1921-1922), Disatis-faction arising out of the post-war Treaty of Sévres, which awarded Greece some former Turkish territory in Europe and the province of Aidin in Asia Minor, led to war in 1921 following on a refusal of the Greek Government to attend a conference of the powers to discuss the question. The Greek army under King Constantine was defeated on the Sakkaria, and later Smyrna was attacked and sacked by the Turks. Peace was signed at Lausanne in 1923, all the Asiatic territory in dispute being restored to Turkey, and the Turko-Greek boundary being fixed as the R. Maritsa.

Grafting, in gardening, the act of insert-ing a budding sprig of one tree or plant into another, for the purpose of producing new varieties of the plant, or to increase fertility. There are many methods, the most common being tongue-grafting, in which an incision is made in the stock plant and a budding shoot, or scion, inserted into the cut. The scion must be cut in a wedge. The join is then bound up with bast or twine and covered with clay.

Grafton, city and river-port of New South Wales, Australia, 350 m. from Sydney, on the Clarence R., the centre of an agricultural district. Pop. 9,400.

Grafton, *Augustus Henry Fitzroy, Duke* of, English statesman in the reign of George III.; held various offices of State under Rockingham, Chatham and North; was bitterly assailed in the famous *Junius Letters*. (1735-1811).

Graham, *John*, Viscount Dundee. See *Claverhouse*.

Graham, *Stephen*, English writer, es-pecially on Russia, whither, giving up the civil service, he went in early life to tramp. His best-known books are *Un-discovered Russia* and *A Private in the Guards*. He has also written on social conditions in England and the U.S.A. (1894-).

Graham, *William*, Labour politician, born at Peebles and educated at Edinburgh; became a civil servant, and in 1918 M.P. for Central Edinburgh. Financial Secretary to Treasury, 1924; President of Board of Trade, 1929-1931. (1887-1932).

Grahame-White, *Claude*, British aviator and engineer. He was the first British aeronaut to be given a pilot's certificate, won the Gordon-Bennett aeroplane race in 1910, served in the World War in the R.N.A.S., and also worked on the construction of aeroplanes. (1879-).

Graham Land, an icebound tract large and numerous smaller islands, included in the British crown colony of the Falkland Is. An expedition of research under the explorer, Rymill, went out to the area in 1935, and another expedition in 1936-1937.

Graham's Dyke, a Roman wall ex-tending between the Firths of Forth and Clyde.

Grahamstown, town in the eastern Province, S. Africa, 25 m. from the sea and 106 m. N.E. of Port Elizabeth; is beautifully situated 1,738 ft. above sea-level at the base of the Zuurberg Mts.; has an exceedingly salubrious climate, some fine buildings, and is the seat both of a Catholic and a Protestant bishop. Pop. 8,300.

Grail, The Holy, the cup or vessel, said to have been made of an emerald stone, that was used by Christ at the Last Supper, and the one in which Joseph of Arimathea caught up the blood that flowed from His wounds on the Cross; it was brought to England by Joseph, it is alleged, but after a term disappeared; to recover it formed an object of quest to the Knights of the Round Table, in which Sir Galahad succeeded.

Grain, the smallest unit of English weight, originally the weight of a grain of wheat. There are 7,000 grains in the avoirdupois, and 5,760 in the troy, pound.

Grain, general name for such cereal foods as wheat, barley, oats, rye, millet and maize. Wheat, the most important food of man, is grown in all temperate climates; it has been cultivated since ancient times, and is largely produced in Canada, Australia, Argentina, the U.S.A., India and all parts of Europe. Oats are grown principally as a cattle food, but are largely eaten by man in northern countries. Barley is employed in the process of beer and spirit manufacture; maize, rye and millet are all used for bread-making in various countries.

Gramineae (*Graminaceae*), grasses; an order of endogenous plants consisting of evergreen herbs, some of which reach a great size and live many years. The rhizome is fibrous or bulbous, and the stem is closed at the joints and cylindrical. The flowers, which are green, are in little spikes, arranged in racemes. The order has a remote affinity to the Palmaceae or Palms. It occurs in most countries, and comprises some 250 genera and 4,500 species, constituting over five per cent. of the world's known plants. All the cereals, the bamboo, and the sugar-cane belong to this order.

Grammar, the science which studies the use of words and their combinations. It comprises a knowledge of words as phonetic symbols of thought, their employment in the expression of ideas, and the principles which regulate their use. It is philosophical when it explains the fact of language, comparative when it considers the grammar of different languages, historical when it examines the origin and growth of human speech, and practical when it arranges and systematises the special peculiarities of the language of any particular country. It is also divided into accidence, which studies the various forms of words, and syntax, which deals with their arrangement into phrases and sentences.

Gramme, the unit of weight in the metric system; a thousand grammes equal a kilogramme. The weight of one cubic centimetre of water at 4° Centigrade is one gramme.

Gramont, or Grammont, Philibert, Comte de, a celebrated French courtier in the age of Louis XIV.; he greatly distinguished himself in the army and at Court by his lively wit and gallant bearing, and soon established himself in the king's favour, and an intrigue with one of the royal mistresses brought about his exile from France; at the profligate Court of Charles II. of England he found a warm welcome and congenial surroundings; left memoirs which were mainly the work of his brother-in-law, Anthony Hamilton, and which give a marvelously witty and brilliant picture of the licentiousness and intrigue of the 17th-Century Court life. (1621-1707).

Gramophone, an instrument for recording sound, especially music; the invention of E. Berliner towards the end of the 19th Century, though Edison who made the first talking machine, called the phonograph, in 1877 had made records on flat tin discs before this. In the early gramophone the record was made

on a viscoue-coated zinc plate. The stylus, or needle, laid bare the zinc, which was then etched with acid, and from this a copper matrix was made from which a number of records were taken on a shellac-compound disc.

In many recent models the sound-box, tone-arm and horn have been replaced by an electro-magnetic system of reproduction with valve amplification as in wireless. The word "gramophone" is a protected trade name, and the industry is a large one, owing its increasing popularity in recent years to the demand for records of dance-music, while electric-recording of music and speech has resulted in a greatly increased purity of reproduction.

Grampians, (1) a name somewhat loosely applied to the central and chief mountain system of Scotland, which stretches E. and W. right across the country, with many important offshoots running N. and S.; the principal heights are Ben Nevis (4,406 ft.), Ben Macdui (4,296 ft.), Cairntoul (4,200 ft.). (2) A range of mountains in the W. of Victoria, Australia, highest elevation 5,600 ft.

Grampus, a large marine mammal related to the dolphin, and

found in Northern seas. The body is black with large white markings. It travels in shoals, and when fully grown attains a length of 25 ft. It preys upon the porpoise, the whale and its own kind.



GRAMPUS

the last of the ancient Moorish kingdoms to be conquered (1492) in Spain, in the SE. of Andalusia, fronting the Mediterranean, now divided into Granada, Almeria and Malaga; the modern province has an area of 4,928 sq. m. and a pop. of 674,000. Granada, the capital, is beautifully situated at the foot of the Sierra Nevada, on an eminence 2,245 ft. above sea-level, 140 m. SE. of Seville; the Jénil flows past it; has a large university, a cathedral and monastery; was founded by the Moors in the 8th Century, but has been largely rebuilt on modern principles. Pop. 125,000.

Granada, a commercial town in Nicaragua, Central America, on the NW. shore of Lake Nicaragua; the seat of a bishop. Pop. 20,000.

Granby, John Manners, Marquis of, an English general, eldest son of the Third Duke of Rutland; rose to be commander-in-chief of the British army in Germany during the Seven Years' War; distinguished himself at Warburg; in 1783 he was master-general of the ordnance, and in 1766 commander-in-chief of the army; was the victim of some of Junius's most scathing invectives. (1721-1770).

Grand, Sarah (real name, Frances Elizabeth McFall), English novelist; Mayores of Bath, 1823 and 1825-1829. Wrote: *The Heavenly Twins* (1893); *The Beth Book* (1897). (1862-).

Grand Alliance, an alliance signed by England, Germany and the States-General to prevent the union of France and Spain.

Grand Bank, a great submarine elevation in the N. Atlantic SE. of Newfoundland, a free fishing-ground (area 500,000 sq. m.) teeming with ood and other fish.

Grand Canal, (1) main waterway of Venice, from which branch the lesser canals; (2) Chinese canal between Hangchow and Tientsin (350 m.)

dating in part from about 500 B.C.; (3) Irish canal which connects Dublin with Ballinasloe.

Grand Canyon, spectacular gorge of the Colorado R. in Arizona, U.S.A. The greatest of a series of such canyons, it is 217 m. long, 3,000-6,000 ft. deep and 2-15 m. wide.

Grand Duke, title of the sovereign of Germany before the revolution of 1918 at the close of the World War. The title was also held by many members of the Russian Imperial family.

Grand Falls, a city of Newfoundland, on Exploits R., the falls of which provide power for large pulp and paper mills. Pop. 4,200.

Grand Fleet, a comprehensive term for the ships of the British Navy of the Home Fleet, Mediterranean Fleet and Reserve Fleet.

Grandi, Dino, Count, Italian statesman, trained for the law and after serving with distinction in the World War, took part in the Fascist march on Rome; has since been a member of the Chamber of Deputies, has held various offices and been Italian delegate on a number of occasions and became Italian ambassador to London in 1932. (1895-).

Grand Jury, a jury formerly appointed were grounds for an accusation to warrant a trial. The system was abolished in 1933.

Grand National, the most famous chaise races, run at Aintree near Liverpool during March or April and initiated in 1839. The course is 4½ m. long, containing 30 jumps.

Grand Prix, an international horse-race run annually in June at Longchamps, France. The stakes, the largest in Europe, are 250,000 francs. The course is of 1 m. 7 furlongs.

Grand Rapids, U.S.A., city of Michigan, Catholic and Protestant cathedrals. Its chief interests are the lumber industry, furniture and aircraft making and gypsum quarries. Pop. 169,000.

Grand Union Canal, part of the eastern portion of the canal system of Great Britain, connecting London via Northampton and Leicester to Nottingham and the R. Trent.

Grangemouth, a busy port in Stirling-shire, Scotland, on the Forth, 3 m. NE. of Falkirk; exports ironware and coal; has excellent docks and does some shipbuilding. Pop. 11,800.

Grange-over-Sands, seaside resort of Lancashire, England, 9 m. E. of Ulverston. It has a wide, sandy beach and is within reach of the Lake District. Pop. 2,700.

Granicus, a river in Asia Minor, flowing and falling into the Sea of Marmora, where Alexander gained, 334 B.C., the first of the three victories which ended in the overthrow of the Persian Empire.

Granite, a common igneous rock, used for building and roadmaking. It solidified at great depths below the surface and is of coarse texture, consisting largely of quartz, feldspar and mica, the individual crystals of which can be distinguished. Granites are known as "acid rocks," i.e., they contain a relatively high percentage of silica; similar rocks with a smaller proportion are known as diorites, syenites and gabbros.

Grant, James, novelist, born in Edinburgh; joined the army as an ensign at 17, but after a few years resigned and adopted literature as his profession; *The Romance of War* (1848), his first book, was followed by over 60 others. (1822-1887).

Grant, Ulysses Simpson, American general and 18th President, born at Mount Pleasant, Ohio; served in the Mexican War, and held several appointments in the army; retired to civil life in 1854, but on the outbreak of the Civil War he re-entered the army and fought on the side of the North with such success that in 1864 he was appointed General-in-Chief; he was eventually raised to the Presidency in 1868, and re-elected in 1872; on the expiry of this second term he made a tour round the world. He became sleeping partner in a business, was robbed, and restored by the U.S.A. to his rank of General. (1822-1885).



GENERAL GRANT

Grantchester, village of Cambridgeshire, shire, England, on the Cam, 2½ m. SW. of Cambridge. Its mill was referred to by Chaucer, and in later days Rupert Brooke idealised it in his poems. Pop. 500.

Grantham, a market town in Lincolnshire, England, on the Witham, 25 m. SW. of Lincoln, with a fine 13th-Century church; in the grammar school Newton was educated, and in 1643 Cromwell won his first victory here; its industries embrace agricultural-implement making and malting. Pop. 19,700.

Grant Land, northern part of Ellesmere Is., in the Arctic, NW. of Greenland. It is icebound and rises, in Mount Grant, to an altitude of 5,000 ft.

Granton, seaport of Midlothian, on the Firth of Forth, 2½ m. NW. of Edinburgh. Pop. 2,000.

Grantown, market town and health resort of Moray, Scotland, on the R. Spey, amid fine pine and birch forests. Distilling is carried on. Pop. 1,600.

Granville, George, Leveson-Gower, second Earl, politician; entered Parliament as a Liberal in 1836, and became a supporter of Free Trade; in 1848 succeeded to the peerage, and in 1851 became Foreign Minister; four years later became leader of the Lords; figured in every Liberal cabinet till 1886, usually as Colonial or Foreign Secretary; in 1859 he failed to form a ministry of his own and in 1886 he retired from politics altogether after a few months as Colonial Secretary. (1815-1891).

Granville-Barker, Harley, actor and dramatist; born in London. First appeared in 1891 at Herrogate; at the Comedy Theatre in 1892, in *The Poet and the Puppets*. Appeared in Shaw plays from 1900. Wrote *The Marrying of Anne Leede*, 1902; *Waste*, 1907; *The Madras House*, 1910. (1877-).

Grape, the fruit of the vine, consisting of an oval berry varying in size. The outer skin is astringent and indigestible, and is green, yellow, reddish or purple. In its fresh state it is largely eaten as fruit. Dried grapes are eaten under the name of raisins or currants. The grape is chiefly grown for its juice, from which wine is produced by a process of distillation and fermentation. It is grown in Mediterranean lands, California, Australia, Bulgaria and S. Africa.

Grape Fruit, or Shaddoe, the fruit of the orange and lemon, a tree closely related to the Mediterranean climates. It grows in clusters, and at a height resembles bunches of grapes.

Grape Sugar. See Glucose.

Graphite, or **Black Lead**, a form of carbon found in Central Europe and Ceylon; used for "lead" pencils and as a polishing material.

Graptolites, fossils abundant in and rocks; they were simple animals somewhat like a quill pen in shape, composed of a horny substance; in some forms the stems are branched; they are the type fossils of the Silurian strata.

Grasmere, a picturesque lake in West-
morland, England, near
Windermere; about 1 m. long; the village of
the same name close by is associated with
Wordsworth and Hartley Coleridge.

as wheat, barley, maize and sugar-cane. Their structure is simple: a stem clothed with alternate leaves, with thin stalks. Farmers divide them into artificial grass and natural grasses, the former being such as are cultivated for fodder—e.g., clover, and the latter true grasses. Pasture grasses vary in value. Certain kinds suit meadows, others marshes, others upland fields and others bleak and sterile hills, where they furnish valuable food for sheep. The more important grass-lands of the world are the great wheat and pasture-lands of Canada, U.S.A., S. Africa, Australia, the Great European Plain and Manchuria.

Grasshopper, a winged insect of the order Orthoptera, of several species.

They are widely distributed, and feed on plants; insects and larvae. A chirping sound is made by the male by rubbing the wing-cases together, or against the legs.



GRASSHOPPER

Grass Snake, a non-venomous reptile common in parts of England and widely distributed throughout Europe; grey-brown in colour, with black spots, it is often mistaken for the viper (v.v.); it feeds mainly on frogs and fish.

Gratian, a celebrated canonist of the 12th century, born in Chiusi, Tuscany; was a Benedictine monk at Bologna, and compiled the *Decretum Gratiani* between 1139 and 1142.

Gratianus, Augustus (Gratian), Roman emperor from 375 to 383, eldest son of Valentinian I., born in Pannonia; at 16, in conjunction with his four-year-old brother, Valentinian II., became ruler over the Western Empire, and three years later, by the death of his uncle Valens, also of the Eastern Empire, a year after which he summoned Theodosius to be his colleague. His reign is noted for the stern repression of the remains of the heathen worship. In 383, while endeavouring to combat the usurper Maximus, he was captured at Lyons and there put to death. (359-383).

Grating, an optical device consisting of a flat piece of glass on which are cut thin lines, at the rate of several thousand to the inch, which gives rise to a spectrum as the result of diffraction; used for the determination of the wave-length of light.

Grattan, Henry, Irish patriot and orator, born in Dublin, and by birth a Protestant; studied at Trinity College; called to the Irish Bar in 1772, and entered the Irish Parliament three years after, where he fought for the independence of that body; on the question of Irish Parliamentary reform he quarrelled with his compatriots, and continued his own efforts to Catholic emancipation;

in 1798 he retired from public life, but opposed the Union in 1800, devoting the rest of his life to the political emancipation of his Catholic fellow-subjects. (1746-1820).

Gravel, a term denoting rounded, water-worn fragments of stone, usually of quartz crystalline rock. The term is also applied to a complaint marked by the passage of grit in the urine. The disease is brought on by lack of exercise and excess of rich food. The drinking of water, plenty of exercise and a modified diet are the remedies.

Gravelines, seaport and fishing town of France, in the dept. Nord, 12 m. from Dunkirk, the scene, in 1558, of a French defeat by English and Spaniards. Pop. 5,000.

Gravelotte, a village in Lorraine, 7 m. W. of Metz; was the scene of a German victory over the French in 1870.

Graves, Alfred Percival, Irish author and folk-song expert, born in Dublin; son of a Bishop of Limerick (1812-1899); educated at Trinity College; a civil servant and from 1876 to 1910 inspector of schools. Famous as author of *Father O'Flynn* and *To Return to All That*. Wrote a play, *The Absentee*, 1908. (1846-1931).

Graves, Robert Rank, English author, son of Alfred Percival Graves (q.v.); educated at Charterhouse and St. John's Oxford; wrote *Goodbye to All That*, 1929, *I, Claudius*, 1934, etc. (1895-).

Gravesend, a thriving river-port and manufacturing town in Kent, England, on the Thames, opposite Tilbury Fort, 24 m. S.E. of London; the new town rises amid picturesque surroundings above the old town; it is the chief pilot station for the river; there is a busy trade in shipbuilding, iron-founding and brewing. Pop. 37,000.

Gravitation, the force of attraction between masses of matter; it varies directly as the product of the masses and inversely as the square of their distance apart—a fact which was discovered by Sir Isaac Newton (1642-1727). The gravitational pull upon falling bodies produces in them an acceleration of 981 cm. per sec. per sec., generally represented by the letter *g*. It is roughly equal to 32 ft. per sec. per sec., so that if a body is allowed to fall freely from rest, it has a velocity of 32 ft. per sec. at the end of the first second, 64 ft. per sec. at the end of the second second, 96 ft. per sec. at the end of the third second, and so on, and this is true whatever the weight of the body. Newton's law of gravitation has been somewhat modified in this century by Einstein.

Gray, Thomas, English poet, born in Cornhill, London; gave himself up to study of Greek literature, and produced in 1747 *Ode on a Distant Prospect of Eton College*, and in 1750 his well-known *Elegy written in a Country Churchyard*. These were followed by the *Pindaric Odes*, the *Progress of Poetry* and *The Bard*, which was finished in 1757. In 1760 he was presented by the Duke of Grafton with the professorship of Modern History at Cambridge, a sinecure office with £400 a year. (1716-1771).

Grayling, a fish of the family Salmonidae, found in British streams

and ranging over N. and Central Europe. It is about 10 in. long, and feeds on flies and small molluscs.



GRAYLING

Grays, town in Essex, England, now part of Thurrock urban district, on the Thames, 2 m. N.W. of Tilbury, opposite Northfleet. Cement and bricks are made. Pop. (Thurrock urban dist.) c. 60,000.

Gray's Inn, one of the Inns of Court London, founded in the 14th Century; the gardens are said to have been laid out by Lord Chancellor Bacon in 1616.

Graz, capital of Styria, in Austria, picturesque situated on the Mur, 141 m. SW. of Vienna; its many old and interesting buildings include a cathedral (1462), four monasteries, and the Landhaus, an ancient dual residence; there is a university; its industries include iron and steel works, sugar-refining, soap and candle factories. Pop. 153,000.

Great Barrier Reef. See Barrier Reef.

Great Bear Lake, the fourth largest lake of Canada, in the NW. Territories, discharging, by the Great Bear R., into the Mackenzie R. It is frozen for much of the year and abounds in fish. Area 11,300 sq. m.

Great Britain, a name used to include England, Wales and Scotland; it was first used to distinguish the island from Brittany or Little Britain, but appears officially for the first time only in the reign of James I., who was styled King of Great Britain. (For the history of the country before 1707 see England.)

The history of Great Britain begins properly with the Act of Union, 1707, which made England and Scotland a united nation, but the accession of George I. in 1714 is a convenient point from which to summarise it. During the reign of George I. Parliament increased its power greatly at the expense of the Crown, the King, unable to follow English speech, retiring from Cabinet meetings; Walpole became the country's first Prime Minister, from 1721-1742, a period with little to make it noteworthy.

In 1742 the War of the Austrian Succession began, and at the Battle of Dettingen, 1743, an English sovereign led troops in person for the last time. Eight years later came the Seven Years War, during which the elder Pitt, having become Prime Minister, shaped his policy in the European situation so as eventually to conquer India and America. With the accession of George III. came a struggle for personal rule, and in spite of Whig opposition he obtained it for a time. During his reign an attempt to tax the new American colonies led to the War of American Independence, ending in the victory of the American States.

Meanwhile changes in the economic world, known as the Industrial Revolution, saw the character of the country completely altered. Village crafts passed away with the coming of factories, the rapid development of road, rail and water transport began, and machines, such as Hargreaves's and Crompton's inventions, revolutionised the growing cotton industry. At the end of the French Revolution, 1789-1798, came the Napoleonic wars; Great Britain was involved in the great European struggle, and it was not until 1815 at Waterloo that the French Emperor was finally overthrown by Wellington and Blücher. In 1801 came the Union with Ireland and the birth of the United Kingdom.

In 1832 the great Reform Bill was passed, and the foundations of the modern British parliamentary franchise were laid during the ministry of Lord Grey; later came the reform of Poor Law and the first Factory Act. In 1837 Queen Victoria ascended the throne. Notable statesmen of her reign were Melbourne, Peel, Palmerston, Lord Russell, Gladstone and Disraeli.

During this period Great Britain became a Free Trade country. In 1854 the disastrous Crimean War took place. From 1867 until later in the century politics consisted chiefly of a duel between Gladstone and Disraeli, or, after the latter's death, Salisbury. In 1886

the first Irish Home Rule Bill was rejected; in 1899 the S. African War broke out, and was concluded in 1902. The growth of Imperialism dates from the latter part of the 19th Century. In 1901 Queen Victoria died, and was succeeded by Edward VII. His reign was notable for the establishment of the Anglo-French *entente cordiale*, the Union of S. Africa, the Balfour Education Act and Chamberlain's Tariff Reform campaign.

Old age pensions were inaugurated in 1908, and in 1912 National Health Insurance came into force. The rejection of the budget of 1911 led to the famous Parliament Bill which curtailed the powers of the House of Lords. In 1914 Great Britain became involved in the World War (see separate article). In 1918 the vote was for the first time given to women. Since the World War the history of Great Britain has been concerned with the economic problems arising out of the abnormal conditions resulting from it and the difficult question of foreign relations, while the great domestic problem of unemployment led to a campaign of reconstruction of economic life.

Free Trade was discontinued, and Protection brought into force to secure the economic unity of the British Empire. The death in 1936 of George V., who had succeeded Edward VII. in 1910, was followed by the accession of his son, Edward VIII., who at the end of the year abdicated in favour of his brother, the present King George VI.

Great Dane, a large dog of German origin, formerly known

as the boar-hound or German mastiff. The dog is courageous, easily trained and highly intelligent, being often employed in performing troupes. The colours are black, fawn, brindled and blue-grey. The breed is common in England, and was introduced into this country in 1870. Its height is on the average 34 in. and its weight varies from 120 to 180 lb.



GREAT DANE

Great Eastern, the name of the largest steamship of the day; was designed by Brunel and Scott Russell; laid down at Millwall in 1854, and launched in 1858, having cost £732,000; it did not prove a successful venture; was used for laying the Atlantic cables of 1862 and 1863 and others; and in the end was sold in 1888 for old iron.

Great Gable, a mountain peak of Cumberland, England, near Scaffell, with an altitude of 2,950 ft.

Great Harry, a man-of-war built by Henry VII., the first of any size built in England.

Greathhead, James Henry, British engineer, inventor of the Greathhead shield used in the construction of the London tube railways and other tunnels. (1844-1896).

Great Lakes, a chain of five lakes in N. America, drained by the St. Lawrence R. In order of size and from W. to E. they are Lakes Superior, Michigan, Huron, Erie and Ontario. With a combined area of 98,500 sq. m., they are thought to contain about half the earth's fresh water. Lake Michigan lies wholly in U.S.A., the others between U.S.A. and Canada. Between Erie and Ontario are the famous Niagara Falls. Canals having been made to circumvent falls and rapids between the lakes, the whole chain is navigable except for the 5 months they are ice-bound. All are rich in fish. Fort William, Hamilton, Toronto and Kingston are the chief Canadian lake-ports;

in the U.S. are Duluth, Chicago, Milwaukee, Detroit, Cleveland, Erie and Buffalo. Around their shores are rich grainlands (S. of Superior and Huron); and dairy and mixed farming lands (Erie and Ontario).

Great Salt Lake, in N. of Utah, U.S.A., stretches upwards of 80 m. along the western base of the Wahatch Mountains, about 4,200 ft. above the sea-level; it is from 20 to 32 m. broad, and very shallow; Antelope Island, 18 m. long, is the largest island; the coast is rugged and desolate; its clear waters, being many times as saline as the sea, hold no fish, and the surplus inflow is carried off by evaporation only.

Great Schism, the period in the history of the Papacy from 1378 to 1418, when two rival popes contended for the Papal chair, one reigning at Rome and one at Avignon in France.

Great Seal. Since the Union of England and Scotland all public acts of State have been sealed with one great seal of Great Britain, of which the Lord Chancellor is the Keeper. Acts relating to Northern Ireland only are sealed with the Great Seal of Northern Ireland.

Great Slave Lake, 300 m. long and 50 m. at its greatest breadth; lies within the Canadian NW Territory. The Great Slave R. enters it from the S., and the Mackenzie R. carries its overflow to the Arctic Ocean.

Great Western Railway,

English railway system covering the Western and South-Western Counties and S. Wales; the original line, from London to Bristol, opened 1841, was planned by Brunel; until 1892 it was a broad-gauge line. The extreme northerly point of the system is Birkenhead; it has extensive works at Swindon and Gloucester, and its London terminal station is Paddington.

Grebe, a genus of diving birds of the Diver family, haunting rivers,

lakes and the sea. They swim and dive readily and feed on frogs, insects and fish. The two principal species found in Great Britain are the Great Crested and the Little Grebe. Others include the Eared Grebe, and the Horned Grebe.



GREAT CRESTED GREBE

Greece, a kingdom of Southern

Europe occupying the southern part of the peninsula which projects into the Mediterranean between the peninsula of Italy and Asia Minor, with numerous adjacent islands; it is made up of northern and southern sections connected by the narrow and canalised isthmus of Corinth, the Ionian Is. in the W. and the Cyclades and Sporades in the E., with Crete to the SE.; it is a mountainous region, and many of the peaks, e.g., Olympus, Parnassus and Helicon—are rich in classical associations; the rivers are of no great size, and the lakes, though numerous, are inconsiderable.

In the valleys the soil is fertile, and agriculture is actively engaged in; and, favoured by a delightful climate, the vine, olive and other fruit-trees flourish; currants are the chief article of export, and textiles and cereals the principal imports; milling, dyeing, distilling and tanning are important industries; various minerals are found, and the marble from Paros is famed as the finest for statue carving. There is a considerable mercantile marine, and a busy shipping trade among the islands and along the deeply in-

dented coast, and also valuable coral and sponge fisheries. The bulk of the people belong to the Orthodox Eastern Church, but in Thessaly and Epirus there are about 125,000 Mohammedans; education is free and compulsory, but is badly administered, and a good deal of illiteracy exists. The glory of Greece lies in her past, in the imperishable monuments of her ancient literature and art.

Ancient Greece was divided into a number of independent states or territories, including, in northern Greece, Thessaly, Epirus, Boeotia, Etolia, Acarnania, Attica; in the Peloponnesus Corinth, Argolis, Achaea, Elis, Messenia, Laconia (Sparta) and Arcadia. They were divided into three families, Ionian, Aeolian and Dorian. The Ionians first developed science, literature and art. By 700 B.C. trade was flourishing, and colonies were founded by the Black Sea and in Italy, Thrace and Sicily. In the 6th Century B.C. Athens became a great city under Solon. In the 4th Century B.C. Darius, the Persian King, secured Thrace and Macedonia, but his expedition to conquer Greece was defeated at Marathon. A later venture by Xerxes, Darius's successor, failed in spite of the fall of Thermopylae.

The strength of Athens grew under Pericles into a powerful confederacy, but finally fell in 405 B.C. after a long war with Sparta, the Peloponnesian War. Sparta now took over the Athenian Empire, but her power ended in 362 B.C. at the Battle of Mantinea, in which the Thebans were victorious. Absorption into the Macedonian Empire under Alexander the Great followed. His empire extended to the Hindu-Kush and the Indus, and he attempted to bring the entire East under Greek power, but his early death left the work incomplete, and on his death the empire was divided among his generals. In 198 B.C. began the Roman subjugation of the Greek Empire and by 146 B.C. Corinth was destroyed and Greek independence disappeared, with the defeat of the Achaean league, Achaea becoming a Roman province.

In the 3rd Century A.D. the country was overrun by the Vandals and Goths, but afterwards became part of the Byzantine Empire (q.v.) till A.D. 1204. By 1460 the greater part of Greece was conquered by the Turks. Turkish domination lasted until 1821, when the Greek War of Independence was successfully fought, after the aid of England, Russia and France had been sought. The Balkan War of 1912 gave Greece Macedonia, Epirus and some islands, and after the World War she was ceded nearly all Turkey in Europe.

The government was a limited monarchy, but in 1924 a Republic was established after further fighting with Turkey, in which Greece lost part of the territory originally awarded to her after the World War. In 1935 the monarchy was restored. The Greek language has its own alphabet, and in classical times was represented by several varying dialects, including Ionian, Doric, Aeolic and Attic. The literature of ancient Greece is one of the most valued legacies of the classical world; among its most famous names are Homer, Hesiod, Herodotus, Thucydides, Plato, Xenophon, Demosthenes, Aeschylus, Sophocles, Euripides, Pindar, Aristophanes and Sappho. The modern language (sometimes called Romain) is a development of the ancient tongue.

Greek, Eastern, or Orthodox Church, that section of the Church which separated from the Roman or Western in 1054, after disputes as to the Roman primacy,



GREEK SOLDIER

the Procession of the Holy Ghost, and other points of doctrine; it acknowledges the authority of only the first seven general councils; it dissents from the *Misogoe* doctrine (q.v.), administers the Eucharist in both kinds to the laity, and is zealously conservative of the orthodoxy of the Church.

Greek Fire, a combustible of highly of uncertain composition, used by the Greeks of the Byzantine Empire against the Saracens; a source of great terror to those who were assailed by it, as it was difficult to extinguish, so difficult that it was said to burn under water.

Greeley, American journalist and politician, born in Amherst, New Hampshire, U.S.A., the son of a poor farmer; trained as a printer; in 1833 started the *Morning Post*, and shortly afterwards the *Log Cabin*, a political paper; founded the *New York Tribune* in 1841, merging his former papers in the *Weekly Tribune*. Till his death he advocated temperance, anti-slavery and socialistic and protectionist principles in these journals. In 1848 he entered Congress and became a prominent member of the Republican party; in 1872 he unsuccessfully opposed Grant for the Presidency. His works include *The American Conflict*, *Recollections*, *Essays*, etc. (1811-1872).

Green, John Richard, historian, born in Oxford; took orders, and was for a time a beneficed clergyman, but wrote meanwhile articles on historical subjects, and in 1874 published his *Short History of the English People*, which was accepted as one of the ablest summaries of the history of the country; later published a larger history in 4 volumes; this was followed by *The Making of England* and *The Conquest of England*, the latter being published after his decease. (1837-1883).

Green, Thomas Hill, philosopher, born in Yorkshire; studied at Balliol College, Oxford; was elected a Fellow and became eventually Whyte professor of Moral Philosophy; his philosophy had a Kantian root, developed to a certain extent on the lines of Hegel, which, however, he applied less in a speculative than in a spiritual interest, though he was not slow, on the ground of it, to assail the evolution theory of Herbert Spencer and G. H. Lewes. (1836-1882).

Greenaway, Kate, artist and designer, famous for her books for children, distinguished by quaintness and charm. *A Birthday Book for Children* (1880) was followed by several others, the originality of which won them immediate popularity; she became a member of the Institute of Painters in Water-colours. (1846-1901).

Greenbacks, a name given to the incon- issued in the United States during the Civil War, so called from the colour of the ink on the back of the notes, bonds, etc. The name has since been popularly applied to the paper money of the States. The notes were made convertible in 1879.

Green Cloth, *Board of*, a body which examines the accounts of the British Royal Household: it takes its name from the covering of a table at which it sits. It was formerly charged with the duty, of punishing offences committed within the precincts of the Court.

Greene, Harry Finckel, British singer, born in Dublin, studied at Dublin, Stuttgart, Florence and London and appeared with success in Europe and America. (1865-1936).

Greene, Robert, dramatist and con- temporary of Shakespeare; born in Norwich, came to London at 20 to begin writing plays and pamphlets; among the former were *Orlando Furioso* and *George a' Green*. (c. 1560-1592).

Greenfinch, one of the commonest (Fringillidae) family, British birds of the Finch family, yellowish-green in colour and frequenting gardens, orchards and hedges. It feeds on seeds.

Greenfly, *See* Aphides.

Greengage,

a small, green-coloured plum, cultivated as a dessert fruit and for preserve-making.

Greenheart,

a S. American tree of the family Lauraceae, grown in British Guiana for its timber, which is dense and heavy, and was much used at one time in shipbuilding. Its strength makes it valuable for fishing-rods. The seeds contain an alkaloid resembling quinine.

Greenland, an enormous island, a pos- session of Denmark, lying mostly within the Arctic circle to the N.E. of N. America, from which it is separated by Davis Strait and Baffin Bay; the area is about 735,000 sq. m.; the land mainly lies submerged beneath a vast plain of ice, pierced here and there by mountain tops; only on the S. coast, during the short summer, is there any appearance of vegetation. There is a great variety of birds, and the animals include the wolf, fox, bear, reindeer, musk ox, and Arctic hare, while whales, seals and many kinds of fish are found. The inhabitants are chiefly Esquimaux, but there are some Danish settlements, begun in 1721, and the trade is a Danish monopoly. The country was known in early times to the Scandinavians, and was rediscovered by John Davis in 1585.

Greenock, a flourishing seaport of the Firth of Clyde, 22 m. W. of Glasgow; from the hill slopes behind the shore it commands a splendid view of the river and High- lands beyond; the west end is handsomely laid out, and contains some fine buildings, including the Watt Institute, with a large public library; the harbourage is excellent and favours a large foreign shipping trade; the staple industries are shipbuilding, engineering, spinning, and sugar-refining; coal and iron are the chief exports, and sugar and timber the largest imports. The churchyard of the North parish church is the resting place of Burns' Highland Mary. Pop. 79,000.

Greensand, a term in geology for a whose green colour is due to the presence of glauconite. There are two main divisions separated by the gault, a series of beds of clay and marl—the upper or Selbornian, and the lower or Vectian.

Greenshank, a wading bird of northern latitudes resembling the

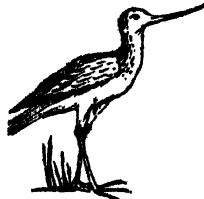
Sandpiper and found in Scotland in summer on its mi- gratory passages, ashy-brown in colour with white edges to the feathers. The legs are green.

Greenstone,

a term in geology relating to a series of basic igneous rocks, of variable composition, green in colour and in- cluding basalt, gabbro, diabase, diorite, etc. They occur among intrusive and eruptive rocks and have a granite-like structure.



GREENFINCH



GREENSHANK

Greenwich, a metropolitan borough of London, on the Thames, 6 m. S.E. of London Bridge; its active industries embrace engineering, telegraph works, chemical works, etc.; the National Maritime Museum and Royal Naval College are here; the Royal Observatory, founded by Charles II. in 1675, occupies a commanding site within the Park; it is from this point that degrees of longitude with us are reckoned. Pop. 97,000.

Greenwich Hospital, founded in 1694 by Queen Mary II. after designs by Christopher Wren, was from 1705 till 1869 an asylum for disabled sailors; since then the funds have been distributed in pensions and used for the upkeep of a school for seamen's children; the building is now the Royal Naval College.

Greenwood, Frederick, publicist and journalist; editor of now defunct London evening papers, the *Pall Mall Gazette* and *St. James's Gazette*, author of *Life of Napoleon III.*, *Lower's Lexicon and Dreams*; was instrumental in the purchase by the British Government of the Khedive's shares in the Suez Canal in 1875. (1830-1909).

Greenwood, Hamar, first Baron, British politician. Born in Canada, he entered the British House of Commons in 1906 as a Liberal. In the World War he served in France, and in 1919 became Under-Secretary at the Home Office; in 1920 he became Irish Secretary, and was in that post during the most troubled period of Irish history; he was raised to the peerage in 1929. (1870-).

Gregorian Calendar, the calendar introduced by Pope Gregory XIII. in 1582; it corrected the Julian calendar, which allowed the year 11 minutes 10 seconds too much; it was gradually adopted in all European countries, in England in 1752, eleven days being omitted from that year to regularise the Calendar.

Gregorian Chant, a form of plain-chant, the traditional unaccented and unmeasured liturgical music of the Catholic Church, so called from Pope St. Gregory I., who is said to have composed many of its melodies. It is now often also used in the Church of England for psalms, hymns, canticles, and the music of the Eucharist. At the end of the 19th Century it was restored and purified, largely by the efforts of the Benedictines of Solesmes Abbey, France.

Gregory, the name of 16 Popes: G. I., **Gregory**, St., the Great, Pope from 590 to 604; G. II., St., Pope from 715 to 731; G. III., Pope from 731 to 741; G. IV., Pope from 827 to 844; G. V., Pope from 996 to 997; G. VI., Pope from 1045 to 1048; G. VII., St., Pope from 1073 to 1085; G. VIII., Pope in 1187; G. IX., Pope from 1227 to 1241; G. X., Pope from 1271 to 1276; G. XI., Pope from 1370 to 1378; G. XII., Pope from 1406 to 1415; G. XIII., Pope from 1572 to 1585; G. XIV., Pope from 1590 to 1591; G. XV., Pope from 1621 to 1623; G. XVI., Pope from 1831 to 1846. Of these the following are worthy of note:—

Gregory I., The Great, St., born in Rome, son of a senator; made praetor of Rome; relinquished the office and became a monk; devoted himself to the regulation of church worship (reviving, among other things, the liturgy of the Mass), to the reformation of the monks and clergy, and to the propagation of the faith; saw some fair-haired British youths in the slave-market at Rome one day; on being told they were Angles, he said they should be Angels, and resolved from that day on the conversion of the nation to which they belonged, sending overseas for that purpose a body of monks under Augustine. (540-604).

Gregory II., St., born at Rome, became a Benedictine; is celebrated for his zeal in promoting the independence of the Church and the supremacy of the See of Rome, and for his defence of the use of images in worship. (d. 731).

Gregory III., born in Syria; was, and carried out the same policy to the territorial aggrandisement of the Holy See at a time when it might have been overborne by secular invasions. (d. 741).

Gregory VII., St., or Hildebrand, a most austere monk, he became sensible of the formidable evils tending to the corruption of the clergy, due to their dependence on the Emperor for investiture into their benefices, and he set himself to denounce the practice, to the extent of one day excommunicating certain bishops who had submitted to the royal claim and those who had invested them; his conduct roused the Emperor, Henry IV., who went the length of deposing him, upon which the Pope retaliated with a threat of excommunication; it ended in the final submission of Henry at Canossa (q.v.); the terms of submission imposed were intolerable, and Henry broke them, elected a Pope of his own, entered Rome, was crowned by him, and besieged Gregory in San Angelo, from which the latter was delivered by Guiscard and enabled to retire to Salerno, where he died, 1085.

Gregory IX., Ugolino, born in Cambrania; had during his pontificate contests with the Emperor Barbarossa, whom he twice over excommunicated; was the personal friend of St. Francis of Assisi, whom he canonised; died (1241) at a very advanced age.

Gregory XIII., born in Bologna; was distinguished himself in the Council of Trent, and by his zeal against the Protestants; celebrated the St. Bartholomew Massacre by public thanksgivings in Rome, and reformed the calendar. (1502-1585).

Gregory XVI., born in Belluno; occupied the Papal chair at a time of great civil commotion, and had much to do to stem the revolutionary movements of the time; developed ultra-montane notions, and paved the way for the hierarchical policy of his successor Pius IX. (1765-1846).

Gregory, Isabella Augusta, Lady, Irish playwright; married, 1881, Sir William Henry Gregory (d. 1892); in 1904 opened the Abbey Theatre, Dublin; established a national drama there. Rendered Irish sagas, also Molière, into the Irish dialect of English. Wrote many one-act plays, among them *The Workhouse Ward*, *The Gaol Gate*, *The White Cockade*, &c. (1852-1932).

Gregory, James, inventor of the reflecting telescope, born in Aberdeen; after a three years' residence in Padua became professor of Mathematics at St. Andrews, from 1669 to 1674, when he was elected to the corresponding chair in Edinburgh; author of various mathematical treatises which display a fine originality; he was struck blind whilst working at his telescope. (1638-1675).

Gregory, Nazianzen, St., Bishop of Constantinople, born in Cappadocia; studied in Athens, where he became the friend of St. Basil, and disputed with Julian, afterwards emperor; had been bishop of Nazianzus before he was raised by Theodosius to the bishopric of Constantinople; he was the champion of orthodoxy, a defender of the doctrine of the Trinity, and famed for his invectives against Julian; he has left writings that have made his name famous, besides letters, sermons and poems. Festival, May 9. (328-359).

Gregory of Nyssa, St., one of the Greek Church, brother of St. Basil, and Bishop of Nyssa, in Cappadocia; he was distinguished for his zeal against the Arians, and was banished from his diocese at the instance of the Emperor Valens, who belonged to that sect, but returned to it after his death; he was an eminent theologian and a valiant defender of orthodoxy. Festival, March 9. (352-400).

Gregory of Tours, Bishop of theologian and historian, born in Clermont; was the author of a *History of the Franks*, the earliest of French chronicles; his work contains a great number of valuable documents, though it is written in a barbarous style. (540-594).

Gregory Thaumaturgus, St., a theologian of the Greek Church and a convert and disciple of Origen; became Bishop of Neo-Cæsarea in Pontus; was present at the Council of Antioch; numerous conversions from paganism are ascribed to him, as well as many miracles. Festival, November 17. (210-270).

Grenada, one of the most picturesque of the Windward Is., in the British West Indies, of volcanic origin; lies about 60 m. N. of Venezuela; the harbour of St. George, the capital, is the most sheltered anchorage in the island group; cocoa and spices are cultivated; it was ceded by France in 1783. Area 130 sq. m. Pop. 66,000.

Grenade, frequently called hand-bomb, a shell or hollow ball of iron charged with explosive and provided with a fuse, thrown from the parapet of a trench and effective at a distance of up to 30 yds. As soon as the fuse is consumed, generally about four seconds, the charge explodes and the metal ball bursts into fragments.

Trench warfare during the World War saw a revival of grenade fighting, called "bombing," and the adoption of the Mills Hand-grenade. "Grenadier" formerly meant a soldier trained to throw hand-grenades.



MILLS BOMB

Grenadier Guards, the senior of the British army, formed in 1685, when Lord Wentworth's regiment was united with the Royal Guards raised by Colonel Russell for Charles II., and called the 1st Grenadier Guards. The regiment achieved distinction at Gibraltar, Blenheim, Waterloo and Sebastopol, and during the World War especially at the Battles of the Marne, Ypres, Hill 60, Neuve-Chapelle, Loos, Arras, Delville-Wood, Cambrai, etc.

Grenadines, a number of islands and islets of the Windward Is., British West Indies, some attached for administrative purposes to St. Vincent, others, including Carriacou, the largest and most populous, to Grenada.

Grenfell, Francis Wallace, Baron, Field-Marshal and Sirdar of the Egyptian army, born in London; distinguished himself in Zulu, Transvaal, Egyptian, and Nile expeditions (1885-1892), and commanded forces in Egypt (1897-1898). (1841-1925).

Grenfell, Sir Wilfrid Thomason, British missionary. He studied medicine at the London Hospital, and in 1892 went to Labrador, where he built hospitals and acted as medical missionary. During the World War he served in an American unit. (1865-).

Grenoble, a city of France, capital of the dept. of Isère, on the river Isère, 58 m. S.E. of Lyons; there are several fine old churches, and a university with a splendid library; the manufacture of kid gloves is the staple industry. Pop. 96,000.

Grenville, George, statesman, younger brother of Earl Temple; was called to the Bar in 1735, and six years later entered Parliament; held various offices of State, and in 1763 succeeded Bute as Prime Minister; his administration is noted for the prosecution of Wilkes (q.v.), and the passing of the American Stamp Act, a measure which precipitated the American Revolution. (1712-1770).

Grenville, Sir Richard, British seaman; already a knight, commanded the first expedition sent by Raleigh to colonise Virginia; took part in the defeat of the Armada, and in 1591, while commanding the *Revenge* in Lord Howard's squadron, engaged single-handed the entire Spanish fleet off the Azores; after a desperate fight of about 18 hours, during which time four of the Spanish vessels were sunk, and upwards of 2,000 of their men slain or drowned, he surrendered, was carried wounded on board a Spanish ship in which he died; the fight is celebrated in Tennyson's ballad *The Revenge*. (1541-1591).

Grenville, William Wyndham, Lord, statesman; entered Parliament in 1782; in 1789 he was Speaker of the House of Commons, and a year later was raised to the peerage and made Home Secretary under Pitt; in 1791 he was Foreign Secretary; supported Catholic Emancipation and the Abolition of the Slave-trade; he was Premier from 1806 to 1807; later he supported Canning and Earl Grey. (1759-1834).

Gresham, Sir Thomas, founder of the Royal Exchange, born in London; son of Sir Richard Gresham, wealthy mercer, who was knighted and made Lord Mayor in Henry VIII.'s reign; after studying at Cambridge entered the Mercers' Company, and in 1552, as "King's agent" in Antwerp, negotiated loans with the Flemish merchants; in 1559 appointed ambassador in Antwerp; between 1566 and 1571 he carried through his project of erecting an Exchange, and his munificence was further displayed in the founding of a college and almshouses. (1519-1579).

Gresham College, college founded by Sir Thomas Gresham in 1575, and managed by the Mercers' Company, London, where lectures are delivered, twelve each year, by successive lecturers on physics, rhetoric, astronomy, law, geometry, music and divinity, to form part of the teaching of University College.

Gretna Green, a village in Dumfriesshire, Scotland, just over the border from England, famous for its blacksmith's shop at which marriages are celebrated according to Scottish law.

Greuze, Jean Baptiste, a French painter, much esteemed for his portraits and exquisite *genre* pieces; he died in poverty. (1725-1805).

Greville, Charles Cavendish Fulke, celebrated for his *Memoirs*. After quitting Oxford he acted as private secretary to Earl Bathurst, and from 1821 to 1860 was Clerk of the Council in Ordinary; during his tenure of this office he enjoyed exceptional opportunities of meeting the public men of his time, and of studying the changing phases of political and Court life, of which he gives so lively a picture in his *Memoirs*. (1794-1865).

Grévy, François Paul Jules, third French President, born in Mont-sous-Vaudrey, Jura; after the '48 Revolution entered the Constituent Assembly, of which he

became Vice-President; his opposition to Louis Napoleon, and disapproval of his *coup d'état*, obliged him to retire; but in 1869 he again entered the political arena, and was four times chosen President of the National Assembly; in 1879 he was elected President of the Republic for seven years, and in 1886 was confirmed in his position for a similar period, but he resigned two years later. (1807-1891).

Grey, Charles, first Earl, soldier; as Sir Charles Grey of Howick he distinguished himself in the wars with the American Colonies and the French Republic, in 1804 was rewarded with a Barony, and two years later was made Earl Grey. (1728-1807).

Grey, Charles, second Earl, denounced union with Ireland; became leader of the House of Commons in 1806; carried Wilberforce's Act for the Abolition of the African Slave-trade; succeeded to the earldom in 1807, and denounced the Bill against Queen Caroline; becoming Prime Minister in 1830, he was defeated, and resigned twice over the Reform Bill; returning to power in 1832, with permission to make as many peers as might be needed, he succeeded at last in passing the Bill; was head of a powerful party in the reformed Parliament; resigned, 1834, over Irish troubles. (1764-1845).

Grey, Sir George, colonial governor and statesman, born in Lisburn, Ireland; while a captain in the army he explored Central Australia and the Swan R. district in 1837 and 1838; in 1841, having retired from the army, he became Governor of South Australia; in 1846 was Governor of New Zealand, and in 1854 Governor and Commander-in-Chief of the Cape of Good Hope, where he conciliated the Kaffirs; from 1861 to 1867 he was at his former post in New Zealand, where he pacified the Maoris; in 1877-1884 was Premier of New Zealand; he wrote *Journals of Discovery in Australia, Polynesian Mythology*, and made a valuable collection of Polynesian proverbs. (1812-1898).

Grey, Lady Jane, the ill-fated "nine days' queen," born at Bradgate,

Leicestershire; was the daughter of the Duke of Suffolk and the great-granddaughter of Henry VII.; she was highly proficient in Greek, Latin, and modern languages; a plot entered into by Suffolk and the Duke of Northumberland, whose son Lady Jane had been forced to espouse at 15, brought about her proclamation as Queen in 1553; the attempted usurpation was crushed in ten days, and four months later Lady Jane and her husband were executed. (1537-1554).



LADY JANE GREY

Grey Friars, the Franciscans (*q.v.*), from their grey habit.

Greyhound, a variety of dog remarkable for keenness of sight, and great speed, comprising many breeds, including the smooth-haired, the Irish greyhound, a powerful animal, formerly used in wolf-hunting, the borzoi, the Italian greyhound and a Highland breed, the only kind possessing any powers of scent. Greyhounds are bred mainly for racing and coursing.

Greyhound Racing, a sport similar to coursing, the dogs chasing an electric hare instead of a real one. It was introduced into England from America in 1896, and at once leapt into popularity; there are now race-tracks in nearly all the large British cities, the best known in London being at the White City, Haringey, Wembley and Wimbledon.

Grey of Fallodon, Edward, first politician. Entering Parliament in 1885 as a Liberal, he first took office in 1892, and in 1905 became Foreign Secretary, a position he held in 1914, when he strove hard to avert the World War. He resigned from the government with Asquith in 1916, when he received a peerage, and followed that leader politically throughout his career. Failing sight handicapped his later years. (1862-1933).

Greywethers, large blocks of sandstone, locally called sarsen stone, found in Wiltshire and other southern counties, as at Stonehenge; so called from their resemblance to sheep.

Grid, name given to one of the electrodes apparatus. See Valve.

Grid System, name for the network of conductors of electrical power established over the whole country to connect the electrical generating stations and enable the transfer of power at high voltages from one district to another. The power from generating-stations is sold at pre-arranged prices to a central board, by whom it is re-sold to the various distributing companies. Power is transmitted at 132,000, 66,000 or 33,000 volts, and is reduced to lower voltages in the areas where it is to be used. Overhead transmission lines supported by pylons are used in open country, but in towns the insulated conductors are carried underground.

Grieg, Edvard, Norwegian composer, born in Bergen, of Scottish descent; received his first musical lessons from his mother, and at 15 went to Leipzig; in 1863 was at Copenhagen and then established himself as a teacher at Christiania, where he continued eight years and became intimate with Ibsen; subsequently received a government pension, and devoted himself to musical composition; his music, chiefly pianoforte pieces and songs, and the well-known orchestral suite *Peer Gynt*, achieved a wide popularity. (1843-1907).

Griffin, or **Griffon**, a chimerical fabulous animal, first depicted in the art of the ancient East and in Greece, generally as a cross between eagle and lion, with sometimes minor features from other animals, such as the cock, horse or fish; it is used as a charge in heraldry.



GRIFFIN

Griffith, Arthur, Irish

statesman, journalist, and one of the founders of Sinn Féin; was arrested in 1918 and chosen Vice-president of the Irish Republic while in prison; in 1921 replaced De Valera as President, being the chief Irish signatory of the treaty establishing the Irish Free State, after which he parted company with De Valera and the anti-treaty party, and became first President of the Dáil when that body was given legal status. (1867-1923).

Grimaldi, Joseph, a famous English clown, son of an Italian dancing-master, born in London; was trained for the stage from his infancy, appearing on the boards when not yet two years old; his Memoirs were edited by Dickens, who describes him as "the genuine droll, the grimacing, flopping, irresistible clown." (1779-1837).

Grimm, Friedrich Meisner, Baron, a German litterateur and critic, born in Ratibon; settled in Paris and became acquainted with Rousseau and the leading Encyclopédistes; on the breaking out of the Revolution he retired to the Court of Gotha and afterwards to that of Catharine II.

of Russia, who made him her minister at Hamburg; his correspondence abounds in piquant literary criticism. (1723-1807).

Grimm, Jacob Ludwig, German philologist, born in Hanau; librarian to Jerome Bonaparte, King of Westphalia, and afterwards to Göttingen University, where he was also a professor, devoting himself the while chiefly to studies in early German lore; afterwards with his brother Wilhelm settled in Berlin, and with him in 1812 produced the celebrated *Grimm's Fairy Tales*; also wrote on German grammar and mythology. (1785-1863).

Grimm, Wilhelm Karl, philologist, younger brother of the preceding, born in Hanau; was associated both in his appointments and work with his brother, the two being known as the Brothers Grimm; edited several old German poems, his principal work *Die Deutsche Heldensage*. (1786-1859).

Grimm's Law, first enunciated by J. L. Grimm, is a statement of certain consonant changes that are assumed to have taken place in the old Germanic language either at the time of the branching off of Germanic from the parent Indo-Germanic stock or subsequently. The changes took place in the remote past, and there are no literary records of it except in the comparative differences between languages (modern and classical) which otherwise have such similarity as to justify the assumption of a common origin. According to Grimm's law *p* in the hypothetical parent Indo-Germanic language becomes *f* in Germanic (cf. Latin *p*lacc = a fish with Germanic *f*isc, English fish). Other consonant changes are also enunciated.

Grimsby, or *Great Grimsby*, a seaport of Lincolnshire, England on the S. shore of the Humber, opposite Spurn Head, 20 m. SE. of Hull; was a port of importance in Edward III.'s time; is now the largest fishing-port in the kingdom; has extensive docks, shipbuilding, tanning, brewing and other industries. Pop. 94,000.

Grimspound, a relic of an ancient stronghold on Dartmoor, Devonshire, near the village of Hamilton Down. It consists of some twenty stone huts within a stone wall about 5 ft. high. It is said to be an example of an early Bronze-Age Village camp-dwelling, and is a unique specimen.

Grindal, Edmund, English divine; Archbishop of Canterbury in 1575; suspended as a puritan in 1577. (1519-1583).

Grindelwald, Oberland, in Switzerland, in a beautiful valley 12½ m. long and 4 m. broad, and nearly 3,500 ft. above sea-level; popular with tourists in the summer and for its winter sports. Pop. 3,500.

Grinnell Land, east central part of Arctic America, a mountainous, mainly ice-covered tract, where foxes and reindeer are found. Kennedy Channel and Kane Basin separate it from Greenland.

Grinstead, East, urban district and market town of E. Sussex, England, 14 m. NE. of Horsham. It has some picturesque old buildings. Pop. 8,700.

Griqualand, West and East, British territories in S. Africa, incorporated in Cape Colony (later Cape Province) in 1880. Griqua is a name given to half-breeds of Dutch fathers and Hottentot mothers.

Griselda, or *Griseldis* ("Patient Griselda"), heroine of medieval tradition; figures in Boccaccio, Petrarch and Chaucer; the beautiful daughter of a Piedmontese peasant, she was loved and married by the Marquis Walter of Saluzzo; his jealous

affection subjected her to several cruel tests of love, which she bore with "wifely patience," and in the end "love was aye between them twa."

Grisnez, Cape, a headland with a lighthouse, on the French coast opposite Dover.

Grisons (*Graubünden*), the largest of the Swiss cantons, lies in the SE. between Tyrol and Lombardy; consists of high mountains and valleys, amongst which are some of the most noted Alpine glaciers; the Engadine Valley, through which flows the Inn, is a celebrated health resort, as also the Davos Valley in the E.; some cereals are raised, but pasture and forest land occupy a large part of the canton, and supply the cattle and timber export trade; the population is mainly German-speaking. Area 2,750 sq. m. Pop. 126,000.

Grizzly, a species of bear found in western N. America, the largest of which attain a length of 10 ft. It varies in colour from light yellow to black, and is fierce and powerful, possessing great intelligence. Its food is roots, grubs and small animals.



Groat, a name applied formerly to any thick coin, the value varying in different countries; in England it was of silver and valued at fourpence; but in Germany, Poland, Holland, etc., of different values under the names of groschen, groots, grots, etc.

Grodno (*Gardinas*), town of Lithuania, on the Niemen, 148 m. NE. of Warsaw; with a medieval castle; manufactures soap, machinery, etc.; gives its name to a province, of which a small part is occupied, and all is claimed, by Lithuania, but the greater part is actually occupied by Poland. Pop. (town) 62,000.

Groin, an architectural term for the intersection of two semi-cylinders or arches. Groins in Gothic architecture are ribbed. In anatomy, the hollow in the human body where the thigh and trunk unite.

Grolier, Jean, a French bibliophile, whose library was dispersed in 1675; the bindings of the books being ornamented with geometric patterns, have given name to bindings in this style; they bore the inscription, "Jo. Grolieri et Amicorum" (the property of Jean Grolier and his friends). (1479-1565).

Groningen, a low-lying province in the NE. of the Netherlands, fronting the North Sea on the N. and having Hanover on its eastern border; its fertile soil favours extensive farming and grazing; shipbuilding is an important industry. The capital of the same name is situated on the Hunse, 94 m. NE. of Amsterdam; has several handsome buildings, a university (1614), botanic gardens, shipbuilding yards, and tobacco and linen factories. Area of province 890 sq. m. Pop. (town) 117,000; (province) 417,000.

Groote Schuur, official residence of the S. African premier. It is about 3½ m. from Cape Town, near Rondebosch, was formerly the home of Cecil Rhodes, to whom there is a memorial.

Gros, Antoine Jean, Baron, a French historical painter, born in Paris; his subjects were taken from events in the history of France, and especially in the career of Napoleon; his first work was "Festivities de Jaffa," and his latest, a picture in the cupola of the Church of St. Geneviève, in Paris. (1771-1835).

Grosbeak, name for several birds of the Fringillidae family, including the hawfinch, the name referring to the large beak; there are numerous American species, among them the cardinal bird.

Grosseteste,

Robert, an English cleric and philosopher, born at Stradbroke, Suffolk, of peasant parents; a man of rare learning, he became a lecturer in the GROSBEEK (HAWFINCH) Franciscan school at Oxford, and rose to be Bishop of Lincoln in 1335; he was an active Parliamentarian, and gave effective assistance to his friend Simon de Montfort in the struggle with Henry III., and headed the Church reform party against the nepotism of Innocent IV. (1175-1253).

Grossmith, **George**, actor, famous for his leading parts in Gilbert and Sullivan's operas, and for single-handed dramatic sketches and songs, written by himself and set to his own music. (1847-1912).

Grote, **George**, historian and politician, born at Clay Hill, Kent, of German descent; was a banker; spent his leisure time in the study of philosophy and history; represented the City of London as a Radical from 1833 to 1841, when he retired to devote all his time to his *History of Greece*, of which the first volumes appeared in 1846 and the last in 1856; wrote on Plato and Aristotle, but his philosophical creed made it impossible for him to do justice to the Greek metaphysics. (1794-1871).

Grotius, **Hugo**, or **Huig van Groot**, Dutch jurist and theologian, born in Delft; studied at Leyden under Scaliger, and displayed an extraordinary precocity in learning; won the patronage of Henri IV. while on an embassy to France; practised at the Bar in Leyden, and in 1613 was appointed pensionary of Rotterdam; he became embroiled in a religious dispute, and for supporting the Arminians was sentenced to imprisonment for life; escaped, fled to Paris, and was pensioned by Louis XIII.; in 1625 he published his famous work on international law, *De Jure Belli et Pacis*; from 1634 to 1645 he acted as Swedish ambassador at Paris; his work *De Veritate Religionis Christiane* is well known. (1583-1645).

Grouchy, **Emmanuel, Marquis de**, a French marshal, born in Paris; entered the army in 1780, and later gave enthusiastic support to the Revolution; took part in the Vendean campaign, the abortive attempt on Ireland; the conquest of Italy, the Piedmontese, Austrian and Russian campaigns of Napoleon, and by skilful generalship covered the retreat of the French at Leipzig; he was among the first to welcome Napoleon back from Elba, defeated Blücher at Ligny, and led the remnants of the French army back to Paris after Waterloo, and then retired to the U.S.A.; in 1819 he returned and in 1831 was reinstated as marshal. (1766-1847).

Ground Nut, general name for the edible root of various plants found in tropical areas; the most common species is the earth nut. The oil thence obtained is a constituent of margarine. It is an important product of British W. and E. Africa, particularly Nigeria, the commercial resultant being called palm oil.

Ground Rent, a sum paid annually for the right to build on another's ground. Land for building is usually let for ninety-nine years. There are

therefore two landlords, the leaseholder and the freeholder. At the termination of the lease the building becomes the property of the freeholder or his heirs.

Groundsel (*Senecio vulgaris*), a herb of the Compositae order. It ranks as a weed and bears yellow flowers. It is sometimes given to cage birds, especially canaries, which like the green leaves.

Group Captain, the rank of an officer commanding a number of squadrons in the Royal Air Force, equivalent to that of an Army colonel or naval captain.

Grouse, a game-bird of the family Gallinaceae with feathered legs and feather-concealed nostrils. They are found in northern regions of both hemispheres, generally in forests and moors, and feed on seeds, fruit and young plants. Species include the capercaillie, black grouse, red grouse, ruffed grouse and ptarmigan. The bird is a popular table dish. The grouse-shooting season begins on Aug. 12.

Grove, **Sir George**, born in Clapham; trained as a civil engineer, and assisted Robert Stephenson in constructing the Britannia tubular bridge; from 1849 to 1852 was secretary to the Society of Arts, and later secretary and director of the Crystal Palace Company; subsequently he was editor of *Macmillan's Magazine*, a contributor to *Smith's Dictionary of the Bible*, and is best known for the *Dictionary of Music and Musicians* which he edited and partly wrote. (1820-1900).

Groyne, a framework of timber, or low, broad wall of concrete or masonry run out into the sea for the purpose of arresting the washing up of shingle, and thus raising a barrier against encroachment. Timber groynes are common at sea-side resorts, where they lessen the force of the waves and thus provide easier bathing facilities. See also *Coast and Coast Protection*.

Grub Street, a street in London near Moorfilds, formerly inhabited (according to Dr. Johnson) by a needy class of jobbing literary men, and the birthplace of inferior literary productions.

Grün, **Hans**. See *Baldung, Hans*.

Grundy, **Mrs.**, an old lady referred to in *Speed the Plough* (1798), personifying the often affected extreme offence taken by people of the old school at what they consider to be violations of propriety.

Gruyère, a small town in Freiburg (q.v.), where whole-milk cheese is made. Pop. c. 1,500.

Guadalajara, second largest city of Mexico, capital of Jalisco state, the seat of an archbishop. It has a university, a large library, a mint and a fine cathedral. Pop. 185,000. Also the name of a province of Spain, in Castile, E. of Madrid, in which are silver-mines. It was in this region that the Italian mercenaries, fighting for Franco, suffered a very heavy defeat in the Spanish Civil War, in 1937. Area 4,686 sq. m. Pop. 205,000.

Guadalquivir, the most important river of Spain, rises in the Sierra de Cazorla, in the southern province of Jaen, and flows in a SW. direction through Andalusia, passing Cordova and Seville, being navigable for steamers up to the latter city; after a course of 374 m. it discharges into the Gulf of Cadiz at San Lucar de Barrameda.

Guadeloupe, a French colony in the Lesser Antilles (W. Indies), consisting of two islands and five small dependent islets. The larger islands are Guadeloupe proper (Capital, Basse-Terre) and Grande-Terre. Area of the two 690 sq. m.



They are subject to earthquakes; produce sugar, bananas, rum and coffee. Pop. of the whole group 268,000.

Guadiana, an important river of Spain, has its source in the E. of the plateau of Mancha, and for a short distance is known as the Zancara, flows in a westerly direction as far as Badajoz, where it bends to the S., then forms the border between Portugal and Spain for a short distance, bends into Alemtejo, and again, before reaching the Gulf of Cadiz, divides the two countries; it is 510 m. long, of which only 42 are navigable.

Guanaco, a S. American ungulate mammal (*Lama huanacus*), from which the llama and alpaca have been developed by domestication. It is allied to the old World camel.

Guanajuato, a central province of Mexico; is rich in minerals, especially silver, and mining is the chief occupation; but stock-raising is of some importance, and large cotton and woollen factories have of recent years been introduced. Area 11,800 sq. m. Pop. 988,000.

The capital, Guanajuato, is the centre of the mining industry, and has pottery manufactures. Pop. c. 25,000.

Guano, deposits found in islands off the coast of S. America and elsewhere, rich in phosphates and ammonium compounds, which are of great value as fertilisers; they are formed from the dung of cormorants, who consume large quantities of fish, obtaining more phosphate than they require.

Guarantee, a pledge of collateral responsibility for the debt of another person, in the event of the latter's default. To be legally enforceable it must be in writing. The person giving the guarantee is known as a guarantor or surety, and suretyship may be effected jointly by several persons. A guarantor who has paid a debt is entitled to claim full repayment from the original debtor. It has become a common practice for insurance companies or other bodies or persons to give "fidelity guarantees" for the honesty of persons in positions of trust.

Guardian, the name in English law legal control or management of the person or property or both of an infant—i.e., one under the age of 21. A guardian may be such by nature—e.g., the father or other ancestor—by statute, or a judicial guardian, appointed by the Chancery Division of the High Court. In Scotland a guardian is termed a tutor. The consent of the guardian is necessary for the marriage of an infant, unless the court dispenses with it.

Guardians, elected bodies formerly charged with looking after the relief of the poor, both in workhouses and with out-relief. They were set up under the Poor Law Act in 1834, and were abolished in 1930, when their work was transferred to county councils and the councils of larger boroughs.

Guards, in the British Army the special term for the Royal Household Troops constituting the Brigade of Guards. Their special duty is the protection of the Sovereign. The term also includes the Foot Guards, of which there are five regiments, Grenadier Guards, Coldstream Guards, Scots Guards, Irish Guards and Welsh Guards.

The Mounted Brigade of Guards comprises the 1st and 2nd Life Guards, and the Royal Horse Guards. In peace time they form part of the garrison of London and the guard of the Sovereign at Windsor, and they do not

leave the country except in special circumstances, the last occasion being service in France during the World War. They are the "crack" regiments of the British Army, are enlisted from men of exceptional stature and physique, and are famous for their discipline and proficiency of training.

Guatemala, a Republic of Central America, fronting the Pacific on the W. between Mexico on the N. and San Salvador and Honduras on the S.; is for the most part mountainous, with intervening valleys of rich fertility; minerals are abundant, and gold and silver are worked, but the wealth of the country lies in its fertile soil, which produces abundance of coffee, sugar, bananas, wheat and fruit of all kinds; Roman Catholicism prevails, and the government is vested in a President and single-chamber legislature. Its independence was proclaimed in 1839. Area 45,450 sq. m. Pop. 2,245,000. The capital, Guatemala, stands on a plateau 72 m. N.E. of its port, San José; there is a cathedral and an archbishop's palace. Pop. 134,000.

Guava, a shrub found in tropical America yielding a succulent fruit used for preserve-making. Varieties are the lemon, red and strawberry guava.

Guayaquil, the largest city and principal port of Ecuador stands at the entrance of the R. Guayaquil on the Gulf of the same name; the foreign trade is centred here; there are shipyards and a good harbour; coffee, quinine and cocoa are exported; there is a university. Pop. 140,000.

Gudgeon (*Gobio fluviatilis*), an edible fresh-water fish, allied to the carp, and found in streams in European countries, including Great Britain.

Gudrun, a heroine in an old German epic (of unknown authorship) so called; daughter of Hettel, King of Frisland; she was betrothed to Herwig, King of Zealand (Heligoland) and carried off by Harnuth, King of Norway, a rejected suitor; preferred out of respect to her vow to serve as a menial in his mother's kitchen rather than be his wife; was rescued from duress by her brother, and her betrothed, and being married to Herwig, pardoned the suitor that had stolen her from his embrace. The epic is concerned chiefly with legends of the North Sea coasts and Normandy, and holds a place in German literature only second to that of the *Nibelungenlied*.

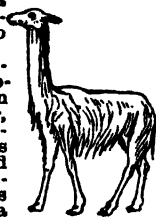
Guelderland, or **Guelders**, a province of the Netherlands, stretching from the Zuider Zee on the NW. to Prussia on the SE.; agriculture is the staple industry; the Rhine crosses it in the S. Area 1,940 sq. m. Pop. 900,000.

Guelder Rose (*Viburnum Opulus*), an ornamental plant of

the natural order Caprifoliaceae, native of the British Isles, Europe and temperate Asia, with small white clustered flowers which have given it the name "Snowball tree."

Guelph, city of Ontario, in Canada, 45 m. SW. of Toronto, in an agricultural district. Here is the Ontario Agricultural College and Experimental Farm. Pop. 22,000.

Guelphs, or **Welfs**, a political party in Italy, who from the 11th to the 14th centuries maintained, against the claims of the Emperors, the independence of Italy, and the supremacy of the Pope, in opposition to the Ghibellines (q.v.). Guelph was the surname of the British Royal family until it was superseded in 1917 during the World War by "Windsor."



GUANACO



Guerillas, bands of armed irregular war independently of the principal combatants. Guerilla bands took part in the Spanish-American, Boer and Franco-German wars. They are, if captured, not entitled to the privileges of combatants.

Guernsey, the second in size of the Channel Is. (q.v.); fruit and vegetables are largely exported and it is noted for a fine breed of cows; St. Peter's Port is the only town, and has an excellent harbour. Alderney, Sark and the smaller islands are dependencies of Guernsey. Area 15,650 acres. Pop. 40,500.

Gueux, "the Beggars," the name assumed by the nobles and others of the patriotic party in the Low Countries in the War of Independence against Philip II. of Spain; being called beggars, in reproach by the Court party, they adopted the name as well as the dress, wore a fox's tail for a plume and a platter for a brooch.

Guiana, an extensive tract of country in the N. of S. America, fronting the Atlantic, bordering on Venezuela on the W., and for the rest hemmed in by Brazil; it is divided into British, Dutch and French Guiana, all fronting the sea; the physical characteristics of all three are practically the same: a fertile alluvial foreshore, with upward-sloping savannahs and forests to the unexplored highlands, dense with luxuriant primeval forest; rivers numerous, climate humid and hot, with a plentiful rainfall; vegetation, fauna, etc., of the richest tropical nature; timber, balsams, medicinal barks, fruits, cane-sugar, rice, cereals, etc., are the chief products; also some gold. **British Guiana**, ceded by the Dutch in 1814, is the most westerly, and borders on Venezuela. Area, 89,500 sq. m.; Georgetown (q.v.) is the capital. Pop. 333,000. **Dutch Guiana**, or Surinam, occupies the central position; area 54,300 sq. m.; pop. 170,000; capital Paramaribo (q.v.). **French Guiana**, or Cayenne, lies to the E.; area 34,750 sq. m.; capital Cayenne (q.v.). Pop. 31,000.

Guides, a regiment of the Indian Army recruited principally from Sikhs and Pathans with British officers. They are trained for mountain warfare on the NW. Frontier of India and have a distinguished record.

Guido Aretinus (**Guy of Arezzo**), a Benedictine monk who flourished at Arezzo, in Italy, during the 11th Century, the first to promote the theoretical study of music; he is credited, amongst other things, with the invention of counterpoint, and was the first to designate notes by means of alphabetical letters, and to establish the construction of the staff. He is said to have been prior of a monastery at his death.

Guienne (a corruption of Aquitania), an ancient province of SW. France now subdivided into the departments of Gironde, Dordogne, Lot, Aveyron and embracing parts of Lot-et-Garonne and Tarn-et-Garonne. It was in English hands through a large part of the Middle Ages.

Guildford, town of Surrey, on the Wey, 30 m. SW. of London, a quaint old town with interesting buildings and the ruins of a Norman castle; a cathedral is in process of building; there are corn mills, printing and railway works. It was at one time the county town of Surrey. Pop. 34,000.

Guildhall, a hall for the meetings of trading bodies of a town; medieval examples still exist at Poole, King's Lynn, Wenlock, etc.; most famous is the London Guildhall, the meeting-place of the City Corporation, with library, museum, art-gallery and banqueting-hall; it dates from the 16th Century.

Guilds, associations of craftsmen or watch over and protect the interests of the crafts or trades, to see that they were honourably as well as economically conducted and to afford help to needy members, each with a body of officials to superintend its affairs.

Guild Socialism, a form of Socialism advocating the communal ownership of the means of production and wealth as represented by the earth's natural resources, the direction being in the hands of trade-unions composed of representatives of the various workers of the entire industry.

The movement began as a reaction against state-socialism and because of the fear that syndicalism (q.v.) would give rise to inequalities between the workers in different industries. The nature of the central administrative authority and the relation between the bodies representing consumers and producers respectively were matters of some controversy. After the World War some "Building Guilds" were formed in England and operated with considerable success, but on the whole little has been heard since the War of this particular form of Socialism.

Guillemot, a genus (*Uria*) of coastal family, inhabiting the Arctic and North Temperate Zones, the Common Guillemot, Marrot, or Murre (*U. troila*) and the Black Guillemot (*U. grylle*) breeding on British shores. There are eight species. The colour is brownish-black on the back with white beneath though subject to seasonal changes.

Guillotine, a beheading machine, introduced into France at the time of the Revolution by a Dr. Guillotin, who, believing that it would obviate unnecessary pain, successfully recommended its adoption by the National Convention; it was anticipated by the *Maiden* in Scotland, which the Regent Morton employed in 1566 and, long before that, by the Italian *Mannaia*. It was sometimes called the *Louisette* from the fact that one Antoine Louis introduced further improvements in the machine.

Guinea, a gold coin formerly current in Britain until 1817, when it was replaced by the sovereign. Its value was variable, but finally fixed at 21s. Professional fees are still generally estimated in guineas. "Spade guineas" bore a spade-shaped shield on the reverse side.

Guinea, a name somewhat loosely applied to an extensive tract of territory on the W. coast of Africa, generally recognised as extending from the mouth of the Senegal in the N. to Cape Negro in the S.; the territory is occupied by various colonies of Britain, France, Portugal, Belgium, Spain and the Republic of Liberia. It is specially to French Guinea (q.v.), the Senegal, between Gambia and Sierra Leone, and Spanish Guinea, between the French Congo and the Cameroons.

Guinea Fowl, a bird of the pheasant family, native to Africa, between Abyssinia and Natal, and now domesticated in Europe and America for their eggs and for table use. There are nine species.

Guinea Pig, or *Cavy*, a rodent of S. America. The domesticated species is short-limbed and about 6 ins. long, the fore-feet having four toes and the hind-feet three; there is no tail. They are very prolific, and are used to a considerable extent for bacteriological and biological experiments.



Guinea Worm, a small, hair-like parasite under the human skin. The eggs enter the stomach in drinking-water.

Guinegate, a village in Hainault, SW. of Belgium, where Henry VIII. defeated the French in 1513 in the Battle of the Spurs (q.v.).

Guinevere, the beautiful wife of King Arthur; conceived a guilty passion for Lancelot, one of Arthur's knights; which continued until Arthur's death, after which she became a nun; there are several versions of her story, one of which is told in Tennyson's *Idylls of the King*.

Guisborough, urban district and market town of Yorkshire, England, in the N. Riding, 9 m. SE. of Middlesbrough. Iron is obtained near by and it has ruins of an ancient abbey. Pop. 8,200.

Guiscard, Robert, Duke of Apulia and Normandy; along with his brothers, sons of Tancred de Hauteville, invaded S. Italy and won the dukedom of Apulia; when Pope Gregory VII. was besieged in San Angelo by Henry IV. of Germany he came to the rescue and the emperor fled. (1015-1085).

Guise, town of France, in the dept. of Aisne, on the R. Oise, 30 m. N. of Laon. It has ironworks and textile factories, and suffered damage during the World War. Pop. 7,000.

Guise, a celebrated French ducal family, deriving its title from the town of Guise in Aisne.

Guise, Charles, Cardinal of Lorraine, son of the succeeding, and considered the ablest of the Guise family; was Archbishop of Reims in 1538, and Cardinal of Lorraine in 1547; was prominent at the Council of Trent, and in conjunction with his brother fiercely opposed Protestantism. (1524-1574).

Guise, Claude, of Lorraine, first Duke of, fifth son of René II., Duke of Lorraine; distinguished himself in the service of Francis I., who conferred on him the dukedom of Guise; was the grandfather of Mary Queen of Scots, through his daughter Marie, wife of James V. of Scotland. (1496-1550).

Guise, Francis, second Duke of, and son of preceding; rose to high eminence as a soldier, winning, besides many others, the great victory of Metz (1552) over the Germans, and capturing Calais from the English in 1558; along with his brother Charles (q.v.) he was virtual ruler of France during the feeble rule of Francis II., and these two set themselves to crush the rise of Protestantism; he was murdered by a Huguenot at the siege of Orleans. (1519-1563).

Guise, Henry I., third Duke of, son of Francis; the murder of his father added fresh zeal to his inborn hatred of the Protestants, and throughout his life he persecuted them with merciless rigour; he was a party to the massacre of St. Bartholomew (1572); his ambitious designs on the crown of France brought about his assassination. (1550-1588).

Guise, Henry II., fifth Duke of, grand-archbishop of Reims, but the death of his brother placed him in the dukedom (1640); he opposed Richelieu, was condemned to death, but fled to Flanders; with Masaniello he made a fruitless attempt to seize the kingdom of Naples and eventually settled in Paris, becoming grand-chamberlain to Louis XIV. (1614-1664).

Guiseley, village of Yorkshire, England, in W. Riding, 2 m. SW. of Otley. Woollens are made. Pop. 3,600.

Guitar, a musical instrument consisting of strings mounted on a pine sound-board with a large sound cavity. The

strings are six in number, three of gut and three of wire, tuned to the notes E, A, D, G, B, E. The strings are plucked with the thumb and fingers while the tone intervals are regulated on the finger board by the left hand.

Guitry, Sacha, famous French actor and dramatist, son of Lucien Guitry, born in Petrograd; has played in America and England. Among his many works are *L'amour masqué*, *Le Miracle* and *Deburau*. (1885-).

Guizot, François Pierre Guillaume, French historian and statesman, born at Nîmes; his boyhood was spent at Geneva, and in 1805 he came to Paris to study law, but soon took to writing, and in his twenty-fourth year had published several works and translated Gibbon's great history; in 1812 he was appointed to the chair of History in the Sorbonne; after Napoleon's downfall became Secretary to the Ministry of Justice; in 1830 became Minister of Public Instruction, Foreign Minister and Prime Minister; his historical works, executed between his terms of office and in his closing years, display wide learning; the best known are *The History of the English Revolution* and *The History of Civilisation*. (1787-1874).

Gujarat, a northern maritime province of India lying between the Gulfs of Cutch and Cambay; it is a rich alluvial country, and comprises several native States; including Kathiawar and Baroda. Since 1933 a Gujarat States Agency, with headquarters at Baroda, has been formed which includes most of these States.

Gules, in heraldry the colour red, represented by vertical hatching.

Gulf Stream, the most important of the great ocean currents; it issues by the Strait of Florida from the Gulf of Mexico (whence its name), a vast body of water 50 m. wide, with a temperature of 84° and a speed of 5 m. an hour; flows along the coast of the U.S. as far as Newfoundland, whence it merges into the equatorial drift current, or Gulf Stream drift, which spreads itself in a N.E. direction across the Atlantic, throwing out a branch which skirts the coasts of Spain and Africa, while the main body sweeps N. between the British Isles and Iceland, its influence being perceptible as far as Spitzbergen; it is the genial influence of this great current which gives to Great Britain its warm and humid atmosphere.

Gulfweed, a floating seaweed, *Sargassum baccifrum*, found in large quantities in the Sargasso Sea. The Gulf Stream carries it northwards from the Gulf of Mexico. It has small, bladder-like berries.

Gull, a genus of sea-birds of the Laridae family, long-winged and web-footed.

There are over 50 species. They are mostly marine, and live upon fish, though some live inland and eat worms and insects. The different varieties include the tern, skimmer, kittiwake and alca.



BLACK-BACKED GULL

Gum, general name for viscous liquids of varying kinds which exude from trees and plants. They contain glucose, and are valuable in the manufacture of emulsions and in calico-printing. They include gum arabic from the Acacia plant, gum tragacanth and the various resins soluble in alcohol.

Gumbinnen, town of E. Prussia, Königsberg, Germany, 70 m. E. of Königsberg, with manufactures of machinery, textiles, beer, brandy, etc. There was fighting here in 1914 between Russians and Germans. Pop. 17,500.

Gun, a generic term applied to firearms of all kinds and sizes, from the howling-piece to the heavy howitzer; but in ordinary language it especially denotes the former, while in the military sense it is exclusively applied to ordnance. The earliest form of gun, in the ordinary sense, was a hand-gun with a match applied to the powder at a touch-hole.

Improved gunpowder led to the matchlock gun, where the match was fixed to a hammer operated by a trigger-action. This was followed in the 17th Century by the wheel-lock, a spark-producing contrivance which replaced the match. The flintlock was a further improvement, a more reliable spark being obtained from the impact of a piece of flint upon the priming pan.

All these guns were loaded at the muzzle, but in the 19th Century the breech-loader appeared, the barrel and stock being separate pieces. They were called pin-fire guns, a firing-pin being released by a spring in the bolt which, when released, struck the percussion-cap of the cartridge, the ignition of which exploded the charge. See also *Rifle*.

Cannon were first introduced into Europe in the 14th Century; the Germans certainly used guns at the siege of Cividade, Italy, in 1331. Early cannon were made of longitudinal iron bars hooped with rings; the charge was contained in a separate chamber placed in a socket in the breech, and the shot was of lead, iron or stone. They were used at Calais and at Crécy in 1346, at Bruges in 1382 and at Constantinople in 1394. The great bombard of Ghent (1382) weighed 13 tons, was 16 ft. long and fired a granite shot. The wrought-iron cannon in Edinburgh Castle, known as "Mons Meg," was a similar weapon.

Brass guns were first made in the 15th Century. Hollow bronze and iron guns were first cast in England in the 16th Century. Siege guns were made capable of firing an 80-lb. shot. Lighter field-guns and cartridges were invented in the 17th Century. In the 18th Century guns were cast solid and then bored; smooth-bore guns were made at Carron foundry. Rifled field-guns were first used in 1859.

The only metal used in modern gun construction is steel, the chief physical properties required being elasticity, ductility, tenacity, malleability and hardness; but improvements in gun steel are obtained by adding a little chromium, nickel and molybdenum.

Gunboat, a small type of war-craft armed with quick-firing and machine-guns and employed in the British Navy mainly on rivers such as the Yangtze-kang, where British interests and British nationals in the International Settlement require protection. During the World War they played a considerable part on the Tigris and Euphrates in the Mesopotamian campaign.

Gun-cotton, a powerful explosive of nitric and sulphuric acid on cellulose. It enters into the composition of cordite and blasting gelatine.

Gun-metal, a tough, close-grained alloy of copper and tin, in the proportion of nine parts of copper to one of tin, used for making castings.

Gunpowder, an explosive mixture of saltpetre, sulphur and carbon; it is said to have been invented by the Chinese, and was first used in Europe at the Battle of Crécy (1346); it has been largely superseded by more powerful explosives, but is still in use for manufacturing fireworks, etc.

Gunpowder Plot, a conspiracy to blow up the Parliament of England on Nov. 5, 1605, the day of its opening, when it was expected the King, Lords and Commons would be all

assembled; the conspirators were a small section of Roman Catholics dissatisfied with King James's government and were headed by Robert Catesby, the contriver of the plot; the plot was discovered, and Guy Fawkes was arrested as he was proceeding to carry it into execution, while the rest, who fled, were pursued, taken prisoners, and the chief of them put to death. November 5 has since become a day for fireworks and "guy" burning.

Gunter, Edmund, mathematician, born in Hertfordshire, England; educated for the Church, but his natural bent was towards mathematical science, and in 1619 he became professor of Astronomy in Gresham College, London; his *Canon Triangulorum* (1620) was the first table of logarithmic sines and tangents drawn up on Briggs' system. Amongst other of his inventions was the surveying chain, known as "Gunter's chain," a quadrant, Gunter's scale, and he was the first to observe the variations of the compass. (1581-1626).

Gunther, King of Burgundy and brother of Chriemhilda; his ambition was to wed Brunhilda (q.v.), who could only be won by one who surpassed her in three trials of skill and strength; by the help of Siegfried, who veiled himself in a cloak of darkness, he succeeded not only in winning her hand, but in reducing her to wifely subjection after she was wed.

Gurkha (Ghurka), a native race of Nepal, an independent State adjoining India to the N. They enlist in large numbers as infantry in the British Army of India, and have a distinguished record of service on the Frontier and during the World War in France, Mesopotamia and Gallipoli. Their characteristic weapon is the Kukri, a heavy curved knife used with grim efficiency in hand-to-hand fighting.

Gurnard, a species of fish of the order Triglidae, frequenting the sea-

bottom near the coasts. The grey and red varieties are caught off British coasts. The head is bony and the body is furnished with finger-like rays.



GURNARD

Gurney, Joseph John, a Quaker philanthropist and writer, born at Earlham Hall, near Norwich; he co-operated with his sister, Mrs. Elizabeth Fry, in bringing about a reform of the prison system; his works include *Prison Discipline*, 1819, *Religious Peculiarities of the Society of Friends*, 1824. (1788-1847).

Gustav V., King of Sweden. He married in 1881 Princess Victoria of Baden, and succeeded to the throne in 1907. (1858-).

Gustavus (I.) Vasa, or Gu Ericsson, I., of Sweden from 1523 to 1560; having conceived the idea of freeing his country from the yoke of Denmark, under which it had fallen in 1519, he was captured by the Danes; escaping he became a wanderer in his own land, working in mines and enduring great privations, but at last, in 1520, the Swedes were goaded to rebellion, and under him eventually drove the Danes from their land in 1523; during his long reign Gustavus brought peace and unity to his empire. (1496-1560).

Gustavus (II.) Adolphus, King of Sweden from 1611 to 1632, born in Stockholm, grandson of preceding and son of Charles IX.; wars with Denmark and Russia occupied him during the early years of his reign; he espoused the Protestant cause in Germany against the Catholic League; victory crowned his efforts, but in the great Battle of Lützen (near Leipzig).

whilst facing Wallenstein (q.v.), his most powerful opponent, he fell in the act of rallying his forces, and in the hour of success. (1694-1632).

Gustavus III., King of Sweden from 1771 to 1792; succeeded his father Adolphus Frederick; in 1772, imposed a new constitution on the country greatly diminishing the power of the nobles; Gustavus was an enlightened ruler, but extravagant; in 1788 he became embroiled in a war with Russia; he was assassinated when about to take up arms against the French Republicans. (1746-1792).

Gustavus IV., King of Sweden from 1792 to 1809, son of preceding; lost territory to the French, and Finland to Russia, while an attack on Norway proved a failure; he was deposed in 1809 and the crown given to his uncle, Charles XIII. (1778-1837).

Gut, the alimentary canal of the body, animal or human, comprises three parts, the fore-gut, the mid-gut and the hind-gut. The mid-gut or mesenteron is the most important, and is a vital part of the digestive organs, in higher animals developing into the liver, etc. The mid-gut of the human being is about 24 ft. in length.

Gutenberg, Johannes, or Henne, also called *Gensfleisch*, claimed to have been the inventor of the art of printing with movable types, born in Mainz; for some time lived in Strasbourg as a polisher of precious stones, mirrors, etc.; he set up his first printing-press at Mainz about 1450. (1400-1468).

Guthrie, Sir James, Scottish genre and portrait painter, born at Greenock; educated at Glasgow High School, studied in London and Paris. His later work was almost all portraiture. President, Royal Scottish Academy, 1902-1919; knighted, 1903. Painted: "Funeral in the Highlands," Glasgow Gallery; "Group of British Statesmen of the War," National Portrait Gallery. (1859-1930).

Guthrie, Thomas Anstey, author and barrister; under the pen-name of F. Anstey, wrote *Vice Versa*, *The Giant's Robe*, *The Brass Bottle* and *Baboo Jabberjee*, B.A., an admirable satire on the Indian law student; a contributor to *Punch*. (1856-1934).

Gutta-percha, the juice of a tree Archipelago, closely related to rubber and used for similar purposes, especially for electrical insulation.

Guy, Thomas, founder of Guy's Hospital, London, born in Southwark; he started in business as a bookseller in 1668, and obtained the privilege of printing Bibles for Oxford University; lucky speculation in South Sea stock, combined with his printing business, enabled him to amass an immense fortune, which he devoted largely to charitable purposes; from 1695 to 1707 he sat in Parliament. (1645-1724).

Guy of Warwick, a hero of English romance of the 13th Century, who won the hand of the daughter of the Earl of Warwick by a succession of astonishing feats of valour, but repented of the slaughter he had made, and went on a pilgrimage to the Holy Land; returned to his wife disguised as a palmer; turned into a hermitage; when about to die sent a ring to her, upon which she came and interred him; she died 15 days after him, and was buried by his side.

Guyon, Mme. Jeanne Marie Bouvier de la Motte, French quietist and mystical writer, born at Montargis; was frequently imprisoned in convents for alleged heretical teaching; released last from Bastille in 1793. Died at Blois. (1648-1717).

Gwalior, important native State of Central India, under British protection since 1803; governed by a Maharajah (whose dynasty was founded by Ramaji Sindhia early in the 18th Century); consists of scattered districts in the basins of the Jumna and Narbada; opium is the chief export. Area 26,370 sq. m. Pop. 3,525,000. Gwalior, the capital, is situated 65 m. S. of Agra; the citadel is very strongly posted on a steep rocky base 340 ft. high.

Gwynn, Nell, a "pretty, witty" actress of Drury Lane, who became mistress of Charles II., whose son by her was created Duke of St. Albans; the King was very fond of her and took special thought of her when he was dying. (1650-1687).

Gyges, a young shepherd of Lydia, who, according to classic legend, possessed a magic ring of gold by which he could render himself invisible; he repaired to the Court of Candaules, whose first minister he became, whose chamber he entered invisibly, and whom he put to death to reign in his stead.

Gymnastics, the cult of physical fitness, is inherited principally from the Greeks, among whom it was an important branch of the regular education of boys. Greek youths were taught to wrestle, run, leap and to throw the javelin and quoit. The usual practice was to wrestle naked; hence the name *gymnastike*, from the word *gymnos*, meaning "naked." Among the Greeks athletic festivals were an important manifestation of national life, and the chief of these, the quadrennial Olympic Games, were sufficiently important to serve as the basis of Greek chronology.

The connection between health and gymnastics was early recognised, and for this reason gymnastics has been encouraged in modern times by all European countries, particularly by Germany and France, and in many cases is now supervised by Governments. Recent educational reforms such as Pestalozzi and Froebel have made it an integral part of their systems.

In Sweden, Professor Ling (1776-1838) was the originator of the celebrated Swedish drill. By this system static exercises are performed, the body being moved into various positions at a word of command. The German system advocates the use of apparatus—parallel bars, vaulting-horse, trapeze, etc. Mass drill can be carried out under either system. In Great Britain gymnastics and drill have never been highly popular, preference being given to athletic sports and games, but the "keep-fit" campaign, sponsored by the Government in 1937, is a recognition of the importance of national fitness which can be most readily attained by gymnastics.

Gymnosophists, a set of contemptible philosophers among the Hindus who practised an extreme asceticism and went about almost naked.

Gymnosperms, name given to a class of plants whose seeds are naked; the best-known group are the conifers, including the fir and pine.

Gynæcology, the study of the female system, especially those of the uterus, ovary, urethra and bladder, vagina and vulva. Those of the uterus include menstrual irregularity; of the ovary, ovaritis, or inflammation, and ovarian tumours; of the urethra, complication in the urinary system; and of the vulva inflammation and cancer. Obstetrics usually considered outside its orbit.

Gypsies, a dwindling nomadic race, Indian origin, speaking a language called Romany. They came to Europe 1400, and spread to various parts of the Continent, especially Hungary, Italy, Spain. There are still a number in

where they are usually caravan-dwelling pedlars, fortune-tellers, etc.

Gypsophila, a small-flowered herbaceous plant of the order Caryophyllaceae, common in Europe and Asia.

Gypsum, a soft mineral composed of sulphate of lime; it is often deposited from solution in the drying up of salt lakes, since sulphate of lime is more soluble in salt than in pure water; when heated, the water of crystallisation is driven off, leaving a white powder known as plaster of Paris, which sets to a hard mass when mixed with water. It is used as a fertilizer and for various purposes connected with the building trades.

Gypsy Moth, a yellowish-brown moth common throughout Europe, whose caterpillars are particularly harmful to trees of all kinds.

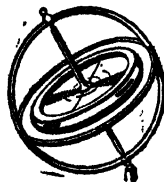
Gyrocompass. See *Gyroscopa*.

Gyroscope, a heavy disc or wheel that it is able to rotate in any plane. Its striking feature is that, when set rotating and left undisturbed, it always maintains the same direction in space, independently of its relation to the earth. Thus, if a gyroscope at the equator is set rotating round a horizontal axis pointing east and west, this axis will appear gradually

to tilt, so that at the end of six hours it is vertical, at the end of 12 hours horizontal again, but with the ends reversed, at the end of 18 hours vertical, but with the end formerly uppermost now below, and at the end of 24 hours once more horizontal in its original direction.

A further property of the gyroscope is known as precession; this is exhibited when a force is applied to it tending to alter the plane in which it is rotating—i.e., tending to change the direction in space of its spinning axis. The gyroscope resists this force and turns in such a way that the plane and direction of the spinning disc become the same as those of the applied force.

The properties of the gyroscope have been applied to navigation, the gyrocompass being essentially a gyroscope in which the precession due to the force of gravity is controlled and the axis of the gyroscope automatically maintains itself in a true geographical north-south direction, thus obviating the difficulties attaching to the use of a magnetic compass in steel ships, and securing greater accuracy in steering and in gunfire.



GYROSCOPE

H

Haakon VII., King of Norway, originally Prince Charles, son of Frederick VIII. of Denmark. He married Princess Maud, a daughter of King Edward VII. of England, in 1896, and succeeded to the throne of Norway on the dissolution of the union with Sweden in 1905. (1872-).

Haarlem, town in the province of N. Holland, on the Spaarne, 4 m. from the sea, and 12 m. W. of Amsterdam; has a fine 15th-Century church with a famous organ (8,000 pipes), linen and other factories, etc., and is noted for its tulip-gardens and trade in flower-bulbs. It is intersected by several canals as well as the river. A lagoon of the Zuider Zee called Haarlem Lake, which formerly stretched southward as far as Leyden, between Amsterdam and Haarlem, was drained by an English company during 1839-1852. Pop. 129,000.

Habakkuk, a book of the Old Testament, named by a Levite who appears to have flourished in the 7th Century B.C., containing a prophecy which belongs to its substance and form, to the classic period of Hebrew literature. It denounces the judgment of God on the land for the violence and wrong that prevailed in it, as about to be executed on it by a power still more violent and unjust in its ways; and comforts the generation of the righteous with the assurance of a time when this very rod of God's wrath shall in the pride of its power be broken in pieces, and the Lord be revealed as God in His Holy Temple.

Habeas Corpus, a writ requiring the production in court of a person accused of a crime and detained by the executive before conviction; the Habeas Corpus Act dates from the reign of Charles II. Under it even aliens resident in the United Kingdom are protected and the court will enquire into the legality of the detention.

Habit, the term in psychology for an action, or series of voluntary actions performed without effort of will, or volition, and different, therefore, from reflex actions, which are involuntary. It is acquired, according to psychologists, by first gaining ease and perfection in the action itself, then by constant repetition until the action becomes automatic and spontaneous.

A child acquires a habit more readily than an adult because its mind is more plastic and there is less distracting thought. The significance of habit in education is recognised by psychologists, and the encouragement of good and the eradication of bad habits is an important part of moral training.

Habit and Repute, a term in Scots law to denote an inference of legal relationship, especially where there is general belief that such relationship exists. If a person is a thief by habit and repute—i.e., notorious—the penalty he incurs is heavier. When a man and woman cohabit and are regarded by neighbours as man and wife, a condition of marriage by habit and repute is established. The reputation must have existed for at least a year without break and up to the date of conviction.

Hackenschmidt, Georges, Russian wrestler; born at Jurjev (Dorpat); became an engineer in St. Petersburg and in Germany; trained by Krajewsky; won many victories on Continent; came to England 1901 and became famous as a wrestler on the music-hall stage. In 1908, at Chicago he failed to conclude a match with Gitch, thus forfeiting world's championship. Has since taken to authorship of a mystical turn. (1876-).

Hackney, metropolitan borough in N.E. London, England, on the R. Lee; a mainly residential district, with some small industries. Pop. 208,000.

Hackney Carriages and Coaches.

Hackney coaches originated in London in 1695, the first stand appearing in 1834 near the old Maypole in the Strand. A smaller carriage, called a cabriolet (whence cab), was introduced in 1823. Drivers were required to purchase a licence, and any cab or carriage plying for hire to-day must hold a licence, the cost for a four-passenger taxicab, for example, being £10 per annum. Horse-cabs have almost disappeared from London streets, though a very few still ply for hire.



HACKNEY COACH

Haco, or Hakon V., King of Norway, from 1223 to 1263; defeated by Alexander III. of Scotland at Larga, and died in the Orkneys on his way home.

Haddington, county town of East Lothian, Scotland, on the Tyne, 17 m. E. of Edinburgh; has interesting ruins of an abbey church, called the "Lamp of Lothian"; was the birthplace of John Knox, Samuel Smiles, and Jane Welsh Carlyle. Pop. 5,700.

Haddingtonshire. See East Lothian.

Haddock (*Gadus ceglefinus*), a marine carnivorous fish of the Gadidae (Cod) family, found on N. Atlantic coasts. Its colour is brown with silver underneath, and there are two spots on the pectorals. It feeds on molluscs, and the bait employed for catching it is usually mussels. It travels in shoals from deep water to the coasts for spawning during March and April. Finnan haddocks take their name from Findon, Scotland.

Haddon Hall, a famous house situated on the R. Wye, at Bakewell, Derbyshire, owned by the Duke of Rutland; an outstanding example of an old English baronial mansion. It consists of two courts of irregular form, almost square, surrounded by suites of apartments, and was designed more for domestic than military purposes.

Hades (*Hu*, the Unseen), the dark abode of the shades of the dead in the nether world; originally a synonym of Pluto, the god of the nether world. This nether world was bounded by the River Styx.

Hadhramaut, a dry and healthy plateau in Arabia, extending along the coast from Aden to Cape Ras-al-Hadd; formerly a dependency of Turkey, but now independent, though protected by Great Britain. In 1934-35 W. H. Ingrams, first political officer of the Aden Protectorate, toured the country with his wife, collecting a great deal of profoundly interesting information. In 1938 Miss Freyr Stark also made a journey among the Hadhramis.

Hadji, a Mohammedan who has made his *Hadj*, or pilgrimage to Mecca, and kissed the Black Stone of the Kaaba (*q.a.*), thereby becoming entitled to wear a green turban.

Hadleigh, an old market town of Suffolk, England, on the Bret, 9½ m. W. of Ipswich; its cloth trade dates back to 1231; Guthrum, the Danish king, died here in 889, and Dr. Rowland Taylor suffered martyrdom in 1556. Pop. 3,000. Also a small parish of Essex, near the N. shore of the Thames estuary, 37 m. E. of London, where in 1897 the Salvation Army planted a farm-colony. There are ruins of a castle here.

Hadrian (Publius *Aelius* *Hadrianus*), Roman emperor, born in Rome; distinguished himself under Trajan, his kinsman; was Governor of Syria, and was proclaimed emperor by the army on Trajan's death in A.D. 117; had troubles both at home and abroad on his accession, but, these settled, he devoted the last 18 years of his reign chiefly to the administration of affairs throughout the empire; visited Gaul in 120, whence he passed over to Britain, where he built the great wall from the Tyne to the Solway; he was a Greek scholar, had a knowledge of Greek literature, encouraged industry, literature, and the arts, and reformed the laws. (76-138).



HADRIAN

Hadrian's Wall,

the remains of a line of Roman fortifications built by command of the Roman Emperor Hadrian in 122. Originally of turf, it was rebuilt of stone in 209, and extends from Wallsend on the R. Tyne to the Solway Firth. It was intended to act as a barrier against marauding bands of Picts and Scots. Portions near Chesters and Housesteads were acquired for the nation in 1930.

Haeckel, Ernst Heinrich, a German biologist, born in Potsdam; studied medicine at Berlin and Vienna; in 1865 became professor of Zoology at Jena; visited Arabia, India, Ceylon and different parts of Europe in the prosecution of his scientific theories; he was the first among German scientists to embrace and apply the evolutionary theories of Darwin. He made important contributions to the *Challenger* reports, and was among the first to trace the genealogical tree of animal life. His name is associated with far-reaching speculations on heredity, sexual selection and various problems of embryology. *The Natural History of Creation, Treatise on Morphology, The Evolution of Man*, are among his more popular works. (1834-1919).

Hæmatite, a form of iron-ore used in manufacture, as it is free from phosphorus. Its chemical name is diferric trioxide and it has a blood colour. A variety found in Spain is used by goldsmiths as a burnisher. The Assyrians used it as an ornamental stone.

Hæmaturia, a condition in which the blood; it may result from an injury, ulceration, tumours or stones in the bladder. The bleeding occurs as trickling or as clots preceding the passage of urine. Kidney disorders may give rise to the condition. The pain which sometimes accompanies the disease may be relieved by the application of heat.

Hæmoglobin, the substance giving the blood of vertebrates, consisting of proteins and iron compounds; its function in the blood is the carrying of oxygen from the lungs to the tissues of the body.

Hæmophilia, or Bleeder's Disease, a peculiar condition of the blood found in certain families and resulting in abnormal slowness in coagulating or clotting. As a consequence a slight injury may be accompanied by dangerous or even fatal hæmorrhage. The condition is hereditary and is transmitted through the female side of the family, though confined almost entirely to the male members. Certain royal families of Europe have suffered from this complaint. Persistent bleeding is the only sign of the disease.

Hæmorrhage, a term in medicine for bleeding. When the blood proceeds from an artery it issues in jets with the same frequency as the pulse. If the blood flows from a vein its colour is scarlet, and the stream is continuous and steady. Another form of bleeding, capillary or oozing, often occurs in the nose, and is difficult to stop owing to inaccessibility of the source.

Hæmorrhage from different parts of the body is known under such names as hæmoptysis (spitting of blood, as in consumption), hæmatemesis, (vomiting of blood, as in acute gastritis), hæmaturia (g.v.), epistaxis (bleeding from the nose), etc. Bleeding during pregnancy and parturition is known as accidental post-parturient hæmorrhage.

Treatment varies with the kind of hæmorrhage, but generally bleeding from a severed artery needs pressure on the bleeding artery between the wound and the heart. A tight bandage applied by turning it with a stick, called a tourniquet, is usually successful. In venous bleeding the bleeding part should be raised and pressure applied to it. The application of cold bandages often assists coagulation, and perchloride of iron and suprarenal extract are sometimes employed.

Hafiz (real name Mohammed Shams-ud-Din), the great lyric poet of Persia, born in Shiraz, where he spent his life. His poetry is of a sensuous character, though his images are often interpreted in a supernatural or mystical sense; Goethe composed a series of lyrics in imitation. (1320-1391).

Hafnium, a metallic chemical element named in honour of Copenhagen (Latin *Hafnia*). It belongs to the same group as titanium, zirconium and thorium. Symbol Hf, atomic number 72, atomic weight 178.6. Alloyed with tungsten, it finds some application in filaments for electric lamps.

Hagar, Sarah's maid, of Egyptian birth, who became by Abraham the mother of Ishmael and of the Ishmaelites.

Hagen, town in Prussian Westphalia, Germany, 30 m. E. of Düsseldorf; engaged in textile and metal industries, brewing, etc. Pop. 148,000.

Hagen, Walter, American golfer; born at Rochester, New York. Won: U.S.A. open championships, 1914, 1919, 1921 and 1924-1927; U.S.A. professional championship, 1924; British open championship, 1922, 1924, 1928, 1929; Belgian open championship, 1924; Canadian open championship, 1931. (1893-).

Hag-fish, general name for a family of eel-shaped, bottom-

dwelling sea fishes of the family Myxiniidae. The Common Hag-fish (*Myxine glutinosa*, so named because of the way the skin secretes glutinous slime) is found off the N. Atlantic and British coasts. They attack cod, haddock and other fish by boring into them and devouring the flesh.

Haggai, one of the Hebrew prophets of the Restoration (of Jerusalem and the Temple) after the Captivity. His book is a record of the prophecies he delivered in connection with the rebuilding of the Temple and its dedication in 516 B.C.

Haggard, Sir Henry Rider, born in Norfolk; after civil and military service in Natal and the Transvaal, adopted the profession of literature; first rose into popularity in 1885 by the publication of *King Solomon's Mines*, the promise of which was sustained in a measure by a series of subsequent novels beginning with *She* in 1887. (1856-1925).



HAG-FISH (with detail of head)

Haggis, a Scottish dish, composed of the of a sheep, chopped lungs, heart and liver seasoned with onions, pepper, salt, etc., and boiled in a sheep's stomach.

Hagiographa, the third division of scripture, including the books of Job, Psalms, Proverbs, Ecclesiastes, Canticles, Ruth, Lamentations, Esther, Daniel, Chronicles, Ezra and Nehemiah.

Hagiology, the branch of literature of saints and martyrs. The most famous ancient hagiology of the Western Church is the *Legenda Aurea*, or *Golden Legend*. In the Greek Church such collections are called menologies.

Hague, The, the capital of the Netherlands, 15 m. NW. of Rotterdam and 2 m. from the North Sea; is handsomely laid out with stately buildings, statues, and winding canals beautifully fringed with lindens and spanned by many bridges; has a fine picture-gallery, a royal library (200,000 vols.), an ancient castle, palace and a Gothic church of the 14th Century; industries embrace cannon-foundries, copper and lead smelting, printing, etc. It is connected by tramway with Scheveningen, a fashionable watering-place on the coast. It became famous for its conventions and peace conferences in the early years of this century; in 1899 the International Court of Arbitration was established there, and the town has also a magnificent Palace of Peace. Pop. 477,000.

Hague Tribunal, the outcome of two conferences held at the Hague in 1899 and 1907 which met to find some basis upon which the 26 member countries might reduce armaments and to consider an agreement for settling international disputes by arbitration. The Tribunal takes the form of a permanent panel of judges before whom cases for arbitration are heard.

Hahnemann, Samuel, a German of Homeopathy (g.v.), born in Meissen; established himself in practice in Dresden on orthodox lines and enjoyed a high reputation, but retired to revise the whole system of medicine in vogue, of which he had begun to entertain misgivings, and by various researches and experiments came to the conclusion that the true principle of the healing art was *similia similibus curantur*, "like things are cured by like," which he announced to the medical world in 1796, and on which he proceeded to practise first in Leipzig and finally in Paris, where he died. (1755-1843).

Haifa, or Khaifa, seaport of Palestine, 9 m. SW. of Acre, under Mount Carmel, with a good harbour, recently enlarged. It is served by railways, has a daily air service to Egypt, and is the terminus of a pipe-line from the Mosul oil-fields. Under Jewish leadership, industries are increasing rapidly; Egyptian cotton is grown nearby, and there are soap and cement works. Pop. 80,000.

Haig (Sir Douglas Haig), first Earl of Bessersyde, British general. Taking a commission in the 7th Hussars in 1885, he served in the Sudan and in the Boer War, where he was chief-of-staff to French. In 1914 he went to France with the British Expeditionary Force in command of the 1st Army Corps, and in Jan., 1915, was given command of the 1st Army. He succeeded French in command of the British forces on the Western front in Dec. 1915, working first with Joffre, then with Nivelle, and in 1918, when the German offensive was launched, he was nearly retired owing to differences with the Government. Foch was made supreme general of the Allied forces, and with Haig giving him loyal support the war was ended in

the autumn with an attack on the Hindenburg line. He was raised to the peerage in 1919, founded the British Legion, and devoted the rest of his life to the welfare of ex-servicemen. (1861-1928).

Haile Selassie (originally *Ras Tafari Makonnen*), extruded Emperor of Abyssinia, great-nephew of Menelik, was regent for the Empress Zauditu from 1917, and on her death in 1930 was crowned Emperor with costly splendour, after quelling a serious reactionary revolt. In 1935 Italy overran his country and annexed it, and the Emperor fled, henceforth residing in Europe. (1891-).

Haileybury College, 2 m. SE. England; founded in 1806 by the East India Company as a training institution for their cadets, and was so used till 1858, when the company ceased to exist; in 1862 it was converted into a public school.

Hailsham (*Sir Douglas Hogg*), first Viscount, British politician and lawyer. Son of Quintin Hogg, founder of Regent Street Polytechnic; educated at Eton; trained for the Bar and became a K.C. in 1917. Entered Parliament as a Conservative M.P. in 1922 and was Attorney-General, 1922-1924 and 1924-1928; knighted 1922; created a Baron 1928 and appointed Lord Chancellor 1928-1929 and 1935-1938; made a Viscount in 1929. Secretary of State for War and Leader of the House of Lords, 1931-1935. Lord High Chancellor, 1935-1938. Editor of a new edition of *Halsbury's Laws of England*. (1872-).

Hainan, an island of China, in the extreme S., between the Gulf of Tongking and the China Sea, 15 m. S. of the mainland; agriculture is the staple industry. Area 16,000 sq. m. Pop. 3,000,000.

Hainaut, or *Hainaut*, a southern province of Belgium, bordering on France, between W. Flanders and Namur; the N. and W. is occupied by fertile plains; the Forest of Ardennes extends into the S., where also are the richest coalfields of Belgium; iron and lead are worked also; the chief rivers are the Scheldt and Sambre; textiles, porcelain and iron goods are manufactured; Mons is the capital. Area 1,436 sq. m. Pop. 1,260,000.

Hair and Hair-dressing.

Hair is the fine, thread-like substance which forms the covering of the skin in animals of the order Mammalia, corresponding to feathers in birds and scales in fish. It varies from the wool of the sheep to the bristles of the hog and the quills of the porcupine.

Each hair consists of a shaft and a root, and the colour is due to pigment granules in the hair-cells. Connected with the hair are glands which produce an oil which lubricates the skin in addition to the hair. Baldness is caused by atrophy or exhaustion of the papilla. Diseases of the hair include plica, polonica, ringworm and alopecia.

The hair of horses, goats, hogs, etc., is used in manufacturing upholstery, clothing, brushes, etc., while human hair, most of which comes from France, Germany and Italy, has some commercial value for wig-making. Differences in structure and appearance are racial. N. Europeans have fair, curly or smooth hair; negroes crisp, short, woolly and very black; Mongols and Indians crinkly black.

Hair-dressing has been an art since ancient times, and striking fashions are observed even among savage and primitive races. Feathers and plumes are often employed by them for hair adornment. In the 18th Century in European countries hair-dressing reached the height of extravagance, especially with ladies. Elaborate erections were built on frames, while pearls, beads and other jewels were lavishly used.

The absurdities of the Georgian fashions disappeared with the Victorian age, and modern hair-dressing is confined most often to waving and cutting, according to the type of coiffure desired, a phenomenon of the present day being the rarity of long hair among women, while establishments for "permanent-waving" and hair-treatment by experts have sprung up everywhere.

Men's hair-dressing has varied little in fashion during the past fifty years, except that the "quiff" once popular among soldiers and the working classes, a sort of forelock plastered upon the forehead, has now almost disappeared. In Cavalier days the hair was worn upon the shoulders, until the Restoration, when the powdered perukes of France were copied. In Georgian times men's hair was tied in a knot at the nape of the neck and powdered.

Haiti (*Hispaniola* or *Santo Domingo*), next to Cuba the largest of the W. Indian Is., in the group of the Greater Antilles, lying midway between Cuba on the W. and Puerto Rico on the E.; its area, somewhat larger than Scotland, is apportioned between the negro Republic of Haiti in the E., over which the United States held a protectorate from 1915 to 1934, and the mulatto Dominican Republic (q.v.) in the W.; the island is mountainous, and forests of valuable timber abound; a warm, moist climate favours rice, cotton, etc., and minerals are plentiful; the language spoken is a corrupt French; Port-au-Prince and San Domingo are the chief towns. Discovered in 1492 by Columbus, the island was soon denuded of its aboriginals, then peopled by imported negroes, joined latterly by French buccaneers; in 1697 the island was ceded to France, but in 1791, under Toussaint l'Ouverture (q.v.), the blacks, after a bloody revolution, swept the island clear of Europeans; both Republics are governed under highly centralised constitutions of the usual S. American type. Area 29,500 sq. m. Pop. (Haiti) 2,500,000; (Santo Domingo) 1,480,000.

Hake (*Merluccius vulgaris*), a carnivorous fish of the cod (Gadidae) family, which feeds on herrings, pilchards, etc. It has a flattened head, deeply cleft mouth with long, sharp teeth, two dorsal fins (one short and one long) and one long anal fin. It is found in the Mediterranean and Northern seas. The flesh is white and flaky, and, though somewhat coarse, is one of our chief edible fish foods.



HAKE

Hakluyt, Richard, English author; became chaplain to the English embassy in Paris. His principal work, published in 1589, *Principal Navigations, Voyages, and Discoveries of the English Nation by Land and Sea*, a most important collection of contemporary travel narratives. (1552-1616).

Hakodate, port in Yezo, Japan, with considerable export trade. Pop. 207,500.

Halberd, or Halbert, a weapon much used in the English army during the 16th Century, consisting of a pole surmounted with a double-edged steel point, near the head of which was a cross-piece of steel shaped like an axe with a spike or hook at the other side.

Halberstadt, a town in Prussian Saxony, 30 m. SW. of Magdeburg; the 13th-Century cathedral is a fine specimen of Pointed Gothic, and the Church of Our Lady, a 13th-Century structure, is in the Byzantine style; its industries embrace gloves, cigars, machines and sugar. Pop. 50,000.

Halcyon Days, days of peace, happiness and prosperity, properly the seven days before and the seven after the winter Solstice, during which the halcyon, or kingfisher, is fabled to be breeding.

Haldane, John Burdon Sanderson, biologist, son of John Scott Haldane, Professor of Mining Research at Birmingham University (1860-1936), and nephew of Viscount Haldane. Educated at Oxford Preparatory School, at Eton, and at New College, Oxford, of which he was Fellow, 1919-1922. Served in Black Watch, 1913-1919, wounded twice, became captain. Reader in Biochemistry, Cambridge University, 1922-1932; Fullerian Professor of Physiology, Royal Institution, 1930-1932; President, Genetical Society, 1932-1936. Wrote *Calvinism, a Defence of Chemical Warfare*, 1925; *Animal Biology* (with Julian Huxley), 1927; *Fact and Faith*, 1934. (1892-).

Haldane, Richard Burdon Haldane, first Viscount, British statesman. The son of a Scottish lawyer, he was called to the Bar in 1879, became a Q.C. in 1890 and entered Parliament in 1888 as a Liberal. On Tariff Reform and Home Rule questions he took an independent line; but it was as a Liberal that he became Secretary for War in 1905. His work there was the creation of an Expeditionary Force, the substitution of the Territorial Force (re-modelled after the War as the Territorial Army) for the old Volunteers and militia, and the formation of a General Staff on the lines recommended by the Escher Committee. In 1912 he became Lord Chancellor, but retired on the formation of the Liberal-Unionist Coalition of 1915. His ill-starred allusion to Germany as his "spiritual home" brought unmerited obloquy upon him, and after the war he transferred his political allegiance to the Labour Party. He had a reputation as a philosopher, but was not, in this sphere, a constructive thinker so much as a notable interpreter of Hegelian metaphysics. (1856-1928).

Hale, George Ellery, American astronomer, director of the Mount Wilson observatory; carried out much research in all branches of astronomy and astrophysics. (1868-).

Halesowen, market town of Worcestershire, England, on the R. Stour, 6½ m. from Birmingham. There are iron and steel works, and metal goods are made. Pop. 32,000.

Halévy, Jacques François Fromental, a French operatic composer, born in Paris; became a professor at the Conservatoire; wrote a large number of operas, of which *La Juive* and *L'Éclair* were the best, and enjoyed a European reputation. (1799-1862).

Halévy, Ludovic, French playwright and novelist, born in Paris; author mainly of light plays and comedies, among the former *Orphée aux Enfers*, produced successfully in London in 1911; the best known of his novels is *L'Abbé Constantin*. (1834-1908).

Halibut, or Hailbut (*Hippoglossus vulgaria*), the largest species of flat-fish (Pleuronectidae family).

It is found in Northern waters (Iceland, Greenland, Norway, Scotland and the North Sea) on both coasts of the Atlantic, and has a very high food value, the oil from its liver having twenty times the vitamin value of cod-liver



HALIBUT

oil. The fish may reach 10 ft. in length and 300 lb. in weight. Both eyes are on the right side of the head.

Halicarnassus, chief city of Caria, in Asia Minor, on the sea-coast opposite the island of Cos, the birthplace of Herodotus; celebrated for the tomb of Mausolus, called the Mausoleum.

Halidon Hill, an eminence in Northumberland, on the Tweed, 2 m. from Berwick, the scene of a bloody battle in 1333 between the English and Scots, the latter being defeated.

Halifax, (1) a manufacturing town, in the W. Riding of Yorkshire, England, situated amid hills on the Hebble, 43 m. SW. of York; the staple industries are carpet and worsted manufacturing, the carpet works being the largest in the world; cotton, merinos and damasks are also woven and dyed. Pop. 98,000. (2) Capital of Nova Scotia, and the chief port in E. Canada; is situated near the head of Chebucto Bay, which forms a magnificent harbour; a citadel and masked batteries defend the town; it is an important railway and shipping terminus and coaling station; it is the seat of Dalhousie University. Pop. 58,000.

Halifax, Charles Lindley Wood, second Viscount, the British peer who for fifty years led the High Church party and was a prime mover in the Malines conversations (q.v.) for restoring unity with Rome. (1839-1934).

Halifax, Charles Montague, Earl of, a celebrated Whig statesman, born in Horton, Northamptonshire. In 1688 he entered the Convention Parliament, and his financial ability soon brought him to the front. In 1692 he brought forward a scheme for a National Debt, and two years later founded the Bank of England in accordance with the scheme of William Paterson. In the same year he became Chancellor of the Exchequer, and in 1697 Prime Minister. In conjunction with Sir Isaac Newton, Master of the Mint, he carried through a re-coinage, and introduced Exchequer Bills. In 1699 he was created a Baron, but subsequently was made the victim of an unsuccessful impeachment. With the accession of George I. he became again Prime Minister, and received an earldom. (1661-1715).

Halifax, Edward Frederick Lindley Wood, third Viscount, British politician, son of the second Viscount Halifax; he was Minister of Agriculture in the Conservative Government of 1924, and succeeded Lord Reading as Viceroy of India in 1926, being raised to the peerage as Baron Irwin; on his return in 1931 was made K.G., and in 1932 President of the Board of Education; succeeded to the earldom in 1934, and was later Secretary for War, 1935; Lord President of the Council, 1937; and Foreign Secretary, 1938. (1881-).

Halifax, George Savile, Marquis of, a changing politics of Charles II.'s and James II.'s reigns, whose apparently vacillating conduct won him the epithet of "Trimmer." An orator of brilliant powers imbued with patriotic motives, he was never a reliable party man. On the abdication of James II. he, as President of the Convention Parliament, proffered the crown to William of Orange. He rose to be a marquis in 1683. His writings, chief of which is *Character of a Trimmer* (practically a defence of his own life), are marked by a pungent wit and graceful persuasiveness. (c. 1630-1695).

Hall, Sir Edward Marshall, English criminal lawyer, called to the Bar in 1883; from 1900 till his death took part in nearly every murder trial of importance. For some years he sat in the House of Commons, and was knighted in 1917. (1858-1927).

Hallam, Henry, English historian, born Bar; was the author of three great works, *The State of Europe during the Middle Ages*, published in 1818; *The Constitutional History of England from the Accession of Henry VII. to the Death of George II.*, published in 1827; and the *Introduction to the Literature of Europe in the Fifteenth, Sixteenth and Seventeenth Centuries*, published in 1838. The death of his son, Arthur Henry Hallam, is the subject of Tennyson's *In Memoriam*. (1777-1859).

Halle, city in Prussian Saxony, on the Saafe, Saafe, 90 m. NW. of Leipzig; has a university attended by upwards of 1,500 students, with a library of over 220,000 vols., and some fine old Gothic churches, medical institutes, hospitals, etc.; it is an important railway centre, and is famed for its saltworks. Pop. 209,000.

Hallé, Sir Charles, an eminent pianist, born in Hagen, in Westphalia. In 1848 he came to England, with a reputation already gained at Paris, and settled down in Manchester. His orchestra did a great work in popularising classical music and educating public taste. In 1888 he was knighted. (1819-1895). His wife, *née* Wilhelmine Néruda, a violinist of rare talent, born in Brünn, appeared first in Vienna when only seven years old. In 1864 she married Normann, a Swedish composer, and in 1885 became the wife of Hallé. (1839-1911).

Hallelujah ("Praise Jehovah"), an ascription of praise to God, occurring at the commencement of many psalms. In Jewish synagogues Psalms 113-118, in which it frequently occurs, are sung on the night of the Passover, and are called the "Hallel of Egypt." It is sometimes spelt Alleluia.

Halley, Edmund, astronomer and mathematician, born near London; determined the rotation of the sun from the spots on its surface, and the position of 350 stars; discovered in 1680 the great comet called after his name; was entrusted by Sir Isaac Newton with the publication of his *Principia*; made researches on the orbits of comets, and in 1719 was appointed astronomer-royal. (1656-1742).

Hall-mark, an official mark or attestation of the genuineness of gold and silver articles by means of which the quality (standard of precious metal contained), country of origin, maker and date of manufacture may be recognised. Hall-marks include the King's mark, the lion; the maker's mark, the initial letter of the maker's name; the date mark, in the form of a shield; and the standard mark, denoting the proportions of true metal and alloy.

Hallowe'en, Oct. 31, the eve of All Saints' Day, on which occasion in rural Britain and many other countries, various superstitious ceremonies were, and sometimes still are, performed, to gain information about future events, matrimonial chances, and so on.

Hallucination, belief in the existence of things which have no real existence. It differs from illusion, which consists in wrong interpretation of the sensory object. The senses most subject to hallucination is hearing, followed by sight, smell, touch and taste, in that order. It may be caused by some experience which intensifies the emotions, or at times when the repressive faculties are relaxed. The simplest forms are tingling of the ears and the sounds of musical instruments.

Halo, a luminous ring such as is sometimes seen round the sun or moon, formed by the refraction of light by ice crystals in the atmosphere; also the ring of light painted around the heads of saints, etc., in religious works of art.

Halogens, a well-defined group of non-metallic chemical elements, comprising fluorine, chlorine, bromine and iodine. The discovery of a fifth member of the group, alabamine, was reported from America in 1931, but has not been confirmed. The halogens (salt producers) are so called because they combine readily with metals to form salts, the halides. The group is characterised by considerable chemical activity, and by the fact that its gaseous members (fluorine and chlorine) are coloured; bromine is a dark red liquid and iodine a lustrous-black, crystalline solid.

Hals, Franz, Dutch portrait painter, born in Antwerp; is considered to be the founder of the Dutch school of genre painting. His portraits, of which the "Laughing Cavalier" is the most famous, are full of life and vigour. Vandyck alone among his contemporaries was considered his superior. (1580-1666).

Halsbury, Hardinge Stanley Gifford, Earl, Lord Chancellor of England, born in London; called to the Bar in 1850, he was Solicitor-General in the last Disraeli Government; entered Parliament in 1877, and in 1885 was raised to the peerage and made Lord Chancellor, a position he held in successive Conservative Governments. (1825-1921).

Ham, a son of Noah, the traditional ancestor of the African and other black races.

Ham, the thigh of a hog cured by smoking and salting and prepared for human consumption. Local processes of curing are many, and such well-known varieties as York, Wiltshire and Bradenham hams are differentiated by method of preparation, which in some cases is a process occupying several months.

Hamadan, town in Iran, at the foot of Mount Elwend, 160 m. SW. of Teheran, believed to be on the site of the ancient Ecbatana; carpets are made. Pop. 99,000.

Hamadryad, in classical mythology a wood-nymph identified with a particular tree, with which she was born and died.

Hamadryad, the giant cobra of India, also found in southern

China and the Philippines; sometimes attains a length of 12 ft., is highly venomous, and eats other reptiles; yellowish in colour, with black banded markings.



HAMADRYAD

Hamburg,

German city-state which includes, besides the town of that name and its suburbs, Berstedorf and Cuxhaven. The city, the chief emporium of German commerce, is on the Elbe, 75 m. from the North Sea, and 177 m. NW. of Berlin. It was founded by Charlemagne in 805, and has grown to be the third largest seaport in the world, its harbour having an area of 1,260 acres. The war diminished its trade and commercial importance, but they are now returning to the pre-war level. The old town is intersected by canals and is separated by the ancient ramparts from the modern portion, built since 1843, when a serious fire destroyed many old buildings, and spacious laid out. There are many fine buildings, including the Rathaus (town hall), and the town library, containing 400,000 volumes. A University was formed in 1919. The many industries include shipbuilding, flour-milling, sugar-refining, brewing and the making of chemicals, cigars, furniture, musical and optical instru-

ments, and machinery. Pop. (state) 1,218,000; (city) 1,139,000.

Hameln, old Prussian town and fortress in the province of Hanover, situated at the junction of the Hamel with the Weser, 35 m. SW. of Hanover city; associated with the legend of the Pied Piper; a fine chain bridge spans the Weser; there are prosperous iron, paper, and leather works, breweries, Pop. 26,000.

Hamel, general, held Sicily against the Romans for six years; concluded a peace with them and ended the First Punic War; killed while seeking to invade Italy via Spain and the Alps; before he died made his son Hannibal (q.v.) swear upon the altar eternal enmity to Rome. (d. 229 B.C.).

Hamilton, a town of Lanarkshire, Scotland, on the Clyde, 10 m. SE. of Glasgow; mining is the chief industry. Pop. 35,000. Also a city of Canada, on Burlington Bay, at the W. end of Lake Ontario, 40 m. SW. of Toronto; seat of McMaster University, and fine manufactures of iron, cotton and woollen goods. Pop. 156,000. Also the chief town of Bermuda, British W. Indies; on Great Bermuda or Main I. Pop. 4,000. Also a town of New Zealand, in North I., 85 m. SE. of Auckland, in a dairy-farming district. Pop. 20,000.

Hamilton, Alexander, American soldier and statesman, born in West Indies; entered the American army, fought in the War of Independence, became commander-in-chief, represented New York State in Congress, contributed by his essays to the favourable reception of the federal constitution, and under it did good service on behalf of his country; was mortally wounded in a duel. (1757-1804).

Hamilton, Emma, Lady, née Amy Nass, Cheshire, a labourer's daughter; appeared in London as an actress; became the wife of Sir Wm. Hamilton in 1791; her intimacy with Lord Nelson became famous.

Hamilton, General. He entered the Gordon Highlanders in 1873, served in the Afghan War of 1878, the Boer War of 1881, in the Nile, Burma, Chitral and Tirah campaigns, and the South African War, in which he was chief-of-staff to Kitchener. In 1916 he was in command at Gallipoli and was censured for the failure of the campaign; he retired in 1920; author of *A Gallipoli Diary* and other books. (1853-).

Hamilton, Patrick, a Scottish martyr, born in Kincauld, Linlithgowshire. Returning from his studies at Paris and Louvain he came to St. Andrews University, where his Lutheran sympathies involved him in trouble. He escaped to Wittenberg, the home of Luther, and then settled in Marburg, but returned to Scotland and in 1528 was burned at the stake in St. Andrews for heresy. (c. 1504-1528).

Hamilton, Sir William, distinguished Scottish philosopher, born in Glasgow; studied there and in Oxford; in 1836 became professor of Logic and Metaphysics in Edinburgh University, exercising a great influence in the domain of philosophic speculation; his lectures were published after his death; his system was attacked by John Stuart Mill. (1788-1856).

Hamites, the supposed descendants of Ham, a general name for many races living in N. Africa, including the ancient Egyptians and their modern descendants, the Copts, Berbers, Tuaregs, Kabyles, Bejas, Gallas, Somalis, Danakils, etc. The race is related to the early Mediterraneans and the Arabs.

Hammer, any instrument with a heavy head of iron or other material intended for striking. Hammers of stone and

of metal were used by the early man; the modern steam-hammer, first invented by James Nasmyth (q.v.), is but the logical development of the stone tool tied to a stick which was doubtless the first hammer. In the Middle Ages hammers were used as weapons in war. By analogy the name is applied to many other striking instruments, such as the element in a firearm which by percussion causes the explosion, the striker of a clock or bell, and the apparatus which strikes the keys in such musical instruments as the piano.

Hammer, Throwing the, an athletic and especially Scottish and Ireland, for many centuries. The implement, formerly a hammer, consists nowadays of an iron ball attached to a chain. The ball weighs about 16 lb., the distance it is hurled depending largely upon the speed and strength with which it is swung in a circle round the thrower's head. World's record, (16 lb.): 189 feet 6 in., P. Ryan, U.S.A. in 1934.

Hammerfest, town, the most northerly situated on the barren island of Kvaløi, is the port of the Norwegian province of Finnmark; fishing is the staple industry. During two months in summer the sun never sets.

Hammer-head, a shark (*Sphyrna zygnra*), found in nearly all seas, including occasionally British waters (growing to 15 ft. in length), whose flat, square-sided head resembles a hammer in shape. The other species in the same genus are sometimes referred to generically as Hammer-heads, though the actual shape of the head varies.

Hampton, formerly an exhibition and athletic ground and now a dog-racing track, and the large prison at Wormwood Scrubbs. William Morris was a resident here for some years. Pop. 127,700.

Hammond, Walter Ragnald, cricketer, for Gloucester from 1920. Scored 12 centuries in county matches, 1927. First played in Tests in Australia 1928. In 1932, in New Zealand Test, made 336 not out. Has played in S. African Test Matches, outstanding batsman and fielder and a first-rate change bowler; captain of English Test team against Australia in England, 1938. (1903-).

Hammurabi, a Babylonian king, author of a famous code of laws, and unifier of the Babylonian Empire; identified with the Amraphal, King of Shinar, of Genesis. (c. 2360 B.C.).

Hampden, John, English statesman, Oliver Cromwell, born in London; passed through Oxford and studied law at the Inner Temple; in 1621 entered Parliament, joining the Opposition. He came first into conflict with the king by refusing to contribute to a general loan levied by Charles, and subsequently became famous by his resistance to the ship-money tax. He played a prominent part in the transactions of the Long Parliament; an attempt on Charles's part to seize Hampden

HAMPSHIRE

and four other members precipitated the Civil War. He took an active part in organising the Parliamentary forces, and proved himself a brave and skilful general in the field. He fell mortally wounded while opposing Prince Rupert in a skirmish at Chalgrove Field. (1594-1643).

Hampshire, or abbreviated, **Hants.**, a county of S. England, fronting the English Channel between Dorset on the W. and Sussex on the E. The Isle of Wight, on the S., is separated from the mainland by the Solent and Spithead.

In the NE. are the "rolling Downs," affording excellent sheep pasturage, while the SW. is largely occupied by the New Forest. The Test, Itchen and Avon are the principal rivers, flowing to the S. Besides the usual cereals, hops are raised, while Hampshire bacon and honey are celebrated. Winchester is the county town, while Southampton, Portsmouth and Gosport are the chief trading and manufacturing centres. Area (including the Isle of Wight) 1,650 sq. m. Pop. 1,102,800.

Hampshire, The, a British cruiser, Kitchener (g.v.) was travelling on a military mission to Russia when, on June 6, 1916, it was sunk off the Scottish coast with the loss of all on board.

Hampstead, a municipal and parliamentary London borough, 4 m. NW. of the City; is a popular place of resort with Londoners, and contains many fine suburban residences. Beyond the old village is the celebrated Heath. Many literary associations are connected with the place. The Kit-Cat Club of Steele and Addison's time is now a private house on the Heath; here lived Keats, Leigh Hunt, Hazlitt, Romney and Constable. Pop. 89,000.

Hampton, a village of Middlesex, England, on the Thames, 15 m. SW. of London, now included in Twickenham. In the vicinity is Hampton Court Palace, a royal residence down to George II.'s time, built originally by Wolsey, who presented it to Henry VIII. In William III.'s time considerable alterations were made under the guidance of Wren. It has a fine picture-gallery and gardens, and is now occupied by persons of good family in reduced circumstances. The Hampton Court Conference to settle ecclesiastical differences took place here in 1604 under the presidency of James I., the decisions proving unsatisfactory to its Puritan members. It was here, too, at the suggestion of Dr. Reynolds, that the authorised version of the Bible was undertaken. Pop. 13,000.

Hamster, a genus of rodents of the *Hesperomys*, Muridae family, of which there are nine species. The common hamster is found in Europe and Asia. The body is stout, with glossy fur, and the legs are short. It lives on roots, grain and fruit, and is a pest to farmers.



COMMON HAMSTER

Hamsun, Knut, Norwegian writer and farmer, winner of the Nobel Prize for Literature in 1920. *Hunger*, *Pain* and *The Growth of the Soil*, are his best-known works. (1859-).

Han, river of China, tributary of the Yangtze, which it joins at Hankow. It crosses the provinces of Shensi and Hupeh. Length 1,300 m.

Han, a Chinese dynasty which was founded by Liu Pang in 202 B.C., and endured until 220 A.D. It reigned during a period when China extended her possessions at the expense of the Hsiung-nu or Huns and other western

HANGAR

tribes, and was fruitful in literary work, especially history. The introduction of Buddhism into China dates from this era.

Hanau, a Prussian town in Hesse-Nassau, at the junction of the Kinzig and the Main, 11 m. NE. of Frankfurt; celebrated for its jewellery and gold and silver work, and otherwise a busy manufacturing town. It was the birthplace of the brothers Grimm. Pop. 38,000.

Hand, the principal human organ of the extremity of the arm. It consists of four fingers and a thumb, with fourteen bones called phalanges, the fingers having three each and the thumb two. These bones connect with those of the palm. The chief muscles which control the hand movements are the flexors and the extensors. The functions of touch depend upon the anterior or palmar face and the nervous papillae at the ends of the fingers. Man has acquired extraordinary dexterity with this organ, especially in the manipulation of delicate tools and instruments. In the ape the hand is an organ of locomotion.

Hand, unit of length (equal to the unit in measuring the horse).

Handcuffs, a device consisting of two short chain and capable of being fastened by a lock and key, with which suspects and criminals are secured. Until recently, in removing prisoners from one prison to another, it was the practice to handcuff each man and connect the various pairs of handcuffs to a long chain, thus making the escape of any single prisoner impossible.

Händel, George Frederick, musical composer, born in Halle; distinguished for his musical ability from his earliest years; was sent to Berlin to study when he was 14; began his musical career as a violinist at Hamburg in 1703; produced his first opera in 1704; spent six years in Italy, devoting himself to his profession the while; came, on invitation, to England in 1710, where, being well received, he resolved to remain, and where, for nearly fifty years, he added to his fame by his diligence as a composer. He produced a number of operas and oratorios. Among the latter may be noted *Saul*, *Samson* and *Judas Maccabaeus*, and pre-eminently the *Messiah*, his masterpiece. (1685-1759).



GEORGE HÄNDEL

Handfasting, a former Scottish marriage, a custom of "temporary marriage" by which a man and woman pledged themselves to each other for a year by joining hands, the relation being dissoluble at the end of that time if no offspring had been born or was anticipated.

Handicap, a system of rendering the chances of victory in a contest more or less equal by giving the less well equipped contestant certain advantages. Most games and sports allow for its use; in horse-racing, for example, the best horses have to carry extra weight in proportion to their abilities; in running sports handicapping is based on the giving of a "start" a few yards in front of the best competitor, who starts at "scratch." In golf the handicap depends upon the number of strokes which a player generally requires to complete a course, and the handicap number is subtracted from his actual score.

Hangar, a large shed erected for the purpose of housing airships, usually constructed of steel framing and

covered with sheets of galvanised iron. That at Howden, Yorkshire, covers over seven acres.

Hangchow, a Chinese town, a treaty-port since the 1894 war with Japan; is at the mouth of the Tsen-tang at the entrance of the Imperial Canal, 110 m. SW. of Shanghai; it is an important literary, religious and commercial centre; has flourishing silk factories, and is noted for its gold and silver ware. Pop. 507,000.

Hanging Gardens (of Babylon), one of the seven wonders of the world, had an area of four acres, formed a square, and were a series of terraces supported by pillars sloping upwards like a pyramid and seeming to hang in air. They are ascribed to Semiramis or, by others, to Nebuchadnezzar.

Hang-nest, a large family of birds found in America, where they correspond to the Old-World starlings and weavers. They vary considerably in habits, some being polygamous and parasitic, like Cuckoos, and some breeding in colonies, while others build elaborate nests hanging from the branch of a tree, and accessible by an entrance near the bottom. There are some fine song birds in the family, including the Bobolink and the Baltimore Oriole.

Hankey, Sir Maurice Paschal Aiers, G.C.B.; Secretary to Committee of Imperial Defence from 1912, to Cabinet from 1920; Clerk to Privy Council from 1923; son of Robert Aiers Hankey of Australia and Brighton. Educated at Rugby; served in marine artillery, 1895-1901; then entered naval intelligence department. Knighted 1916. Secretary to War Cabinet. British Secretary to Peace Conference and other conferences. In 1938 retired from his Secretaryship to become a Director of the Suez Canal. (1877-).

Hankow, a Chinese river-port, at the confluence of the Han and Yangtze Rs.; there is a considerable amount of shipping; tea is the principal article of export, and a large trade is carried on with the inland provinces. The foreign settlement was surrendered in 1927, and the town was one of the Japanese objectives in 1938, and suffered severely. Pop. 778,000.

Hanley, a busy English manufacturing town, in the "Potteries," 18 m. N. of Stafford; now part of Stoke-on-Trent; with collieries and ironworks in the neighbourhood. Pop. (parliamentary division) 78,000.

Hannay, Rev. James Owen, British novelist who writes under the pen name of George A. Birmingham. Made a canon of Dublin in 1912, he has written several novels, largely about Ireland, in a humorous vein, and also plays. (1865-).

Hannibal, great Carthaginian general, son of Hamilcar (q.v.); subjugated all Spain south of the Ebro by the capture of the city of Saguntum, which led to the outbreak of the Second Punic War and his leading his army through hostile territory over the Pyrenees and the Alps into Italy; defeated the Romans in succession at the Trebia, the Trebia and Lake Trasimene, extirpating the army sent against him; passed the Apennines and descended into Apulia, where, after being harassed by the tantalising policy of Fabius Maximus, he met the Romans at Cannae in 216 B.C. and inflicted on them a crushing defeat; later reverses ended in the evacuation of Italy and the transfer of the seat of war to Africa, where Hannibal was defeated by Scipio at Zama in 201 B.C. He afterwards joined Antiochus, King of Syria, who was at war with Rome, but on that monarch's defeat he fled to Prusias, King of Bithynia, where, when his surrender was demanded, he ended his life by taking poison. (247-183 B.C.).

Hanoi, capital of French Indo-China, in Tonkin, on the Red River, a fine modern town, with a European College and University. Brewing, distilling and cotton spinning are carried on. Pop. 129,000.

Hanover, province, formerly an independent kingdom; stretches N. from Westphalia to the North Sea, between Holland on the W. and Saxony on the E.; well watered by the Elbe, Weser and Ems. In the S. are the Harz Mts. For the rest the land is flat, and much of it is occupied by uncultivated moors. Agriculture and cattle-rearing are the chief industries, while the minerals of the Harz are extensively wrought. In 1714 George Ludwig, second Elector of Hanover, succeeded Anne on the English throne as her nearest Protestant kinsman, and till 1837 the dual rule was maintained, Hanover meanwhile in 1814 having been made a kingdom. In 1837 the Hanoverian crown passed to the Duke of Cumberland, Queen Victoria, as a woman, being ineligible. In 1866 the kingdom was conquered and annexed by Prussia. Area 14,975 sq. m. Pop. 3,368,000.

Hanover, the capital of the above province, is situated on the Leine, 78 m. SE. of Bremen. It consists of an old and a new portion. Its many fine buildings include the royal library (170,000 vols.), the Kestner Museum, several palaces and art-galleries, etc. It is the centre of the N. German railway system, and its many industries embrace iron-works, the manufacture of pianos, tobacco and linen. Pop. 444,000.

Hansard, record of the proceedings and debates in the British Parliament, taking its name from its former printer, Luke Hansard (d. 1828); now a Government publication.

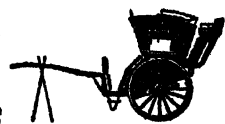
Hanseatic League, a combination of towns in NW. Germany for mutual protection against the pirates of the Baltic and mutual defence of their liberties against the encroachments of neighbouring princes. It dates from 1241, and flourished for several centuries, its commerce being extended far and wide; numbered at one time 64 towns, and possessed fleets and armies, an exchequer and a government of its own. The League dwindled down during the Thirty Years' War to six cities, and finally to three, Hamburg, Lübeck and Bremen.

Hansom Cab, a two-wheeled horse driver sits behind and over the passengers, the invention of Joseph Hansom about 1840.

Hapsburg,

or Habsburg, House of a famous royal house which has played a leading part in the history of Continental Europe from its foundation in the 12th Century by Albert, Count of Hapsburg; was represented until the conclusion of the World War by the Imperial family of Austria. Representatives of this family wore the Imperial crown of the Holy Roman Empire for centuries. It takes its name from the castle of Hapsburg or Habichtsburg (Hawk's Tower), on the Aar, built by Werner, Bishop of Strasburg, in the 11th Century.

Hara-Kiri, called also the "happy once practised in Japan, but now almost obsolete, permitted to offenders of high rank to escape the indignity of a public execution; the nature of it may be gathered from the name, "a gash in the belly."



HANSOM CAB

Harar, or **Harrar**, town of Abyssinia (Italian East Africa), in the Galla country. The town is connected by railway with Djibouti, and is a trading centre. Coffee is grown. Pop. 40,000.

Harbin, town and treaty port of Sungari R., an important junction on the Trans-Siberian Railway. Beet and flax are grown locally. Pop. 330,500.

Harbour, a sheet of water, protected shelter for ships. Harbours may be artificial or natural. Natural harbours owe their status to the configuration of the shore, the movement of tides and currents and the depth of water available. Famous natural harbours are those of Rio de Janeiro, one of the largest in the world, New York, Southampton and Milford Haven. The mouths of rivers often afford harbours, but entrance is often confined to the deep central channel, and sometimes a "bar" is formed by the deposition of silt, needing constant deepening by dredgers. In artificial harbours—e.g., Dover, Takoradi—the natural advantages of the site are increased by breakwaters.

Naval harbours are mostly artificial, since few natural harbours can afford shelter for ships as well as dockyards for construction and repair. Harbours of refuge are those constructed only for the purpose of protection to shipping, especially on rocky or stormy coasts near shipping routes, and in some cases breakwaters are needed projecting to a great distance from the shore, and approaching each other to provide a suitable entrance. Commercial harbours require, as a rule, more comprehensive facilities. In addition to protection, docks are needed to maintain a uniform water level, and accommodation must be provided for the machinery required for loading and unloading cargo. Good warehousing room and plenty of quay acreage are also of importance. Small harbours are often equipped with "booms" of logs which serve to break the force of waves.

Harbour Grace, a seaport and the second town of Newfoundland, lies on the W. side of Conception Bay, 24 m. NW. of St. John's. Its commodious harbour is somewhat exposed. It is the seat of a Roman Catholic bishop, and has a cathedral and convent. Pop. 3,800.

Harburg, a prosperous Prussian seaport in Lüneburg, on the Elbe, 5 m. S. of Hamburg; its industries embrace rubber goods, oil, chemicals, etc.; is a favourite watering-place. Pop. (with Wilhelmsburg) 113,000.

Harcourt, Sir William Vernon, statesman, born, a clergyman's son, at Nuneham Park, Oxfordshire; educated at Cambridge, and in 1854 called to the Bar; Q.C. in 1866, and professor of International Law at Cambridge (1869-1887). He won considerable repute by his articles in the *Saturday Review* and his "Historious" letters to the *Times*, and in 1868 entered Parliament for Oxford as a Liberal. In 1873 he became Solicitor-General, and received a knighthood. He was a vigorous opponent of the Disraeli Government, and on the return of the Liberals to power in 1880 became Home Secretary. Under Gladstone in 1886 and 1892, he was Chancellor of the Exchequer. He staunchly supported Gladstone in his Home Rule policy; became leader of the Opposition in the House of Commons on Gladstone's retirement, dying in 1899 owing to a party split. (187-1904).

Hardanger Fiord, long, beautiful inlets, on the SW. coast of Norway. Length is 68 m. It is a popular tourist resort and is visited by cruising liners during the summer. Vik is at its head.

Hardicanute, King of England and Canute and his successor on the Danish throne; was King of England only in part till the death of his brother Harold, whom he survived only two years, but long enough to alienate his subjects by the re-imposition of the Danegeit. (c. 1019-1042).

Hardie, James Keir, British politician. He started as a Scottish miner, took to writing, and entered Parliament as Labour member for West Ham in 1892. He founded the Independent Labour Party, of which he was chairman for many years, in 1893, and for several years edited *The Labour Leader*. (1856-1915).

Harding, Warren Gamaliel, American politician. Elected to the Senate in 1915, he became President in 1921, at once embarking on a peace policy. He convened the Washington Conference (q.v.) in 1921. He died suddenly while on a speaking tour of the States. (1865-1923).

Hardinge, Henry, Viscount, a distinguished soldier and Governor-General of India, born in Wrotham, Kent; joined the army in 1798, and served through the Peninsular and Waterloo campaigns, but, wounded at Ligny, he turned his attention to politics; was Secretary for War under Wellington, and twice Chief Secretary for Ireland. In 1844 he was appointed Governor-General of India, and later distinguished himself under Gough in the first Sikh War. A viscountcy and pension followed in 1845, and in 1852 he succeeded Wellington as Commander-in-Chief of the British army. (1785-1856).

Hardinge of Penshurst, Charles, first Baron, British diplomat and administrator; after diplomatic service in Persia and Russia served in the Foreign Office from 1903; was ambassador to Russia, 1904-1906; Permanent Foreign Under-Secretary, 1906-1910, when he became Viceroy of India, returning in 1916 to the Foreign Office, and being ambassador in Paris from 1920 to 1922. (1858-).

Hard Labour, a certain class of imprisonment, involving separate confinement and employment at some heavy task such as sack-making. After 28 days the severity of the condition is progressively lessened according to the behaviour of the prisoner. Sentences including hard labour may be inflicted either summarily or for indictable offences. Two years is the maximum hard labour sentence.

Hardness of Water. Water is said to be hard when it will not easily lather with soap. The hardness is due to the presence in the water of salts of calcium and/or magnesium, principally the bicarbonates and the sulphates; the calcium salts almost always predominate. When soap is added to hard water, a curdy precipitate of calcium (and/or magnesium) stearate is formed, the soap being destroyed and thus unable to effect its detergent action.

Hardness due to bicarbonates is "temporary," since it can be removed by bringing the water to the boil, the bicarbonates being decomposed and yielding an insoluble precipitate of the corresponding carbonate; such hardness is the cause of the "rocking" of hot-water pipes and the "furring" of kettles. The sulphates of calcium and magnesium cannot be removed by merely heating the water, and the hardness they cause is therefore known as "permanent."

Either kind of hardness may be removed by the addition of washing-soda or borax, or by means of the "base exchange" or zeolite process (as e.g., in the Permutit system), where the water is allowed to flow through a tube packed with artificial zeolite—i.e., sodic aluminium silicate. The calcium and

magnesium salts react with this substance to form insoluble silicates, which remain in the tube, and the water is thus softened. When the zeolite is exhausted it may be regenerated by soaking it in a strong solution of common salt. A moderate degree of hardness in drinking-water is beneficial.

Hardwár, a town of India, on the Ganges, 39 m. N.E. of Saharunpur, North-West Provinces; famous for its large annual influx of pilgrims seeking ablation in the holy river; a sacred festival held every twelfth year attracts some 300,000 persons. Pop. 31,000.

Hardwicke, Sir Cadric Webster, actor; born at Lye, Worcester-shire; educated at Bridgnorth and Academy of Dramatic Art. First appearance, Lyceum, 1912. In Benson's company, 1913. In Shakespeare at Old Vic, 1914. Served in France, 1914-1921. In Birmingham Repertory Company, 1922. Has played parts at Malvern Festivals, including notable roles in Shaw plays, and in *The Barretts of Wimpole Street*. Knighted 1934. (1893-)

Hardwicke, Philip Yorke, first Earl of, Lord Chancellor, 1737-1756 (during which period he was prime mover in the Government; abolishing heritable jurisdictions and prohibiting the tarta in Scotland after 1745); was native of Dover, son of an attorney; Solicitor-General, 1720-1724; Attorney-General, 1724-1733; Lord Chief Justice of King's Bench, 1733-1737; Baron Hardwicke, 1733; Earl, 1754; systematised equity. (1690-1764).

Hardwood Trees, a name given to especially the oak, ash and the like. Ebony, walnut, maple, sycamore and beech are also hardwood trees and their timber is much used in the making of furniture. In Australia such woods as teak are termed hardwood. The name is also given in particular to the *Izora ferrea*, of the order Rubiaceae, found in the West Indies.

Hardy, Thomas, novelist and poet, born 1830, in Dorsetshire, with whose scenery he has made his readers familiar; trained as an architect, and followed that calling with distinction; first earned popularity in 1874 by his *Far from the Madding Crowd*, which was followed by, among others, *The Return of the Native*, *The Woodlanders* and *Tess of the D'Urbervilles*, the last in 1892. His best-known poem is *The Dynasts*. His ashes are buried in Westminster Abbey. His writing is pessimistic, exhibiting mankind as the plaything of fate. (1840-1928).

Hardy, Sir Thomas Masterman, a brave associated with the closing scene of Nelson's life, born at Portsmouth, Dorsetshire. As a commander in the Battle of the Nile he greatly distinguished himself, and gained his post-commission to Nelson's flagship, the *Vanguard*. At Trafalgar he commanded the *Victory*, and subsequently brought Nelson's body to England. He received a baronetcy, and saw further service, eventually attaining to the rank of vice-admiral. (1769-1839).

Hare, a rodent quadruped of the family Leporidae. It has long ears and hind-legs, and is thus distinguishable from the rabbit.

The upper lip is divided hence "hare-lip." They occupy "forms," and do not burrow, exhibit great speed, and feed on grain, roots and the bark of young trees. They produce young several times a year. In habit they are nocturnal and solitary. The common hare is found through-



HARE

out Europe and parts of Asia. It is tawny red in colour, with a white belly, and is about 2 feet long.

Hare, Sir John (originally John Fairs), actor; born in Giggleswick, York-shire. In London studied acting under Henry Leigh Murray. First appeared in Liverpool, 1864, in *The Lyons Mail*. First London appearance, 1865, at the old Prince of Wales's, where, till 1874, he made a reputation in Robertson's comedies. Ran Court Theatre, 1875-1879. With Kendal at the St. James's 1879-1888. Ran the Garrick, 1889-1895. Knighted, 1907. (1844-1921).

Harebell, the popular name of the *Campanula rotundifolia*, a native of the British Isles, bearing small, bell-shaped flowers, usually blue, but occasionally white, growing among bracken and heather on open spaces and downland.

Harefield, village of Middlesex, England, 3 m. N. of Uxbridge. At a former Harefield Hall, Queen Elizabeth was entertained and Milton's *Arcades* was acted. Pop. 3,000.

Hare Lip, a malformation of the lip whereby a cleft, generally to one side of the median line of the upper lip, is formed. It can be cured by a slight operation during childhood. It is often accompanied by a cleft palate.

Harem, the apartment or suite of apartments in a Mohammedan house for the female inmates and their attendants, and the name given to the collective body of them.

Harewood, Henry George Charles Lascelles, sixth Earl of, eldest son of fifth Earl; educated at Eton and Sandhurst; A.D.C. to Governor-General of Canada, 1907-1911. Served in World War; wounded three times and awarded the D.S.O. Married Feb. 28, 1922, the Princess Royal, Victoria Alexandra Alice Mary, daughter of George V. Succeeded his father, 1929. (1882-)

Harfleur, a village in France with a strong fortress, 4 m. S. of Havre, taken by Henry V. in 1415, and retaken afterwards by both French and English, becoming finally French in 1450; was for a long time the principal French harbour on the Channel. Pop. 4,300.

Hargreaves, James, inventor of the spinning-jenny, probably born in Standhill, near Blackburn; was a poor and illiterate weaver when in 1760 he, in conjunction with Robert Peel, brought out a carding-machine. In 1766 he invented the spinning-jenny, a machine which has since revolutionised the cotton-weaving industry, but which at the time evoked the angry resentment of the hand-weaver. He was driven from his native town and settled in Nottingham, where he started a spinning-mill. He failed to get his machine patented, and died in comparative poverty. (d. 1778).

Haricot, a leguminous plant of the genus *Phaseolus*, being a type of Dwarf French bean bearing a seed which is allowed to ripen on the plant and is widely used as a food when dried.

Harlech, an old Welsh town in Merioneth-shire, facing the sea, 10 m. N. of Barmouth. Its grim old castle by the shore was a Lancastrian fortress during the Wars of the Roses, and its capture by the Yorkists in 1468 is the subject of the well-known song, *The March of the Men of Harlech*. Pop. 2,000.

Harlem, a district of New York City, U.S.A., SW. of the Harlem R.; the centre of the City's negro quarter.

Harlequin, a character in a Christmas pantomime, in love with Columbine, presumed to be invisible, and dett at tricks to frustrate those of the clown, who is his rival lover.

Harley, Robert, Earl of Oxford, celebrated English politician; entered Parliament shortly after the Revolution (1688) as a Whig, but after a period of vacillation threw in his lot with the Tories and in 1701 became Speaker of the House. In 1704 he was associated with St. John (Bolingbroke) in the Cabinet as Secretary of State, and set about undermining the influence of Godolphin and Marlborough. He became Chancellor of the Exchequer and head of the Government; was created Earl of Oxford and Lord High Treasurer; was displaced by Bolingbroke in 1715; was impeached for intriguing with the Jacobites and sent to the Tower. Two years later he was released, and the remainder of his life was spent in the pursuit of letters and in the building up of his famous collection of MSS., now deposited in the British Museum. (1661-1724).

Harlington, village of Middlesex, England, 1 m. S. of Hayes. It gave its name to the Earl of Arlington, a mistake in the patent accounting for the lost letter. Pop. (with Hayes) 23,000.

Harlow, market town of Essex, England, 6 m. SW. of Bishop's Stortford. It has a racecourse. Pop. 3,000.

Harmattan, a hot, withering wind, desert, blowing over the coast of Guinea to the Atlantic from the interior of Africa, more or less from December to February.

Harmonica, a musical instrument from which the sounds are produced by the friction of moistened fingers on glass or metal tubes, used in the 17th Century, but nowadays a toy. Beethoven and Mozart composed music for it.

Harmonic Motion. If a tuning-fork is set in vibration, it emits a certain note which remains constant in pitch, though, as the vibrations die away, it gradually becomes less and less loud. We may deduce that, since the pitch remains unaltered, the time of the vibrations is also unaltered; and that, since the loudness decreases, the extent of the vibrations also decreases.

The motion executed by the prongs of the fork is said to be *harmonic* (and isochronous, since the period of the vibrations is constant). A body is said to move in simple harmonic motion when its acceleration along its path is proportional to its distance from a fixed point in the path, as measured along the path; it may be shown mathematically that such motion is isochronous. A common example of a body moving in (nearly) simple harmonic motion is the bob of a pendulum, where the period of swing is independent of the amplitude (or "size" of the swing).

Harmonic Progression, a series of quantities in which any three consecutive terms are so related that the difference between the first and second divided by the difference between the second and third is equal to the quotient of the first by the third, the middle term of such a group of three being the harmonic mean of the first and third; thus, $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$ are in harmonic progression and $\frac{1}{3}$ is the harmonic mean of $\frac{1}{2}$ and $\frac{1}{6}$.

Harmonium, a musical instrument in which a number of "reeds" are vibrated by the passage of air against them through the action of bellows operated by the foot. Invented in 1840, it has a compass of five octaves, and the currents of air are controlled by keys on a keyboard. The reeds are "free"—i.e., the pitch is not affected

by the varying strength of the air current. Once popular in small chapels and Sunday Schools, it has been replaced by the American organ, which is an improved harmonium in which the force bellows give place to suction by air-exhaustion. Stops are fitted to secure a variety of expression and tonal values and many are equipped with a knee lever which increases volume.

Harmony, the combination of musical notes according to certain laws of relation so as to form chords. Close harmony is that seen in four-part music, where the notes are so close together that no other can be inserted between them. When the notes are spread so widely that there is room between them for other notes without destroying the resulting chord the term extended harmony is used.

Harold I., King of England from 1035 to 1040, younger son of Canute. The kingdom was practically divided between him and his brother Hardkanute (*q.v.*); but, the latter remaining in Denmark to protect his possessions there, England passed into Harold's hands.

Harold II., last of the Saxon Kings of England, held the crown for a few months in 1066, was the second son of the great Earl Godwin (*q.v.*). In 1053 he succeeded his father in the earldom of the West Saxons, and during the later years of Edward's feeble rule was virtual administrator of the kingdom. On his accession to the throne his title was immediately challenged by his brother Tostig and William, Duke of Normandy. Having crushed his brother's invasion at Stamford Bridge, he immediately hurried S. to meet the forces of William at Hastings. Norman strategy won the day, and Harold fell in the battle pierced through the eye by an arrow. Historians unite in ascribing to him every kingly quality—a noble presence, sagacity and a brave yet gentle nature. (1022-1066).

Harold I. of Norway, surnamed *Haarfagr* (fair-haired); by him the petty kingdoms of Norway were all conquered and knit into one compact realm: it is said that he undertook this work to win the hand of his lady-love, and that he swore an oath neither to cut nor comb his hair till his task was done. (d. 933).

Harold III. of Norway, surnamed *Hardraade* (hard in counsel); chief of the Varangian guards at Byzantium; succeeded to crown of Norway on death of Magnus; fell at Stamford Bridge, 1066.

Haroun-Al-Raschid ("Aaron the Orthodox or Just"), the most renowned of the Abbaside caliphs; succeeded to the caliphate in 786 on the death of his elder brother, Al Hâdi, and had for grand vizier the Barmecide Yahya, to whom with his four sons he committed the administration of affairs, he while making his Court a centre of attraction to wise men, scholars and artists, so that under him Baghdad became the capital of the civilised world. His glory was tarnished towards the end of his reign by the massacre of the Barmecide family out of jealousy, an act which was followed by an insurrection which cost him his life. The halo that invests his memory otherwise was, however, more fabulous than real, largely owing to the picture of him presented by the "Arabian Nights." (c. 764-809).

Harp, a musical stringed instrument of ancient origin known in Egyptian times. It is played by plucking the strings with the fingers or a plectrum. Its triangular form has altered little from the ancient type. Its modern development is due to Erard and Hochbrückner, who introduced pedal action for the purpose of re-tuning and the double action whereby the strings are raised one or



HARMONIUM

two semitones. The present-day harp has 43 strings tuned according to the diatonic scale, every eighth string being an octave apart. It is nowadays an orchestral rather than a solo instrument.

Harpندن, residential urban district of Hertfordshire, England, 5 m. S. of Luton. Near by, at Rothamsted, is an experimental agricultural school. Pop. 9,500.

Harper's Ferry, town of W. Virginia U.S.A., on the Chesapeake and Potomac Rrs. In the Civil War it was raided by John Brown, the abolitionist, and later surrendered by the Federals, after great loss, to Stonewall Jackson.

Harpies, ravenous mythological creatures living in fith and defiling everything they touched, having the head and breast of a woman, the wings and claws of a bird, and a face pale with hunger; the personification of whirlwinds and storms.

Harpies, the general name of six large birds of prey of the Falconidae family, most of them found only in S. America. They are mainly long-crested birds, the true Harpy (*Thraschelus harpyia*) being one of the finest of all birds of prey. It preys on all sorts of mammals, including monkeys, foxes and pigs.

Harpoon, a weapon employed in hunting whales and other large fish. It is thrown by hand or discharged from a gun, and consists of a heavy piece of iron with barbs on the outer edge attached to a long rope.

Harpsichord, a musical instrument of the 16th Century, and a forerunner of the modern pianoforte (q.v.), but differing in the action. The tones were produced by quills fixed to wooden up-rights which struck the strings. A development of the harpsichord is the spinet. In early orchestral music the harpsichord was played by the conductor. Its music is metallic, and before the pedal action improvement by later makers, its expression was limited.

Harrier, a type of dog which hunts by scent, the quarry being usually a hare. It resembles a foxhound, but is smaller, and, though keener scented, is less speedy. They are much used in Ireland in packs. There are some 150 packs in England.

Harrier, a genus (*Circus*) of birds of the Falconidae (Eagle and Hawk)

family, having a ruff on the head which gives them an appearance something like that of an owl. They are slim birds with long legs and wings, prey largely on poultry and lay their white eggs in nests on the ground. The British species are the Hen-Harrier (*Circus cyaneus*), the Marsh-Harrier (*C. aeruginosus*), and Montagu's Harrier (*C. pygargus*), a summer visitor only.

Harrington, seaport of Cumberland, England, 2 m. S. of Workington, with coal-mines, blast-furnaces and shipyards. Pop. 4,000.

Harris, name of the southern portion of the Island of Lewis, Outer Hebrides, including St. Kilda and other islands; produces wool woven into the familiar "tweeds"; islanders are crofters and fishermen. Pop. 5,000.

Harris, George Robert Canning Harris, fourth Baron, administrator and cricketer, was born in Trinidad, where his father, the third Baron, was Governor.

Under-Secretary for India, 1885-1886; for War, 1886-1890. Governor of Bombay, 1890-1895. With Imperial Yeomanry in S. African War, 1900-1901. In cricket he played for Gentlemen; for his University, 1874; captained Kent, 1875-1889; played for Kent till 1906; captained England in Test Matches, 1889-1884. President, M.C.C., 1895. (1851-1932).

Harrisburg, capital of Pennsylvania, U.S.A., beautifully situated on the Susquehanna, 106 m. NW. of Philadelphia; the industries include extensive iron and steel works and a flourishing lumber trade. Pop. 80,500.

Harrismith, town and health resort of Orange Free State, South Africa, situated over 5,000 ft. high, among the mountains, 170 m. SE. of Durban. Pop. 6,000.

Harrison, Benjamin, twenty-third President of the U.S.A. and grandson of William Henry Harrison, a former President, born in North Bend, Ohio; starting as a lawyer in Indianapolis, was efficient commander during the Civil War; in 1880, became a United States Senator; as the nominee of the Protectionist and Republican party he won the Presidency against Cleveland, but at the election of 1892 the positions were reversed. (1833-1901).

Harrison, Frederic, barrister, born in London; professor of Jurisprudence in the Inns of Court; author of articles contributed to reviews, of essays, and of lectures on a variety of current questions, from the standpoint of the positivism of Auguste Comte; author of *Order and Progress*, *The Meaning of History* and *A Life of Ruskin*. (1831-1923).

Harrison, John, a celebrated mechanician, born in Foulby, Yorkshire; inventor of a chronometer which, by its apparatus for compensating the disturbing effects caused by variations of climate, enabled mariners to determine longitude to within a distance of 18 m., thus winning a prize of £20,000 offered by Government. He also invented the compensating *gridiron pendulum*, still in use. (1693-1776).

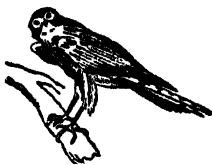
Harrison, William Henry, ninth President of U.S.A., son of a signatory to the Declaration of Independence; elected president in 1840 but died a month after inauguration. (1773-1841).

Harrogate, a popular watering-place, prettily situated amid forest and moorland, in the W. Riding of Yorkshire, England, 20 m. NW. of York; it enjoys a wide repute for its sulphurous, saline and chalybeate springs. Pop. 40,000.

Harrow, an implement employed in agriculture, consisting of pieces of iron or timber crossing each other and equipped with metal teeth. It is usually drawn corner-wise over the ground after ploughing to break the larger pieces of earth, rendering the soil level, and later to cover seeds after sowing.

Harrow (Harrow-on-the-Hill), a rapidly growing town of Middlesex, England, built around an eminence 200 ft. high, 12 m. from London; its Gothic Church, St. Mary's, founded by Lantrano, has architectural interest. Harrow School, a celebrated public school, was founded in 1571 for the free education of 30 poor boys of the parish, but subsequently opened its doors to others. Pop. 132,000.

Hart, Solomon Alexander, born in Plymouth, in early years an engraver's apprentice and miniature painter. He became celebrated as a painter of historical scenes and characters; elected R.A. in 1840, he was appointed professor of Painting in the Royal Academy in 1854, and subsequently librarian. His works include "Henry I.



HEN-HARRIER

receiving intelligence of the Death of his Son," "Milton visiting Galileo in Prison," "Wolsey and Buckingham" and "Lady Jane Grey in the Tower." (1806-1881).

Hartal, a form of political boycott in India, including the shutting of all shops as a sign of national mourning. Mohandas Gandhi has organised hartals in recent years, as at Bombay in 1923, as protests against alleged British oppression.

Harte, Francis Bret, American humorist and novelist, born in Albany, New York; went to California at 15; tried various occupations, mining, teaching, printing and literary sketching, then joined the staff of a newspaper, and became eventually first editor of the *Overland Monthly*, in the columns of which he established his reputation as a humorist by the publication of his verses, *The Heathen Chinee* and other productions, such as *The Luck of Roaring Camp*. After a short term as professor of Literature at California University, he was appointed Consul at Krefeld and, subsequently, Glasgow; latter years spent in England; author of *Gebrüder Conroy*, *In the Carquinez Woods*, *A Wolf of the Plains* and other novels, as well as notable short stories. (1839-1902).

Hartebeeste, the name of several species of large antelope

of S. Africa, red in colour with black markings. They have long horns, and are very swift. They belong to the genus *Bubalis*.

Hartford, the capital of Connecticut, U.S.A., on the Connecticut, 50 m. from its mouth and 112 m. N.E. of New York; is handsomely laid out, and contains an imposing white marble capitol, Episcopalian and Congregational colleges, hospitals, libraries etc.; is an important depot for the manufacture of firearms, ironware and tobacco, and is a busy banking and insurance centre. Pop. 164,000.

Hartland, village of N. Devon, England, 13 m. S.W. of Bideford. Near by is Hartland Point, at the S. end of Barnstaple Bay. It has a lighthouse.

Hartlepool, a seaport of Durham, England, situated on a tongue of land which forms the Bay of Hartlepool, 4 m. N. of the Tees estuary; the chief industries are shipbuilding, cement works and a shipping trade, chiefly in coal and iron. Pop. 20,000. **West Hartlepool** on the opposite and south side of the bay, 1 m. distant, has outgrown its mother-town, Hartlepool, and carries on a similar trade, but on a larger scale; the extensive docks, stretching between the two towns, cover an area of 300 acres. Pop. 69,000.

Hartshorn, name formerly given to which was prepared from the horn of the stag.

Harty, Sir Herbert Hamilton, British composer and conductor who became famous as the conductor of the Hallé orchestra at Manchester in 1920, and who has also composed a number of orchestral pieces and songs; knighted in 1925. (1880-).

Haruspices, among the Romans, soothsayers who affected to foretell future events by the inspection of the entrails of animals offered in sacrifice.

Harvard University, the oldest of higher education in the U.S.A., is located at Cambridge, Massachusetts, 3 m. W. of Boston. It is named after the Rev. John

Harvard, son of a Southwark butcher, who by the bequest of his library and small fortune helped to launch the institution in 1638. Originally intended for the training of youths for the Puritan ministry, it has grown into a university of the first rank, free from all sectarian control. It has some 5,000 students, is splendidly equipped and richly endowed. In 1936 the Mayor of Southwark took part in the Tercentenary Celebrations.

Harvest Mite, a name for several insect order Arad, which infest fruit bushes, grasses, etc., in late summer. They will attack man and animals, burrowing under the soft skin of sensitive parts, causing great irritation.

Harvest Moon, the full moon which in our latitude, at the autumnal equinox, rises about the same time on several successive evenings.

Harvey, Sir George, a Scottish artist, born at St. Ninians, Stirling, one of the original associates of the Royal Scottish Academy, of which he at length became president. Among his paintings are the "Covenanters' Preaching," "The Curlers" and "John Bunyan in Jail." (1806-1876).

Harvey, Sir John Martin, British actor. For a number of years he acted under Irving. His performances as Sydney Carton in *The Only Way* is one of his most famous. He has played many other famous parts. Knighted in 1921. (1863-).

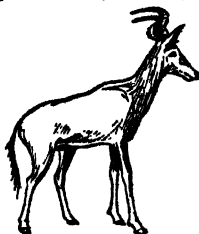
Harvey, William, a celebrated English physician, born in Folkestone; graduated at Cambridge, and in 1602 received his medical diploma at Padua. Settling in London, in a few years he became physician to St. Bartholomew's Hospital, and subsequently lecturer at the College of Physicians. In 1628 he announced in a published treatise his discovery of the circulation of the blood. For many years he was Court physician, attending Charles I. at the battle of Edgehill. (1578-1657).

Harwich, a seaport and market town of Essex, England; is situated on a headland on the S. side of the conjoined estuaries of the Stour and the Orwell, 5 m. N. of the Naze and 65 m. N.E. of London; it is an important packet station for the Continent, has a good harbour and docks, with an increasing commerce. Pop. 13,000.

Harwood, Great, a market town of Lancashire, England, 5 m. N.E. of Blackburn. Cotton is manufactured, and there are coal-mines. Pop. 13,000.

Harz Mountains, a mountain range stretching for 57 m. between the Weser and the Elbe to the S. of Brunswick. It forms a picturesque and diversified highland, is a favourite resort of tourists, and rises to its greatest elevation in the far-famed *Brocken* (q.v.), the scene of the *Walpurgisnacht* in Faust. Silver, iron, and other metals are found in considerable quantities, and, with the extensive forests, give rise to a prosperous mining and timber industry.

Hasdrubal, the name of several dignified Carthaginian generals, of whom the most noted were (1) the son of Hamilcar Barca (q.v.) and brother of Hannibal (q.v.); he played a prominent part in the Second Punic War, conquered Cn. Scipio in Spain (212 B.C.), and subsequently commanded the Carthaginian army in Italy; he fell at the Battle of the Metaurus in 207 B.C. (2) The son-in-law of Hamilcar Barca, whom he succeeded in 228 B.C. as administrator of the new empire in the Iberian peninsula; he pushed the western frontiers back to the Tagus, and by his strong yet conciliatory government firmly established the Carthaginian power; he was assassinated in 221 B.C.



HARTEBEESTE

Hashish, an intoxicant made from hemp, Indian hemp, largely used in the Near East as a narcotic and sedative drug.

Haslar Hospital, Royal Naval hospital at Gosport, Hampshire, the chief naval hospital in Britain.

Haslemere, market town of Surrey, England, 13 m. S. of Guildford, between Hindhead and Blackdown; famous as the home of the Dolmetsch family of musicians. Pop. 9,000.

Haslingden, town of Lancashire, England, 19 m. NW. of Manchester; has cotton, silk and woollen factories, and in the vicinity are coal-mines, iron-works, etc. Pop. 17,000.

Hastings, (1) popular holiday and health resort in Sussex, England; occupies a fine situation on the coast, with lofty cliffs behind, 33 m. E. of Brighton; has a splendid esplanade 3 m. long, parks, public gardens, etc., and ruins of a Norman castle. Pop. 65,000. (2) Town of North I., New Zealand, in an agricultural district. Pop. 15,000.

Hastings, Battle of, fought on Oct. 14, 1066, on Senlac Hill, 6 m. NW. of Hastings (where now stands the little town of Battle), between William, Duke of Normandy, and Harold II., King of England. Victory rested with the Normans, and Harold was slain on the field.

Hastings, Francis Rawdon-Hastings, Marquis of, Governor-General of India; entering the army in 1771, he saw active service in the American War and in Holland; succeeded his father in the earldom of Moira; was in 1813 appointed to the Governor-Generalship of India. He was instrumental in extending the East India Company's territories, and pacifying the warlike Gurkhas, for which, in 1816, he was created Marquis of Hastings; in later years he held the Governorship of Malta. (1754-1838).

Hastings, Sir Patrick Gardiner, English lawyer, educated at the Charterhouse. Mining engineer, 1898-1899; served in S. African War, 1900-1901. Trained for the Bar and became a barrister, Middle Temple, 1904; K.C., 1919. Sat in Parliament as M.P. for Walsden, 1922-1926 and was the first Labour Attorney-General, 1924, in which year he was knighted. He is one of our leading counsel. He has written two plays, *The River and Scotch Mist*. (1880-).

Hastings, Warren, first Governor-General of India, born in Churchill, Oxfordshire; early left an orphan, he was maintained at Westminster School by his uncle, and at 17 received a clerkship in the East India Company. In 1769 he became a member of the Madras Council; married the divorced wife of Baron Imhoff, and in 1772 was appointed President of the Council in Bengal. He was raised to the position of Governor-General in 1773. Despite jealousies and misrepresentations both in India and at home, he extended and brought into orderly government the British dominions. In 1805 he voluntarily

imposed upon the House of Lords for oppression of the natives, and for conniving at the plunder of the Begums or dowager-princesses of Guddi. The trial brought forth the greatest orators of the day, Burke, Fox, and Sheridan leading the impeachment, which, after dragging on for nearly eight years, resulted in the acquittal of Hastings on all the charges. His fortune having been consumed by the enormous expenses of the trial, he was awarded a handsome pension by the Company. (1732-1818).

Hatchment, the name of the armorial shield hung against the wall of the residence of a deceased person.

Formerly it was customary at Oxford and Cambridge Universities to hang the hatchment of a deceased college official over his residence.

Hatfield, or Bishop's Hatfield, a market town of Hertfordshire, England, 18 m. NW. of London; its parish church dates from the 13th Century, and in the vicinity stands Hatfield House, a noble architectural pile of James I.'s time, the seat of the Marquis of Salisbury. Pop. 5,000.

Hathaway, Anne, wife of William Agnes, daughter of Richard Hathaway, of Shroton, near Stratford-on-Avon, where the Hathaways's cottage still stands. She was married in 1582, about six months before the birth of her daughter Susannah, May 1583. Her only other children, Judith and Hamnet (twins), were born 1585. Hamnet died 1596. Under her husband's will, Anne took only his second-best bedstead. (c. 1556-1623).

Hathor, an Egyptian goddess, sometimes called Athor, Queen of Heaven, daughter of Ra. She was symbolised by a cow.

Hatteras, Cape, a low sandy headland of a small island separated from the mainland of N. Carolina, U.S.A., by Pamlico Sound. It is a storm-swept and treacherous point, and is marked by a powerful light, 190 ft. high.

Hatteria, a genus of rhynchocephalous reptiles, the only living representative of which is the peculiar lizard-like species of New Zealand, of which the best known is the



HATTERIA (TUATERA)

Tuatara, or Hatteria (*Sphenodon punctatus*), found burrowing near the shore on a few small islands only, having been exterminated on the mainland. It is regarded as the most primitive of living reptiles and goes back to the Triassic period. It exhibits certain differences from the true lizard.

Hatton, Sir Christopher, Lord Chancellor of England, 1587, son of William Hatton, of Holdenby, Northants; entered St. Mary's Hall, Oxford, c. 1555; Inner Temple, 1559. At Court his dancing pleased Queen Elizabeth, who gave him various offices and grants of land. He was given Ely Place, Holborn, taken from the Bishop of Ely, 1576, and Hatton Garden was named after him.

Hauberk, a coat or tunic of mail rings and extending below the knees.

Hauptmann, Gerhardt, German dramatist, born in Salzbrunn; wrote many successful tragedies, comedies and novels, including *Pippas Dances*, *Atlantis*, etc.; won the Nobel Prize for literature in 1912. (1862-).

Haus(s)a, or Hausa, a people of Central Sudan, whose language has become the common speech of some 15 million between the Mediterranean

and the Congo, and is written in modified Arabic characters. The people themselves, of negro race, are warlike and brave, though they were conquered by the Fulanis, with whom they have largely intermarried. Since 1874 they have supplied to the British forces native regiments of soldiers and police.

Hausmann, George Eugène, Baron, a celebrated Prefect of the Seine, who, while holding that position (1853-1870), carried through extensive architectural and road-making improvements in Paris, transforming it into one of the handsomest cities of Europe. Their enormous cost brought about his dismissal, but he

received many distinctions, and was ennobled by Napoleon III.; in 1881 he was elected to the Chamber of Deputies. (1809-1891).

Hautboy, the old name of the oboe, a musical treble wind instrument with a double reed, fitted usually with fifteen keys.

Haute-Garonne, dept. of S. Central France, N. of the Pyrenees; the R. Garonne runs through it; grain, fruit, wine and marble are produced; chief town, Toulouse. Area 2,460 sq. m. Pop. 458,600.

Haute-Loire, dept. of S. Central France; watered by R. Loire and Allier; timber, grain, lace and coal are produced; chief town, Le-Puy-en-Velay. Area 1,930 sq. m. Pop. 245,000.

Haute-Marne, dept. of N.E. France, traversed by the Marne; has large forests, and produces grain, vegetables and wine; chief town, Chaumont. Area 2,420 sq. m. Pop. 188,500.

Hautes-Alpes, dept. of S.E. France, on the Italian border, W. of the Cottian Alps; mainly pastoral; chief river, the Durance; chief town, Gap. Area 2,180 sq. m. Pop. 88,200.

Haute-Saône, dept. of E. France, W. of the Belfort territory; both agricultural and manufacturing; fruit, coal, cotton and iron goods produced; chief town, Vesoul. Area 2,075 sq. m. Pop. 212,900.

Haute-Savoie, dept. of S.E. France, S. of the Lake of Geneva; contains Mont Blanc; wine and dairy produce are exported; chief town, Annecy. Area 1,775 sq. m. Pop. 260,000.

Hautes-Pyrénées, dept. of S. Central France, on the Spanish border; produces minerals; cattle and sheep are grazed and fruit and wine produced; chief town, Tarbes. Area 1,750 sq. m. Pop. 189,000.

Haute-Vienne, dept. of Central France, N. of the Limousin Mts.; produces cereals, chestnuts, fruit and cattle. Chief town, Limoges. Area 2,120 sq. m. Pop. 334,000.

Haut-Rhin, dept. of E. France, until 1918 part of the Prussian province of Alsace; has textile and chemical industries; chief towns, Mulhouse and Colmar. Area 1,350 sq. m. Pop. 507,500.

Havana, Cuba, in the W. Indies; has a spacious and securely sheltered harbour, an old Spanish cathedral, a university, botanical garden and several fine theatres. The town is ill laid out, badly drained, and subject to yellow fever, though under U.S.A. military ascendancy much improvement was made in every respect; the staple industries are the raising of tobacco and sugar, and the manufacture of cigars. Pop. 546,800.

Havelock, Sir Henry, British general, born in Bishop Wearmouth; entered the Indian service in 1823; served in the Afghan and Sikh Wars, and in Persia. On the outbreak of the Mutiny he was in 1857 sent to the relief of Cawnpore and Lucknow, the latter of which places he entered on Sept. 25, where, being beleaguered, he entrenched himself in the Residency, and held out until Sir Colin Campbell came to his relief; but his health had been undermined, and he died on November 22nd. For his services a baronetcy and a pension of £1,000 was conferred on him, the latter after his death being transferred to his son. (1795-1857).



SIR HENRY
HAVELOCK

Haverfordwest, seaport and capital of Pembrokeshire, Wales, prettily situated on the Cleddon, 10 m. N.E. of Milford; has a 14th-Century castle and a ruined priory; the chief industry is paper-making. Pop. 6,200.

Haversian Canals, canals in the bones to convey the vessels that nourish them, so named after Clopton Havers, an eminent physician and anatomist. (1655-1702).

Havre, Le, the second commercial port in France, on the N. side of the Seine estuary, 143 m. N.W. of Paris, in the dept. of Seine-Inférieure; has a fine harbour, docks, etc., but shipping is incommoded by the shifting sandbanks of the estuary, and railway facilities are poor; its industries embrace shipbuilding, iron-works and flour-mills. Pop. 185,000.

Hawaiian Islands (named by Cook the Sandwich Is.), a group of volcanic islands, 20 in number, situated in the N. Pacific; total area somewhat larger than Yorkshire. Of the five inhabited islands Hawaii is the largest; it contains the famous volcano, Kilauea, whose crater is 9 m. in circumference, and filled with a glowing lake of molten lava which ebbs and flows like an ocean tide. The island of Maui has the largest crater on earth. The climate of the group is excellent, and vegetation (including forests) is abundant; sugar and rice are the chief crops. Honolulu (on Oahu), with a splendid harbour, is the capital. The islands are a territory of the U.S.A.; English is spoken and the people are Christians. They were discovered in 1778 by Captain Cook. Area 6,440 sq. m. Pop. 385,000.

Hawarden, a town of Flintshire, Wales, 7 m. W. of Chester, near which is Hawarden Castle, where Gladstone resided and died.

Hawfinch, a bird of the finch family, a variety of the grosbeak (q.v.). The male is larger than the chaffinch, and has black and brown markings with a white tip to the tail. It is found in Europe (including England) and Asia.

Hawick, a prosperous and ancient town of Roxburghshire, Scotland, at the confluence of the Teviot and Slitrig, 52 m. S.E. of Edinburgh; is a flourishing centre of the tweed, yarn and hosiery trade, and has besides dyeworks, tanneries, etc. Pop. 17,500.

Hawk, a general name for European birds of prey other than owls, eagles and vultures, particularly the sparrowhawk and goshawk. The hawk was in the Middle Ages largely bred for hunting (see Falconry).

Hawkbit, a genus (botanical name *Leontodon*) of plants of the order Compositae, allied to the dandelion. Three species are found in Britain, while others are distributed throughout Europe and Asia. It has large yellow flowers and long leaves.

Hawke, Lord, an English admiral, born in London; entered the navy at an early age, and won distinction in the naval fight off Toulon in 1744; defeated a French fleet off Finisterre and captured six ships of the line in 1757, and two years later defeated Admiral Condan and a French squadron in Quiberon Bay; was made a peer in 1776. (1705-1781).

Hawker, travelling trader who carries stocks of small goods from place to place for retail sale. Legally a hawker is distinguished from a pedlar by the fact that he uses a horse or beast of burden, while the pedlar goes on foot. In Great Britain both hawkers and pedlars are required to be licensed, at a fee of £3 annually for the former and 6s. for the latter.

Hawker, Robert Stephen, a Cornish clergyman and poet; vicar for 40 years of Morwenstow, a parish on the N. Cornwall coast; author of *Cornish Ballads*; was the author of several works besides his ballads, in particular *Echoes from Old Cornwall* and *Footprints of Former Men in Far Cornwall*. (1803-1875).

Hawkes Bay, or Wairoa, bay of North Island, New Zealand, on the E. coast, extending about 60 m. from Wellington to Auckland. It gives its name to a mainly forested provincial district with an area of 4,260 sq. m., and pop. of 72,000.

Hawkins, Sir Anthony Hope. See Hope, Anthony.

Hawkins, Sir John, an English navigator and admiral, born in Plymouth; was Rear-Admiral of the fleet sent against the Armada and contributed to its defeat; was the first Englishman to traffic in slaves, which he carried off from Africa and imported into the W. Indies. (1532-1595).

Hawkweed, a genus of hardy perennial plants of the order Compositae with yellow, orange or red flowers (botanical name of genus, *Hieracium*). They are hairy and have a tuft of oblong leaves at the base. There are some 450 species found in Europe and America, several being native to the British Isles. The orange Hawkweed (*H. aurantiacum*) is cultivated in England for the sake of its flowers.

Hawkwood, Sir John de, an English captain, born in Essex; served with distinction at Crecy and Poitiers, and was knighted by Edward III.; afterwards fought as free-lance with his White Company in the wars of Italy, and finally in the service of Florence, where he spent his last days. (d. 1394).

Haworth, a village of Yorkshire, England, situated on a rising moorland in the W. Riding, 2 m. SW. of Keighley, memorable as the lifelong home of the Brontës and their final resting-place. Pop. 6,000.

Hawthorn, a genus of small European and American trees of the order Rosaceae, with white (sometimes pink), scented (sometimes flowers and spoked stems) (botanical name *Crataegus*). There are some hundred species, including the familiar English May (also commonly called hawthorn or whitethorn—botanical name *Crataegus Oxyacantha*). The fruit is a red edible drupe called Haws and serving as winter food for many birds.

Hawthornden, old mansion of Midlothian, Scotland, 8 m. NE. of Edinburgh, situated in the beautiful wooded glen of the same name. It was formerly the seat of the Drummonds.

Hawthornden Prize, an award for imaginative work, usually a novel by a writer under 41 years old. Its value is £100, and it is awarded annually, the founder being Miss Alice Warrender. The prize commemorates William Drummond.

Hawthorne, Nathaniel, American novelist, born in Salem, Massachusetts. His *Twice-told Tales* was the first production by which he won distinction. After its publication he spent some months at Brook Farm, leaving which he married and set up house at Concord. From 1848 to 1850 he held a State appointment, and in his leisure hours wrote his *Scarlet Letter*, (1850) which established his fame as a master of literature. This was followed by *The House of the Seven Gables*, *The Snow Image*, *The*



HAWTHORN

Blithedale Romance, *The Marble Faun* and *Our Old Home*. (1804-1864).

Hay, grasses dried in the sun and stored food. The grass should be in flower when cut, as it then contains most saccharine. The stacking serves to preserve freshness with a slight fermentation. Mowing and stacking are best done in dry weather.

Hay, Ian (real name John Hay Belth), novelist and playwright; educated at Fettes College, Edinburgh, and St. John's College, Cambridge. For some time schoolmaster at Fettes. First novel *Pip*, 1907. In the World War served with the Argyll and Sutherland Highlanders; became major. Famous for his war book *The First Hundred Thousand*. He is the author also of a number of plays, including *Tilly of Bloomsbury*, *The Sport of Kings* and *A Safety Match*, and has collaborated in others. (1876-).

Haydn, Joseph, Austrian composer, born in Rohrau, Austria, of poor parents; early evinced a musical talent, and became at the age of eight a cathedral chorister; came into notice first as a street musician; soon became a popular music-master in Vienna, and, under the patronage of the Esterhazys, kapellmeister to Prince Nicolaus, a passionate lover of music. He produced opera, symphonies and oratorios, etc. He is at his best in quartettes and symphonies, and in *The Creation* and *The Seasons*. (1732-1809).

Haydock, urban district and colliery town of Lancashire, England, 3 m. NE. of St. Helens. There are iron foundries. There is a race-course at Haydock Park. Pop. 10,500.

Haydon, Benjamin Robert, English historical painter, born in Plymouth; studied at the Royal Academy, and in 1807 exhibited "Joseph and Mary resting on the Road to Egypt"; two years later quarrelled with the Royal Academy over a supposed slight to his picture, "Descent from the Cross," brought him £1,700 by exhibition, and his "Judgment of Solomon," considered his finest work, sold for 700 guineas. He was continually in debt, and his sensitive temperament, smarting under imaginary slights, led him to commit suicide by shooting himself in his studio. (1786-1846).

Hayes (1) urban district of Middlesex, England, 13 m. W. of London. Here are many factories, turning out aeroplanes, gramophones, printing-presses, etc. Pop. (with Harlington) 23,000. (2) Village in Kent, England, 2 m. S. of Bromley, with a large common. Here the great Earl of Chatham died and William Pitt, his son, was born. Pop. 5,000.

Hayes, Rutherford Burchard, nineteenth century President of the U.S.A., born in Delaware, Ohio; studied law at Harvard, and started practice at Cincinnati. He served through the Civil War, entered Congress in 1865, and was thrice Governor of Ohio. In 1876 he was elected President in the Republican interest after a protracted and bitterly disputed election. He did much to pacify the South, reform the civil service, advance education and to bring about redemption of specie payments. (1822-1893).

Hay-fever, a sort of catarrh, accompanied by paroxysms of sneezing, irritation in the eyes, pains in the head, etc., most frequent in early summer.

Haymarket, a market for the buying and selling of hay. The London street so called takes its name from a famous haymarket held opposite Charles Street, whose site is now occupied by the Haymarket Theatre, built in 1790, with which are associated such famous names as Fielding, Charles Macklin, Benjamin Webster, Sir W. S. Gilbert, the Bancrofts, Sir E. Beerbohm Tree and Norman McKinnel.

Hayward, Thomas W., English cricketer, born at Cambridge; nephew of Thomas Hayward, Cambridge cricketer (1835-1876). Qualified for Surrey, 1891, for which county he played for a number of years, scoring 3,518 runs in one season (1906). He also played against Australia and trained Hobbs. (1871-).

Haywards Heath, market town of E. Sussex, England, 12 m. N. of Brighton, now part of Guckfield urban district. It has an important cattle market. Pop. 5,400.

Hazebrouck, town in France, in the dept. of Nord, 25 m. S. of Dunkirk. It has a fine 16th Century church with an open spire 260 ft. high. Its manufactures include linen and beer; dye works and tanneries also exist. During the World War it was frequently bombed by German aircraft, and in 1917 and 1918 was shelled by the German long-range gun. At one time seriously threatened by the German advance, it was never captured. Pop. 13,500.

Hazel (*Corylus avellana*), a small tree of the order Betulaceae, native of

Britain and temperate Europe, and also found in Asia and N. America. It yields a small, edible nut (known as hazel-nut, cob-nut or filbert), and male and female flowers are borne on separate plants, the male flowers being pendulous catkins.



HAZEL

Hazel Grove,

urban district (Hazel Grove and Bramhall) of Cheshire, England, 2 m. SE. of Stockport, with cotton and silk industries. Pop. 12,500.

Hazlitt, William, critic and essayist, born in Maidstone, of Irish descent; began life as an artist, but abandoned art for letters, and contributed to the reviews; wrote on the English poets and dramatists, the *Characters of Shakespeare's Plays*, *The Spirit of the Age*, a *Life of Napoleon*, etc. Criticism was his forte, and he ranks among the foremost devoted to that art. He died in poverty. (1778-1830).

Headache, a term which includes pains of all kinds in the head and arising from a variety of causes often easily remedied, though a persistent headache may be due to the presence of a tumour or some other brain affection, while diseases of the kidney and heart are other possible contributory causes.

Ordinary headache is frequently due to some disturbance in the alimentary canal, and is often accompanied by sickness, in which case modification of the diet will prevent a recurrence. Worry, anxiety and hasty eating are apt to interfere with the digestion of food, and headaches frequently result from this cause. The strain caused by defective vision can also cause headache. Prevention should be sought by removal of the underlying cause, by the application of cold, wet cloths placed on the forehead or by vinegar. Aspirin (q.v.) frequently gives relief.

Head-hunters, name given to the Dyaks of Borneo, from their habit of preserving as trophies the heads of those whom they slew in battle, as the Red Indians did with scalps.

Headmasters' Conference, an association of headmasters incorporated in 1909 to discuss educational questions affecting the more important public schools. Annual conferences are held, and "Head-

masters' Conference Schools," which include Eton and Harrow, are those whose headmasters are members of the Conference.

Health, the condition in which all the bodily functions are performed normally; as applied to a district, a condition when the number of cases of disease is below the average. In the individual, health depends on cleanliness of the body and surroundings, exercise and suitable food and occupation.

Public Health, now one of the most important occupations of all national and local governments, requires the maintenance of a satisfactory standard of drainage, housing, the efficient disposal of refuse, prevention of nuisances and food adulteration, etc. (see **Public Health**). There is in London an Institute of Public Health (37, Russell Square, W.C.) which carries on educational work and hygienic research.

Health, Board of, established by an Act of 1848 as a Committee of the Privy Council to regulate sanitary conditions of life, prevention of infection, disease, etc. It was replaced by the Local Government Board in 1871, which in turn was superseded in 1919 by the Ministry of Health.

Health, Ministry of, a Government department set up under the Ministry of Health Act, 1919, to exercise the powers of the former Local Government Board and Insurance Commission. It has also assumed the powers of the Privy Council under the Midwives Acts, 1902 and 1918, control of State-subsidised housing, and the supervision of the health of expectant mothers and feeding of necessitous children and their medical examination. See also **Public Health**.

Health Insurance, National. In 1912 the first National Health Insurance Act of 1911 became operative. It was sponsored by Mr. Lloyd George. The scheme is on a compulsory and contributory basis, applying to almost the whole industrial population. The cost is shared between insured persons, their employers and the State. Medical, sickness, disablement and maternity benefits are provided, together with other additional benefits under certain conditions.

Insured persons are enrolled in Societies of their own choice, known as Approved Societies, including Friendly societies, trades unions, employers' provident funds and societies formed by industrial insurance companies. Specially appointed bodies known as Insurance Committees supervise the administration of medical benefit and comprise representatives of various interests—insured persons, medical practitioners, municipalities and the central government.

Persons between 16 and 65 years of age engaged in any employment under a contract of service whose wages or salary do not exceed £250 annually, and manual workers of whatever remuneration, are insurable, with a few exceptions. Under certain conditions a certificate of exemption may be obtained. Certain classes may become voluntary contributors. Contributions payable are for the combined Health and Pensions Scheme, one card is used and the stamps represent combined payment. The ordinary rates of combined contributions are men 1s. 8d. a week, women 1s. 2d. (shared equally between employer and employee).

Every employed person is required to obtain a contribution card for his employer to stamp. The penalty for non-production is a fine not exceeding £10. Medical benefit includes medical attendance and treatment, including treatment and attendance for tuberculosis and the provision of medicines and such medical and surgical appliances as are defined in the Regulations. Hospital or specialist treatment is not included.

Sickness benefit is normally 15s. weekly for a man, and 12s. for a woman for a period not exceeding 26 weeks after 104 weeks' contributions have been paid. Disablement benefit is a continuation of sickness benefit at a lower rate, and continues so long as the member remains incapable of work until the age of 65 is reached. The normal rate for men and women is 7s. 6d. weekly.

Maternity benefit is the payment of 40s. on the confinement of the wife of an insured man, or of £4 for a woman, married or unmarried, who is herself insured. There must have been 42 weeks' contributions. Additional benefits include dental treatment, hospital treatment, the cost of ophthalmic treatment, nursing and convalescent homes. By the Act of 1928 persons who were unable to continue their insurance payments through unemployment were granted an extended free period of 2½ years. Further Prolongation Acts were passed in 1930 and 1931.

The National Health Insurance Scheme is under the general control of the Ministry of Health (q.v.) in England, the Welsh Board of Health in Wales and the Department of Health for Scotland. Moneys received from the sale of health insurance stamps at post offices accumulate in the National Health Insurance Fund. A full summary of the provisions of the National Health Insurance Acts can be obtained from H.M. Stationery Office for 1d.

Healy, Timothy Michael, Irish Nationalist, born in Bantry, Cork; came into prominence during the Land League agitation in 1880, and in the same year was returned to Parliament; called to the Irish Bar in 1884; a forensic orator, with a great gift of humour; was active in promoting the interests of the Home Rule movement; in 1890 was one of the leaders in the revolt against Parnell. In 1922 on the formation of the Irish Free State he became its first Governor-General, a position he held for six years. (1855-1931).

Hearing, the appreciation of sound by the auditory nerves of the ear, which, when stimulated by noise, are vibrated by "sound-waves" in the air collected by the pinna of the ear and led to the tympanic membrane. The internal ear contains vibrators which pass on a stimulus to the hair-cells, whence a nervous impulse passes along the auditory nerves to the brain.

Hearn, Lafcadio, writer. Born in Lafcadio, Greece, after which he was named; a son of Irish and Greek parents, he was educated in Ireland and at Durham; emigrated to America, where he engaged in journalism, and later proceeded to Japan, to settle there as professor at Tokio; married a Japanese wife and became a naturalised Japanese subject. His works, such as *Glimpses of Unfamiliar Japan* and *Kokoro*, reveal the life of the east to Western minds. (1850-1905).

Hearst, William Randolph, American newspaper proprietor; controls a powerful group of papers, including the *Cosmopolitan Magazine* and *New York American*, with a total circulation of some ten millions; a Democrat and at one time anti-British in his propaganda. He failed in attempts to become governor of New York State, and mayor of New York City. (1863-).

Heart, the organ in the animal body which propels the blood and governs its circulation. In different orders of animals it varies from a rudimentary organ to the complicated structure of the human heart, which is a hollow muscular organ, conical in shape, situated between the lungs, and about 5 in. long, 3½ in. wide and 2½ in. thick. It is surrounded by a strong membrane called the pericardium, and is composed of four cavities, two auricles and two ventricles. The right auricle receives the blood returned

from the body by the vena cava superior (from the head, arms and chest), the vena cava inferior (from the legs and abdomen) and from the heart itself by the coronary vein. The blood then passes into the left ventricle, and communication is closed by a valve when the ventricle contracts. The opening into the artery is guarded by a valve formed of three flaps. The pulmonary veins bring the blood from the lungs and pour it into the left ventricle, which distributes the oxygenated blood to the body via the aorta, which also has a three-flapped valve, whence it passes to the arteries. The auricle and ventricle of one side are separated from those of the other by a muscular partition, the septum cordis.

Various diseases may affect the heart. One is pericarditis, or inflammation of the lining membrane, caused either by cold or injury, or a concomitant of other diseases. Inflammation of the inner lining is called endocarditis, and may be simple or ulcerative. Valvular disease often results as the after-effect of such diseases as rheumatic fever. The heart then becomes hypertrophied or overgrown, leading to dilation, though, in the case of children, the principle of "compensation" enables the heart to accommodate itself to the change. Fatty degeneration occurs when the muscular fibres are replaced by oleaginous particles, while angina pectoris, a very painful malady, is accompanied by a sense of strangling in the chest. Sudden excitement or shock sometimes causes syncope or fainting.

Heartburn, a term for a burning due to some digestive disturbance. A feeling of discomfort in the throat and the region of the heart is a usual accompaniment. Bicarbonate of soda will afford speedy relief, while charcoal and bismuth may be taken with advantage. A simple diet, regular exercise and regular action of the bowels will prevent recurrence, while moderate meals will avoid the risk which arises from an overloaded stomach.

Heart of Midlothian, the old Tolbooth or jail (pulled down in 1817) of Edinburgh, the capital of Midlothian, which gives name to one of Scott's novels.

Heartsease, or Pansy (*Viola tricolor*), the old name of the Violet (*Violaceae*) order, native to Britain and temperate countries. The variously coloured flowers have five broad petals, and the leaves are long and sharply pointed, the stem being 6 in. to 1 ft. in height, with a single flower in each axil.

Heat was formerly believed to be an invisible material substance, to which scientists gave the name *caloric*. It was, however, shown by Count Benjamin Rumford (a British soldier), about the year 1800, that the enormous quantities of heat generated during the boring of cannon were more probably to be regarded as a transformation of part of the energy of the boring-tool. This view was supported by the work of Sir Humphry Davy, who found that when two pieces of ice were rubbed together they partly melted; the heat necessary to melt the ice clearly coming from the mechanical energy of the rubbing.

The final proof of the fact that heat is a form of energy was provided in a series of experiments made by J. P. Joule (1818-1889) between 1840 and 1860, who produced heat in various ways—e.g., by the friction of paddle-wheels in water and in mercury, by



HEARTSEASE

the compression of air, by an electric current, and by rubbing two iron rings together—and found that in every case it was necessary to do work equivalent to raising 778 lb. vertically through one foot in order to produce the quantity of heat (one British Thermal Unit) required to raise the temperature of 1 lb. of water through one degree Fahrenheit.

Hence 778 feet-lb. of mechanical energy are equivalent to one British Thermal Unit of heat energy; in conventional scientific language, the mechanical equivalent of heat is 778 feet-lb. per B.Th.U., or, on the metric system, 4.19×10^6 ergs per calorie.

Heat, Latent, the number of calories (see **Heat, Specific**) required to convert 1 gm. of a substance from the solid state to the liquid state at the melting-point (Latent Heat of fusion), or from the liquid state to the gaseous state at the boiling-point under normal atmospheric pressure (Latent Heat of vaporisation). Neither change is accompanied by any rise in temperature, hence the term "latent," meaning hidden. The Latent Heat of fusion of ice is 80; the Latent Heat of vaporisation of water is 537.

Heat, Specific, the number of units of heat (calories) required to raise the temperature of 1 gm. of a substance through one degree Centigrade. The calorie is the amount of heat required to raise the temperature of 1 gm. of water through one degree Centigrade.

Heat, Transmission of, may take place in three ways—viz. by convection as in water, where the heated portion of the material actually moves; by conduction, when it is transferred from particle to particle of a substance which as a whole remains stationary (of the knob of a steel poker which gets hot when the other end is in a fire) and by radiation comparable to the radiation of light. Thus the heat of the sun reaches us by radiation, travelling with the same velocity as light, viz. 300,000 kilometres or 186,000 miles per second. This radiation, however, is not actually heat; it produces heat when it is absorbed by a material substance. Heat-radiation resembles light radiation in many other ways than the speed with which it travels; thus it moves in straight lines, is reflected by a mirror, and may be focussed by means of a lens.

Heath, the name given to the heather-covered but otherwise barren moorlands which occupy extensive tracts in Britain, and in N. Europe.

Heath, the common name of the low-growing moorland shrubs of the genus *Erica* of the natural order Ericaceae. There are some 500 species found in Europe (especially in the Mediterranean districts), S. Africa and other parts of the world. Five species are native to Britain, including the familiar *Erica cinerea* (five-leaved heath) and *Erica Tetralix* (cross-leaved heath).

Heather, or **Ling** (*Calluna vulgaris*), a low-growing shrub of the order Ericaceae, found on moorland in Europe, Greenland and N. America. It is an evergreen, with narrow leaves which retain moisture, and bearing flowers in racemes. It is insect- and wind-pollinated and yields good honey (heather honey).

Heathfield, George

Elliott, Lord, British general, son of Sir Gilbert Elliott, born in Stobs, Roxburghshire; saw service at Dettingen and Fontenoy; fought with English troops in alliance with Frederick the Great against Austria. For his heroic defence of Gibraltar (1779-1783) against the combined forces of



HEATHER

France and Spain he was raised to the peerage. (1717-1790).

Heaven, in Christian theology, the place of the immediate Divine presence, where God manifests Himself without veil, and His saints enjoy that Presence. In Scripture it denotes, (1) the atmosphere, (2) the starry region, (3) a state of bliss, (4) the divine presence and (5) God Himself.

Heaviside, **Oliver**, physicist, born in London, retired, 1874, from employment with Great Northern Telegraph Company, Newcastle, on account of deafness; published, 1892, *Electrical Papers* bringing theory to bear on practice and pointing the way to long-distance telephony; Published *Electro-Magnetic Theory*, 1893-1912, and suggested the presence of the Heaviside Layer (q.v.). (1850-1925).

Heaviside Layer, of the upper part of the atmosphere, some 15 m. above the earth, which is supposed to be ionised, making it opaque to wireless waves which are reflected back to the earth.

Heavy Cavalry, in the British Army formerly the Household Cavalry or Cuirassiers, the 4th and 5th Dragoon Guards, and the 1st and 2nd Dragoons, the men in these regiments being taller and more heavily equipped than those of other cavalry regiments. The full-dress uniform of the Life Guards still comprises the cuirass, but the other regiments are gradually being converted into mechanised units.

Hebburn, urban district of Durham, N.E. of Gateshead. It has collieries, shipbuilding, engineering and chemical works and other industries. Pop. 24,000.

Hebdomadal Council, the governing body of Oxford University, so called from its meeting weekly. It was founded in 1631, and consists of heads of houses and proctors.

Hebe, Greek goddess of eternal youth, daughter of Zeus and Hera; superseded as cupbearer of the gods by Ganymedes, and became the wife of Hercules after his admission among the immortals.

Heber, **Reginald**, Bishop of Calcutta, born in Cheshire, author of a prize poem entitled *Palestine* and a volume of *Hymns*, several of them famous, as *From Greenland's Icy Mountains*; died at his post in Trinopolis; left a narrative of a *Journey through India*. (1783-1826).

Hebrew, a Semitic language, the ancient language of the Jews, and that in which most of the Old Testament is written. It has been revived in the 19th and 20th Centuries, and is one of the official languages of Palestine. A considerable prose and verse literature in modern Hebrew now exists.

Hebrew Poetry in the old Testament is of two kinds, lyric or gnomic, i.e., subjectively emotional or sentimentally didactic, the former belonging to the active or stirring, and the latter to the reflective or quiet periods of Hebrew history. The lyric expression of the Hebrew temper we find in the Psalms and the Lamentations of Jeremiah, and the gnomic in the books of Proverbs and Ecclesiastes; while the book of Job, which is dramatic in form, is partly lyric and partly dramatic. The extensive Hebrew poetic literature produced in the Middle Ages by Jehuda Halevi, Solomon Ibn Gabirol, etc., largely resembles the Psalms in theme and expression.

Hebrews, **Epistle to the**, a book of the New Testament of uncertain authorship addressed to Christians of Jewish descent, who were strongly tempted, by the persecution they were subjected to at

the hands of their Jewish brethren, to renounce Christ. Its attribution to St. Paul is now universally discredited.

Hebrides, or *Western Islands*, a general name for the islands on the W. coast of Scotland (save those in the Firth of Clyde), about 500 in number, of which 100 are inhabited. They belong to the counties of Ross, Inverness and Argyll, and are divided by the Little Minch and the Minch into the Outer Hebrides, of which the chief are Lewis-Harris, North and South Uist, Benbecula and Barra; and the Inner Hebrides, including Skye, Rum, Mull, Iona, Staffa and Colonsay. They have wild and rocky coasts, but are picturesque and verdurous, and are much frequented by tourists. The climate is mild and moist. Cattle and sheep-rearing, fishing and weaving are the chief industries; chief town, Stornoway, in Lewis. Ruled by Norway until the 13th Century, they then fell to the Scots race of Somerled until John Macdonald in the 14th Century made himself "Lord of the Isles." Pop. c. 80,000.

Hebron, an ancient town and city of Palestine, refuge in Palestine, originally called Kirjath-arba, i.e., four cities, 20 m. S. of Jerusalem; it is now a growing manufacturing town, with pop. c. 20,000. Many Jews were massacred here in 1929 by Arabs in a rising due to incidents at the Walling Wall, Jerusalem.

Hecate, in Greek mythology, a mysterious divinity invested with authority in heaven, earth and hell, and thus figured with three bodies or heads; came to be regarded exclusively as an infernal deity, having under her command all manner of phantom spirits.

Hecatomb, a term denoting in ancient Greece worship the offering of 100 oxen in perfect condition. Only the thighs, legs and hide were burnt, the remainder providing meat for a feast.

Heckmondwike, a market town in Yorkshire, England, 8 m. N.E. of Huddersfield; is the principal seat of the carpet and blanket manufactures in the W. Riding. Pop. 9,000.

Heda, or *Hekla*, the loftiest of 20 active volcanoes in Iceland (5,102 ft.); is an isolated peak with five craters, 68 m. E. of Reykjavik; its most violent outbreak in recent times continued from 1845 to 1846.

Hectare, a unit of square measure in a square on a hundred metres, just under two and a half English acres.

Hectic Fever, a fever often accompanying panying consumption, and showing itself by a bright pink flush on the cheeks.

Hectograph, an apparatus for the matter, consisting of a gelatine pad upon which a first copy of the matter is placed, copying ink being employed. One impression produces about 100 copies.

Hector, the chief hero of Troy in the war with the Greeks, the son of Priam and Hecuba; fought against the bravest of the enemy and finally slew Patroclus, the friend of Achilles (q.v.), which roused the latter from his long lethargy to challenge him to fight. Achilles chased him three times round the city, pierced him with his spear, and dragged his dead body after his chariot round Ilium. His body was at the command of Zeus delivered up to Priam and buried with great pomp within the city walls.

Hecuba, the wife of Priam, King of Troy. On the fall of the city she fell into the hands of the Greeks, and, according to one tradition, was made a slave; according to another, threw herself in despair into the sea.

Hedgehog, a genus of insectivorous mammals (*Erinaceus*) of which

there are many species found in Europe, Asia and Africa, and all similar in general characteristics. The English Hedgehog is about 9 ins. long, furnished on the back and sides



ENGLISH HEDGEHOG

with spines which afford protection when the creature rolls itself into a ball. It feeds on snails, insects, mice, frogs, etc., and is sometimes kept in gardens to reduce pests. It hibernates in winter.

Hedgeley Moor, moor of Northumberland, England, 9 m. N.W. of Alnwick, the scene of a defeat of the Lancastrians by the Yorkists during the Wars of the Roses in 1463.

Hedge Mustard (*Sisymbrium officinale*), a plant of the order Cruciferae, common in Britain, where it grows to a height of 1½ ft., bears yellow blossoms and has a pungent odour.

Hedge Nettle, the common name of the genus *Stachys*, found throughout the Northern Hemisphere.

Hedge Sparrow (*Acentor modularis*), a brown bird of the Turdidae (Thrush) family, common in England, and very like the house sparrow, but bearing black markings.

Hedin, Sven Anders von, explorer, born in Stockholm, Sweden; travelled first through Persia and Mesopotamia; later explored the Pamirs and mountain ranges of the Yark and Daria; visited Mongolia and Tibet in 1896 and succeeding years, making important discoveries. His travels are described in *The Riddle of the Gobi*. (1865-).

Hedonism, the doctrine that pleasure is the end of life and the measure of virtue, or greatest good.

Heem, Jan Davidsz. van, a famous Dutch painter, born in Utrecht; had a prosperous career in Antwerp, where in 1635 he became a member of the Guild of Painters. He is considered the greatest of the "still life" painters. His pictures, masterpieces of colouring and chiaroscuro, are to be found in many European galleries. (1606-1684).

Hegel, George Wilhelm Friedrich, German philosopher, born in Stuttgart; studied first at Tübingen, with a view to theology; qualified at Jena for an academic career; adhered to and collaborated with Schelling in philosophy; first announced himself in 1800 by his work, *Phenomenology of the Spirit*; became rector of the Academy at Nürnberg, where in 1812-1816 he composed his *Logic*; was in 1816 appointed professor of Philosophy at Heidelberg, whence he was removed to Berlin in 1818, where, his philosophy being now matured, he began to apply it with intense earnestness to every subject of human interest. In his idealism philosophy first reached the goal to which it was till then with hesitating steps only stretching forward. His works fill 22 goodly-sized volumes, and his system may be grouped under three heads: (1) the Science of Logic, (2) the Philosophy of Nature and (3) the Philosophy of Spirit. His philosophy was the basis of the metaphysical speculations of Karl Marx, while his idealisation of the State is at the basis of the ideology of Fascism. (1770-1831).

Hegelianism, the philosophical system of Hegel, which resolves being into thought, and thought into the unity of the logical moments of simple apprehension, judgment and reason, all

purely spiritual acts, whereby being in itself, or *sein*, becomes other than itself, or *dasein*, and returns into itself, or *für sich sein*, the universal being first by separating from itself particularised, and then by return into itself individualised, the whole being what Hegel characterises as *Der Prozess des Geistes*, "The process of the Spirit." Hegelianism is important as the fountain-head of such widely differing political philosophies as Marxism and Fascism.

Heidelberg, a celebrated German city in Baden, amid beautiful surroundings, on the Neckar, 13 m. S.E. of Mannheim; has many interesting buildings, including ruins of a splendid 13th-Century castle, but is chiefly celebrated for its flourishing university, whose professoriate has included many of the most distinguished German scholars; it was long the centre of Calvinism; its chief trade is in books, tobacco, wine and beer. Pop. 83,000. Another Heidelberg is in the Transvaal, S. Africa, 58 m. S.E. of Pretoria, and is a health resort and a centre for the Witwatersrand goldfields. Pop. (white) 1,900.

Heidelberg Man, an early sub-man were found in a sandpit at Mauer on a tributary of the Rhine in 1907. The remains included the lower jaw and teeth and were found among the bones of animals living in the early Pleistocene Age. It is now considered to be of later date than the Piltdown man (*q.v.*), though earlier than the Neanderthal.



JAWS OF
HEIDELBERG
MAN (A) AND
MODERN
MAN (B)

Heifetz, Jascha, violinist, born in Vilna, made his first public appearance at 4½ years of age at Vilna, in Petrograd Conservatoire at 10; soon afterwards giving concerts, with phenomenal success in Germany, Austria, U.S.A. (1901-).

Heilbronn, a quaint old town of Württemberg, on the Neckar, 23 m. N. of Stuttgart; has a fine 11th-Century Gothic church, and the Thief's Tower (*Diebsturm*). It is a busy commercial centre, and manufactures silver-ware, paper, beet-sugar and chemicals. Pop. 60,000.

Heimdallr, in Norse mythology, god of light, similar to the classical Apollo. He guarded the frontiers of Himinbjorg (heaven) and the rainbow bridge (*Bifrost*) against the attack of the giants—like blind Höder of Teutonic myth. His hearing was so acute that he could hear the grass grow. He was always in deadly feud with Loki for the recovery of Freyja's stolen necklace, and ultimately they slew each other.

Heine, Heinrich, a German lyric poet, born in Düsseldorf, of Jewish parents; trained for the law, but devoted himself to literature; first became known by the publication of his *Reisebilder* and his *Buch der Lieder*, the appearance of which created widespread enthusiasm in Germany. In 1825 he abandoned the Jewish faith and professed Christianity, though of a lax variety. In 1830 he settled in Paris, and married a rich lady, who alleviated the sufferings of his last years. An attack of paralysis left him blind, but under these privations and much bodily pain he continued his literary labours to the last. He is chiefly remembered for his songs, many of which have been set to music. (1797-1856).

Heir, one who becomes entitled to the deceased person. Strictly an heir becomes such only after the death of the person whose heir he is; until that occurs he is an heir apparent (*q.v.*) or heir presumptive (*q.v.*).

Heir Apparent, one whose right of succession if he survive the present holder cannot be questioned.

Heirloom, personal belongings or chattels, which go with freehold land or inheritance to the executor for division amongst next of kin. They may not be devised away from the heir by a will, and may be sold only by permission of a court under the Settled Land Act. The name may cover a large variety of articles, such as deer, tombstones, jewels, deeds, chests, armour, etc.

Heir Presumptive, one whose succession may be affected by the birth at a later date of a more direct heir.

Hejaz, with Nejd, a kingdom of Central Arabia, stretching from the Persian Gulf to the Red Sea. For the most part the inhabitants are nomadic Arabs, and the country is of vital importance to the Eastern world, as it contains the Holy City of Mecca. A stronghold of the Wahabis in the 18th Century, it was ruled by Turkey till 1913, when it gained some measure of independence. In 1925 the kingdom greatly extended its borders, but these are still not strictly defined. Area (Hejaz) about 150,000 sq. m.; (Nejd) about 800,000 sq. m. Both countries are now parts of the single kingdom of Saudi Arabia, unified in 1932 under King Ibn Saud.

Hejira, Hejra or Hegira (Arabic, "going away"), a word applied to Mohammed's flight from Mecca to Medina in A.D. 622; the starting-point of the Mohammedan calendar. 1938 A.D. is roughly equivalent to A.H. (Year of the Hejira) 1357.

Hel, or Hela, in Scandinavian mythology, an inexorable divinity, the daughter of Loki, and the death-goddess who presides over the icy realm of the dead. Hence arose the English word Hell.

Helder, The, a strongly fortified and flourishing seaport in North Holland, on the Marsdiep, at the N. end of the North Holland Canal, 51 m. NW. of Amsterdam; is an important naval centre, and has an excellent harbour. Pop. 34,000.

Helen, daughter of Zeus and Leda, and wife of Menelaus, King of Sparta; the most beautiful of women, she was carried off to Troy by Paris, and to revenge her abduction the Greeks who had pledged themselves to protect her, made war on Troy.

Helianthus, a genus of plants of the natural order Compositae, of which there are some 60 species, natives of America. Included in the genus are the Sunflower (*Helianthus annuus*) and the Jerusalem Artichoke (*Helianthus tuberosus*).

Helicon, a mountain in Boeotia, Greece, sacred to Apollo and the Muses; famous for the fountains on its slopes dedicated to the latter.

Helicopter, a type of aeroplane in which the machine is

equipped with one or more lifting propellers which rotate horizontally. The first appeared in 1872. In 1923 Raoul de Pescara, who was killed while an air passenger in 1937, successfully flew one of his own invention. The helicopter has the advantage of being able to rise almost vertically.



HELICOPTER

Heligoland, an islet of the North Sea, 35 m. from the mouths of the Elbe and the Weser, given by Britain to Germany in 1890 in exchange for recognition of the former's rule in Zanzibar; consists of the *Oberland*, a plateau, with some

400 houses, and the *Unterland* on the shore, 206 ft. beneath, with a group of 70 dwellings. In the summer it is crowded with visitors, bathing being the chief attraction; fishing is the staple industry of the native Frisians. Off here Germany suffered naval reverses at the hands of Great Britain in Aug. 1914, and Nov. 1917. The fortifications erected by Germany were demolished under the Treaty of Versailles, but the island is believed to have been re-fortified under the Nazi régime.

Heliography, a method of signalling by means of the sun's rays flashed from mirrors. Messages can in this manner be transmitted a distance of 190 m. It was at one time of extensive use in military operations.

Heliometer, an astronomical instrument for measuring the diameter of celestial bodies and their distance from each other. It was invented in 1814 by Fraunhofer. It consists of an equatorially-mounted telescope with a divided object glass.

Heliopolis (i.e., City of the Sun), in Egyptian *On*, one of the oldest and most sacred cities of Egypt; situated 10 m. N. of Cairo, on the easternmost branch of the Nile; was a centre of Egyptian learning; Potiphar was one of its chief priests; Cleopatra's Needle, now on the Thames Embankment, came from here. Also a name of Bealbec.

Helios, the Greek God of the sun, identified with Apollo, was the brother of Selene and Eos; a god of the brood of the Titans, and the source of light to both gods and men.

Heliotherapy, the treatment of certain diseases by the application of the sun's rays. The most useful radiations are the infra-red and the ultra-violet. The former dilate the capillaries of the skin and stimulate circulation, while the latter check metabolism and replace dietetic deficiency, and are specially valuable in curing rickets.

Heliotrope, or **Bloodstone**, a variety of quartz (chalcedony or jasper) of a deep green colour, with bright red spots. The finest specimens, which come from S. Asia, are of fairly translucent chalcedony; those of jasper are opaque. They are used as seals, ring-stones, etc.

Heliotrope (*Heliotropium*), a genus of some 220 plants of the order Boraginaceae found in tropical and temperate regions, some species of which are cultivated as greenhouse plants in England for the sake of their ornate flowers, the chief species grown for this purpose being the *H. peruvianum* (also called Cherry Pie).

Heliozoa, protozoa, a group of the sun-animalcule. Some have no skeleton, and in some cases they possess a gelatinous membrane. They are widely distributed, and are found both in fresh- and marine-water.

Helium, a non-metallic chemical element belonging to the group of inert or rare gases. It was discovered by Sir Norman Lockyer (1868) upon the sun (hence its name, from the Greek *helios*, the sun) by means of the spectroscope. In 1894, however, Sir William Ramsay detected it in the gases evolved from the mineral cleveite on heating. Symbol He, atomic number 2, atomic weight 4.002. Helium occurs in minute traces in the atmosphere, but in much higher proportion (up to 5 per cent.) in the gases given off from certain hot springs, particularly where the water is radioactive;

this is because helium is a product of the disintegration of many radioactive elements, the α -particles expelled from radium, for example, consisting of charged helium atoms.

The "natural gas" obtained in vast quantities in the N. American oilfields (Medicine Hat, etc.) often contain nearly 1 per cent. of helium, and is the chief source of the element, which, owing to its lightness and non-inflammability, is used, where possible, to fill dirigibles, etc., instead of the dangerously inflammable hydrogen, of which it has about 92 per cent. of the lifting-power. In a discharge lamp, helium gives a greenish-white light.

Helix, a term indicating a spiral line shaped like a spiral spring with a straight axis. In architecture, a small twist under the abacus of a Corinthian capital.

Hell, the place popularly conceived as that where unrepentant sinners suffer eternal torment, corresponding to the Greek Hades and the Biblical Gehenna. The pains of hell are held to be both physical and spiritual, the latter consisting chiefly of remorse and despair. Modernists are inclined to modify the earlier interpretation of the term hell, and to relegate the idea to legendary folk-lore.

Hellas, the Greek name for Greece, both in ancient and modern times.

Helle, a maiden who, with her brother Phrixus, fled on the golden-fleece ram to escape from the cruelty of her step-dame Ino, and fell into the strait called after her the Hellespont in which she was drowned. See *Golden Fleece*.

Hellebore, the name of a genus of plants (*Helleborus*) of the order Ranunculaceae, found in Britain, Europe and Mediterranean districts and possessing medicinal value. Varieties include the Green Hellebore (*Helleborus viridis*) bearing green flowers and the Christmas rose (*H. niger*), the white flowers of which turn green after fertilisation.

Hellenism, the adoption of Greek manners, culture and language by the peoples of the Near East—Asiatics, Egyptians, Jews, etc.—which followed upon the conquests of Alexander the Great and lasted until the rise of Mohammedanism.

Helles, **Cape**, at the S. end of Gallipoli, near the entrance to the Dardanelles, where troops were first landed at the start of the Gallipoli campaign of 1915.

Hellespont, the ancient name for the Dardanelles (q.v.), the entrance to the Bosphorus.

Helm, the handle or tiller by which the rudder of a boat or ship is moved during steering operations. In large ships the tiller is in the form of a wheel. The tiller must be moved in the opposite direction to which it is desired to turn the boat.

Helmet, a protective covering for the head, especially in war. In Norman times it was made of hide with iron safeguards for the ears and neck. Knights of the 14th Century wore movable visors to protect the face. The advent of gun-fire rendered them useless in modern warfare until the World War, when helmets were used with great effect to protect troops from shrapnel, much of which strikes downwards. Helmets are also worn by firemen, divers, policemen, etc.

Helmet Shell, a gastropod mollusc resembling the whelk; its shell is used in the manufacture of cameos and brooches. They belong to the family Cassididae.

Helmholtz, Hermann von, eminent German scientist, born in Potsdam, Brandenburg; first an army doctor, and in 1848 became professor of Physiology in Königsberg, and subsequently in Bonn and



HELIOTROPE
(*H. Europaeum*)

Heidelberg. In 1871 he became professor of physics in Berlin, and in 1887 nominated 1 of the Charlottenburg Institute. Toology he made contributions of great due on the various sense-organs, and to physics on the conservation of energy. His published works include *Theory of Sound Sensations* and *Sensations of Tone as a Physio-Basis for the Theory of Music*. (1821-94).

ise, niece of Fulbert, canon of amour with Abelard (q.v.); became prioress of the convent of Argentoull; later founded a new convent of the Paraclete, where she was abbess. (1101-1164).

Helots, slaves who formed the lowest grade of the population of Sparta, were descendants of the original inhabitants of Laconia, or prisoners of war. They belonged to the State, from which alone they could receive manumission. They were employed as tillers of the ground, waited at meals, filled various menial offices for private individuals; were whipped annually to remind them of their position, slaughtered when their numbers increased too much, and forced to exhibit themselves under intoxication as a warning to the Spartan youth.

Helsingborg, city and seaport of Malmö, Sweden, 32 m. N. of Malmö, facing Elsinore across the Sound. It has a large trade, especially with Denmark, and many manufactures. Pop. 58,500.

Helsinki, or **Helsingfors,** a strongly fortified seaport and capital of Finland, in a commanding position on a rocky peninsula in the Gulf of Finland, 191 m. W. of Leningrad. The numerous islands and islets at the entrance of the harbour are strongly fortified. The town is handsomely laid out, and has a flourishing university (student roll, 8,600), and does a good Baltic trade. Pop. 272,500.

Helvellyn, one of the Cumberland mountains, 3,118 ft. high, rises at the side of Ullswater, midway between Keswick and Ambleside.

Helvetii, a Celtic people mentioned by Caesar as occupying territory in Central Europe now embraced in Switzerland. They suffered tremendous slaughter at the hands of Caesar when endeavouring to make their way to a wider territory in Southern Gaul.

Hemans, Felicia Dorothea, née Browne, poetess, born in Liverpool. Her marriage was an unhappy one, and after the birth of five children ended in permanent separation. She was the authoress of a number of works, and enjoyed the friendship of Wordsworth, Scott and other literary celebrities of the time. (1793-1835).

Hematin, or **Hæmatin,** a constituent of the blood, which combines with globin to give it its distinctive colour.

Hemel Hempstead, a busy market town in Herts, 23 m. NW. of London; noted for its straw-plaiting, and has paper-mills, foundries, etc. Pop. 16,000.

Heming, or **Hemmings,** John, editor, with Henry Condell (d. 1627), of the First Folio Shakespeare; an actor, probably from Shakespeare's part of the country; treasurer of the Lord Chamberlain's (afterwards the King's) company of actors; said to have been the original Falstaff. Latterly principal proprietor of the Globe Theatre. (1556?-1630).

Hemingway, Ernest, American author; born at Oak Park, Illinois; at first a reporter; published stories and poems from 1923 onward; *The Sun Also Rises*, 1926; *A Farewell to Arms*, written in an original flowing style, attracted much attention in 1929. (1898-).

Hemiplegia, a common form of paralysis affecting one side only of the body, and from which complete recovery is rare. If the right side be affected, the seizure is often accompanied by aphasia (loss of the power to express ideas in speech or to understand the spoken or written word).

Hemisphere, the half of a sphere, especially the earth, which is usually divided on maps into an Eastern and a Western Hemisphere, the former called the old and the latter the new world. The equator also forms a boundary between the North and South Hemispheres.

Hemlock, a poisonous umbelliferous plant (*Contum maculatum*)

found in Britain, Europe and temperate Asia. It is used medicinally as a sedative and a substitute for opium. It bears white flowers on a smooth, hollow stem with purple markings. Socrates's death was caused by a draught of hemlock. Its effect on human beings is to produce paralysis, convulsions and death, but the medical preparation relieves rheumatism, whooping-cough and pain.



HEMLOCK

Hemp (*Cannabis sativa*), a plant of the order Moraceae, an annual herb, and a native of Western and Central Asia, but naturalized in Africa, S. America, Italy, Russia, etc. Indian hemp produces the narcotic drug called hashish. The fibre is strong, and is used in the manufacture of sail-cloth ropes and cables. Hemp seed is used as food for birds and yields a valuable oil. It is cultivated extensively in the U.S.A. The flowers resemble hops, and the leaves are divided into five leaflets.

Hems, or **Hems,** a city in Syria, known to the Romans as Emesa, on the Orontes, 63 m. NE. of Tripoli. Here stood in ancient times a famous temple of the Sun, one of whose priests, Heliogabalus, became Roman emperor (218). The Crusaders captured it from the Saracens in 1098. It does a good trade in oil, cotton, silk, etc. Pop. 53,000.

Hemsworth, town of Yorkshire, England, in the W. Riding, 8 m. SE. of Wakefield. Coal-mining and stone-quarrying are carried on. Pop. 13,000.

Henbane, a plant of the order Solanaceae with soft, hairy foliage, and pale-yellow flowers streaked with purple, found in waste ground. The juice contains several alkaloids with a medicinal value. It is a fatal poison, especially to fowls. The only British species is *Hyoscyamus niger*. The extract is superior to landanum as a narcotic, as it does not result in constipation.



HENBANE

Henderson, Arthur, British politician. He entered Parliament as Labour member in 1903, became chairman of the Labour Party in 1908, and in 1915 was President of the Board of Education. From 1916 to 1917 he was Labour representative in the War Cabinet. In 1924 he was Home Secretary in the Labour Government and in 1929 became Foreign Secretary. In 1932 he presided over the Geneva disarmament conference, and received the Nobel Peace Prize in 1934. (1863-1935).

Hendon, borough of Middlesex, England, a residential suburb of NW. London. Here are aeroplanes works and

flying-schools. A large reservoir, the Welsh Harp, is used for boating and skating. Pop. 130,000.

Hengist and Horsa, two Saxon brothers who came over to assist Vortigern against the Picts in the 5th Century, and were rewarded by a gift of Thanet, though they were afterwards defeated by Vortigern and Horsa slain.

Hengistbury Head, promontory of Hampshire, England, on the W. side of Christchurch Bay. It has remains of ancient fortifications.

Henley, William Ernest, poet and critic, author of a *Book of Verses* and *Song of the Sword*, and of a volume entitled *Views and Reviews*, in which he evinces discriminative criticism; edited, with T. F. Henderson, an edition of Burns's poetry, with a Life of the poet; wrote several plays in collaboration with Robert Louis Stevenson. (1849-1903).

Henley-on-Thames, a borough of Oxfordshire, England, on the Thames, near the Chiltern Hills, 36 m. W. of London. The river is spanned here by a fine five-arch bridge, and the annual amateur regatta is a noted social event. Malting and brewing are the chief industries. Pop. 14,500.

Henna (*Lawsonia inermis*) a shrub of N. Africa and Eastern Asia, producing yellow and brown dyes, extensively used as cosmetics both in Europe and the East.



HENNA

Henrietta Maria, wife of Charles I., born at the Louvre; daughter of Henry IV. of France and of Marie de' Medici; a beautiful and able woman, much beloved by her husband, but as a Roman Catholic disliked and distrusted by the nation; monaced with impeachment by the Commons, she had to flee the country; returned with a supply of money and ammunition, but in 1644 was obliged to seek refuge again in France; revisited the country for a short time after the Restoration, and died near Paris at her retreat there. (1609-1669).

Henrietta Maria, daughter of wife of the Duke of Orleans, brother of Louis XIV., born in Exeter. She was successful in persuading her brother, Charles II., into league with France by signing the Treaty of Dover. On her return to France she died suddenly, it is believed by poison. (1644-1670).

Henry, the unit of inductance of an Joseph Henry (q.v.). A coil has an inductance of one henry if a current changing at the rate of one ampere per second produces an electromotive force of one volt. The microhenry is the millionth part of a henry.

Henry I., King of England from 1100 to 1135, youngest son of William the Conqueror, born at Selby, Yorkshire; usurped the crown from his elder brother Robert, an act which was confirmed by the Church and the mass of the people. Robert, after a weak resistance, being pensioned off. The epithets Beauclore and the Lion of Justice, which were bestowed on him, accurately describe him as he appeared to his people. His attainments were scholarly for his times, and his reign was distinguished by the strong and organised administration of justice, although morally his life was a depraved one. Meanwhile, his brother Robert had again taken up arms but was routed at Tenchebrai, thus losing Normandy,

and remained a prisoner in Henry's hands till his death in 1133. Henry now governed his kingdom with a firm hand. The turbulent Norman nobles were subdued, while the administration of the law was greatly improved by the institution of the *Curia Regis* (the King's Court) and of itinerant judges. Trade improved, and the religious life of the nation was deepened through the advent of the Cistercian monks and the influence of Anselm. His wife was Eadgyth (who changed her name to Matilda), daughter of Malcolm of Scotland. (1068-1135).

Henry II., King of England from 1134 to 1189, first of the Plantagenet line; son of Matilda, daughter of Henry I., and her second husband Geoffrey Plantagenet, Count of Anjou, born in Le Mans. When he came to the throne as Stephen's successor he was already in possession, mainly through his marriage with Eleanor, the divorced wife of Louis VII., of more than half of France. He set himself with all the vigour of his energetic nature to reform the abuses which had become rampant under Stephen, with Thomas à Becket as his zealous Chancellor. The Great Council was frequently summoned to deliberate on national affairs. The *Curia Regis* was strengthened, the itinerant judgeships revived, while the oppression and immorality of the nobles was sternly suppressed by the demolition of the "adulterine castles." A blow was aimed at the privileges and licentiousness of the clergy by the Constitutions of Clarendon, but their enactment brought about a rupture between the King and Becket, now Archbishop of Canterbury, which subsequently ended in the murder of Becket. In 1171 Ireland was invaded and annexed, and three years later William the Lion of Scotland was forced to declare his kingdom a fief to the English throne. Some time previously the Welsh princes had done him homage. The last years of his reign were embittered by quarrels and strife with his ungrateful sons. He was a man of many kingly qualities, and his reign marks an epoch in the development of constitutional law and liberty. (1133-1189).

Henry III., King of England from 1216 to 1272, eldest son of King John; succeeded to the throne at the age of nine. During his minority the kingdom was wisely and faithfully ruled by the Earl of Pembroke and Hubert de Burgh. When he came of age he proved himself a weak ruler, and his administration has been called "one long series of impolitic and unprincipled acts." With the elevation of Peter des Roches, a native of Anjou, to the post of chief adviser, French interlopers soon became predominant at the Court, and the recipients of large estates and pensions, an injustice further stimulated by the King's marriage with Eleanor of Provence. Justice was prostituted, England humiliated under a feeble foreign policy, and the country finally roused by infamous exactions. Simon de Montfort, the King's own brother-in-law, became the leader of the people and the champion of constitutional rights. By the Provisions of Oxford, forced upon the King by Parliament assembled at Oxford (1258), a wider and more frequent Parliamentary representation was given to the people, and the King's power limited by a permanent council of 15. As an issue of the Barons' War, which resulted in the defeat and capture of the King at Lewes (1264), these provisions were still further strengthened by the Mise of Lewes, and from this time may be dated the birth of representative government in England as it now exists. In 1265 was summoned the first Parliament as at present constituted, of peers temporal and spiritual, and representatives from counties, cities and boroughs. Internal dissensions ceased with the victory of Prince Edward

over the barons at Evesham (1265), when the popular leader De Montfort perished on the field. (1207-1272).

Henry IV., King of England from 1399 to 1413, first of the Lancastrian kings, son of John of Gaunt, and grandchild of Edward III., born at Bellingbroke, in Lincolnshire. Richard II.'s misrule and despotism had damped the loyalty of his people, and when Henry came to England to maintain his dual rights he had little difficulty in deposing Richard, and, with the consent of Parliament, in assuming the crown. This act of usurpation—for Richard's true heir was Roger Mortimer, a descendant of an older branch of the family—made Henry more obsequious to the Parliament which had placed him on the throne, and was the occasion of the bloody Wars of the Roses that were to devastate the kingdom during the reigns of Henry VI. and Edward IV. Henry's own reign was a troubled one. Wars were successfully undertaken against the Welsh under Owen Glendower and against the Scots; while rebellion was raised by the Percies in unsuccessful attempts to win the crown for Mortimer. The only important law passed enacted the burning of heretics, the first passed in England for the suppression of religious opinion. (1366-1413).

Henry V., King of England from 1413 born in Monmouth. During the wars of his father's reign he gave evidence of his abilities as a soldier, distinguishing himself especially by his conquest of Wales. On his accession to the throne he renewed the claims put forward by Edward III. to the French crown, and with the support of his people embarked on his great struggle to win the kingdom of France. In 1415 he gained the glorious victory of Agincourt, strengthened his position by confirmed military successes, and by marrying Catherine, daughter of the French King, and by the Treaty of Troyes, got himself appointed regent of France and successor to the throne. He was idolised by his people as the perfect pattern of a warrior king, but he had neither the gifts of statesmanship nor the foresight of Edward I., to whom he has been compared, and the English dominion which he established in France was too insubstantial to endure. (1387-1422).



Henry VI., King of England from 1422, born in Windsor; was a child of nine months when his father died, and in the same year was acknowledged King over the N. and E. of France. The Dukes of Bedford and Gloucester became respectively regents over the English and French kingdoms. War with France was resumed and for thirty years the weary struggle continued, until England, despite some early successes, had been stripped of her French possessions, mainly owing to the enthusiasm awakened by the heroic and ill-fated Joan of Arc (q.v.). The growing discontent of the people is indicated by Jack Cade's rebellion (1450), and five years later began the famous Wars of the Roses. Six battles were fought between the rival houses, and four times victory rested with the Yorkists. After the final victory of the Yorkists at Towton (1461), Henry fled to Scotland and Edward IV. was proclaimed King. Henry was a man of weak intellect, gentle, and of studious nature, and was ill-mated with his ambitious and warlike queen, Margaret of Anjou. A futile struggle was made to win his kingdom back, but the hopes of the Lancastrians perished at Tewkesbury. The

King was captured and confined in the Tower, where, there is little doubt, he was murdered. (1421-1471).

Henry VII., King of England from 1485 to 1509, son of Edmund Tudor, Earl of Richmond, first of the Tudor monarchs, born at Pembroke Castle. After defeating and slaying Richard III. on Bosworth Field he assumed the crown, and by his marriage with Elizabeth of York, daughter of Edward IV., united the claims of the rival roses. His firm and prudent rule established quiet and order in the country. The pretensions of the adventurers Lambert Simnel and Perkin Warbeck were promptly crushed. A peaceful relationship was established with France, and the Scots were conciliated by the marriage of his daughter Margaret to their King, James IV. Increased prosperity followed, maritime enterprise was encouraged, but the kingly power grew at the expense of the constitutional authority of Parliament. Resort was had to benevolences and other unconstitutional methods of raising funds, and in his later years the King's exactions became tyrannical. Though not a man of kingly qualities, he did much for his country. (1456-1509).

Henry VIII., King of England from 1509 to 1547, son of preceding, born in Greenwich; was welcomed to the throne with great enthusiasm, and still further established himself in public favour by his gallant exploits at the Battle of Spurs and at the sieges of Tournai and Terouanne in the war of the Holy Alliance against France. In his absence an invasion of James IV. of Scotland was repulsed and the Scottish army crushed at Flodden (1513). During the first half of the reign public affairs were mainly conducted by the King's favourite minister, Wolsey, whose policy it was to hold the balance of power between Spain and France; but he fell into public disfavour by the heavy burden of taxation which he laid upon the people. Henry, who in 1521 had been named "Defender of the Faith" by the Pope for his published defence of the sacraments against the attacks of Luther, was now seeking a divorce from his first wife Catherine of Aragon. A breach with the Pope ensued, Wolsey was deposed for his double-dealing in the matter, and Henry, having defiantly married Anne Boleyn, put an end to the papal jurisdiction in England to secure himself against appeals to the Papal Court, and had himself acknowledged Supreme Head of the Church of England. The suppression of the monasteries soon followed, and their estates were confiscated (1536-1540). In 1536 the Reforming movement was continued by the drawing up of the *Ten Articles* and by an authorised translation of the Bible; but the passing of the *Six Articles* three years later, declaring in favour of the real presence of Christ in the Eucharist, clerical celibacy, private masses, auricular confession, etc., was an attempt to stay the rapid spread of Protestant doctrines. In 1541 Henry was declared King of Ireland, and in the two following years successful wars were waged with Scotland and France. The importance of the reign lies in the coincidence of it with the rise and culmination of the English Reformation. Historians for the greater part agree in representing Henry as a man of versatile powers, considerable intellectual force, but headstrong, selfish, and cruel in the gratification of his desires. He was six times married; Catherine and Anne of Cleves were divorced, Anne Boleyn and Catherine Howard executed, Jane Seymour died in childbirth, and Catherine Parr survived him. He left behind to succeed him on the throne Mary, daughter of Catherine, Elizabeth, daughter of Anne Boleyn, and Edward, son of Jane Seymour. (1491-1547).

Henry IV., King of France from 1594 till 1610, surnamed "The Great" and "The Good." During his reign the great struggle between the Huguenots and the Catholics continued with unabated fury. Henry saved his life in the massacre of St. Bartholomew's Day by renouncing his early Calvinism, but was imprisoned. Four years later he was again at the head of the Huguenot army and, defeating the Bourbon claimant for the throne, was crowned king, after waiving his Protestant principles to conciliate the people. In 1598 he issued the famous Edict of Nantes, giving freedom of worship to the Huguenots. During his administration the nation was consolidated, new roads and a growing trade knit the towns together. Financial reforms of great importance were carried out by his celebrated minister, Duc de Sully. Henry was assassinated, it is said, by instigation of the Jesuits. (1553-1610).

Henry III., an illustrious Emperor of the Holy Roman Empire, son of Conrad II. In 1026 he became King of the Germans, succeeded to the dukedoms of Bavaria and Swabia, and in 1039 assumed the imperial crown. Under his strong and wise government, dissensions, papal and otherwise, were put down, the territory of the empire extended, and many churches and monastic schools established. (1017-1056).

Henry IV., Emperor of the Holy preceding. His reign is memorable as witnessing the first open claim on the part of the Papal power to dominion over the crowned heads of Europe. Henry's attempt to depose Gregory VII. was boldly met by a declaration of excommunication; Henry was forced to do penance and to receive his crown afresh from the Pope; but the struggle broke out anew. Clement III. continued the opposition, and the contest raged with varying success till the deposition of Henry by his ungrateful son. (1050-1106).

Henry the Navigator, son of

King of Portugal, born in Oporto; an able, enterprising man, animated with a zeal for maritime discovery, who at his own expense sent out voyagers who discovered the Madeira Islands and explored the coast of Africa as far as Cape Blanco; is said to have been the first to employ the compass for purposes of navigation; his mother was daughter of John of Gaunt. (1394-1480).



HENRY THE
NAVIGATOR

Henry, Joseph, American scientist; carried out much research in connection with electromagnetism and induction. The unit of inductance, the "henry" (q.v.), was named after him. (1799-1878).

Henry, O., pen name of William Sydney Porter, American writer. After successively working in an army store, ranching in Texas, and working there in a bank and land office, he served three years in prison for embezzlement. He edited several periodicals and produced a number of short stories of an original and humorous character, largely based on the experiences undergone during his varied career. (1882-1910).

Henry, Patrick, American statesman and orator, born in Virginia; leaving a business career, he took to law, and rose into fame by his eloquent pleadings in the cause of the people; played a conspicuous part in the agitation for independence, especially by his oratory; he was a member of the first Congress in 1774. (1736-1799).

Henson, Herbert Hensley, Bishop of Durham since 1920; previously from 1918, of Hereford; born in London; educated at Oxford; Head of Oxford House, Bethnal Green, 1887-1888; Canon of Westminster and rector of St. Margaret's 1900-1912; Dean of Durham, 1912-1918. A leader of liberal thought in the Church of England. (1863-).

Henson, Leslie Lincoln, comic actor and producer, born in London; formerly in the City; first appearance in concert party at Bath, 1910; appeared later in the same year in London in pantomime; toured with various companies in England and America; appeared at the Gaiety, 1915, in *To-Night's the Night*, with instant success. After war service, reappeared 1919 and has scored many successes since. (1891-).

Henty, George Alfred, writer of boys' stories; born at Trumpington, Cambridge; educated at Westminster; volunteered for Crimean War in hospital commissariat; witnessed many European campaigns, besides those in Ashanti and Kibiya. From 1876 wrote stories, about 80 in all. *The Young Franc-Tircurs* (1872) is his best-known book. (1832-1902).

Henzada, town and district of Burma. The town stands at the head of the Irawadi delta, 65 m. NW. of Pegu, and is an important trading centre. Pop. (dist.) 551,000; (town) 24,000.

Hepatica, a term in homeopathic medicine for a product of sulphur, consisting of polysulphides of potassium with sulphate or thiosulphate of potash. It is sometimes called bryophyta.

Hephæstos, Greek god equivalent to the Roman Vulcan, the god of fire, or of labour in the element of fire, son of Zeus and Hera, represented as ill-shapen, lame and ungainly. He had his smithy in Olympus, and the marvellous creations of his art were shaped on an anvil, the hammer of which was plied by 20 bellows. In later traditions he had the Cyclops for his servants, employed in manufacturing thunderbolts for Zeus. He was wedded to Aphrodite, whom he caught playing false with Ares, both of whom he trapped in a net, a spectacle to all the upper deities.

Hepplewhite, George, English furniture-maker; has given his name to a style of Georgian furniture marked by the use of curved lines, and less solid than the Chippendale furniture which preceded it. (d. 1786).



HEPPLE-
WHITE
CHAIR

Heptarchy, Anglo-Saxon, the seven kingdoms of Kent, Sussex, Wessex, Essex, Northumberland, East Anglia and Mercia, the chief of those established by the Saxons during the 6th Century in Great Britain.

Heptateuch, a name given to the Bible.

Hera, chief goddess of the Greek mythology, sister and wife of Zeus, daughter of Kronos and Rhea, and queen of heaven; equivalent to the Roman Juno. She was jealous of Zeus in his amours with mortals, and persecuted all his children by mortal mothers, Hercules among the chief.

Heraclitus, a Greek philosopher, born in Ephesus, who flourished about the year 480 B.C.; taught that everything throughout the universe is in constant flux, all things being in transition from being to nothing and from nothing to being, from life to death and from death to life, that nothing is, that everything becomes, that the truth of being is becoming.

Heraclius, Emperor of the East from 610 to 642, born in Cappadocia; raised to the throne of the East on account of services rendered to the citizens of Constantinople in ridding them of a tyrant; waged war against the Persians, defeated Chosroës and compelled a peace, but was unable to withstand the arms of the Moslem invaders.

Herald, formerly an officer who acted as messenger between sovereigns, now a State official of the Herald's College (q.v.). The heralds are assistants to the Kings of Arms. There are now six, known as Lancaster, Somerset, Chester, Richmond, Windsor and York.

Heraldry, the science of armorial bearings or devices blazoned on shields and armour. It has developed since the 13th Century, and arose partly from the custom of wearing closed helmets, making armorial bearings necessary for identification. Heraldry was a prerogative of the ruling class, being a sign of noble rank.

Marshalling arms is the placing of several coats of arms on one shield to show descent, marriage, etc. A wife's arms are usually shown on a small escutcheon on the husband's coat. Complete armorial bearings consist of a motto, crest, wreath, helmet, lambrequin (a cloth covering for the helmet), coronet, shield (usually quartered) and mantle.

Shield devices frequently bear the resemblance of an animal, often a lion posed as rampant, statant, couchant, dormant, etc., while mythical creatures such as the wyvern, griffin, dragon, unicorn, etc., are often adopted as symbols. Flowers include the rose, fleur-de-lis, while birds are represented by the eagle, peacock and pelican.

Heralds' College, a body existing to trace genealogies and to grant coats-of-arms. It was founded in 1483, and is presided over by the Earl Marshal, an hereditary post held by the Dukes of Norfolk.

Herat, the chief town of the province of Herat, in W. Afghanistan, on the Hari-Rud, 200 m. W. of Kabul. Its central position has given it a great commercial and military importance. It has manufactures of leather and wool; oil has been found in the neighbourhood. Pop. 30,000.

Hérault, a maritime dept. of S. France facing the Gulf of Lion. In the N. are the Cevennes Mts., but wide plains fringed on the sea border with large lagoons occupy the S. The climate, except on the marshy coast, is dry and healthy. Its former importance as a wine-growing district has greatly diminished, but olives and almonds are cultivated, sheep and silkworms bred. Coal is the most important mineral. Salt is obtained in large quantities from the salt marshes, and fishing is an important industry. Area 2,402 sq. m. Pop. 515,000.

Herb, or herbaceous plant, is one in which the stem does not become woody and die down to the ground in winter. Such plants may be annual, biennial or perennial. Annuals spring from seed and die in one season, biennials produce leaves the first year and flowers and fruit the second year. Perennials blossom and form fruit year after year.

Herbarium, a collection of dried herbs, named and classified in order. When the plants are dry they are fixed to paper by gum and placed in a cabinet. Stiff paper should be used. Pressing should be done upon absorbent paper between boards.

Herbart, Johann Friedrich, German philosopher, born in Oldenburg; succeeded Kant at Königsberg, professor also at Göttingen twice; founded his philosophy like Kant on the criticism of

subjective experience, but reached different results, and arrayed himself against the whole of the post-Kantian German philosophy. (1776-1841).

Herbert, Alan Patrick, satirist and an India Office official; educated at Winchester and New College, Oxford; served in France and Gallipoli in the World War, and was wounded. Has written effective satires of the law in *Misleading Cases* (1927) and other works; has also produced several plays; in 1935 became M.P. for Oxford University as an independent, and in 1937 scored a great success as a private member by securing the passage of an act amending the Divorce Law, which he sponsored. (1890-).

Herbert, Edward, Lord, of Cherbury, diplomatist, soldier and scholar, born in Montgomery Castle, in Wales; served as a soldier under Maurice of Orange; was twice ambassador in France, but chiefly devoted to philosophical speculation; was the first of the deistical writers of England, though his deism was dogmatic not critical, positive not sceptical, as is that of the subsequent English deists. (1583-1648).

Herbert, George, poet, brother of the preceding, born in Montgomery Castle; failing in preferment at Court, took holy orders and became rector of Bemerton, Wiltshire, a post he lived only two years to hold; was the author of a series of poems entitled *The Temple*; his life was written by Izaak Walton. (1593-1633).

Herbert, Sidney (Lord Herbert of Lea), politician, born at Richmond; entered the House of Commons in 1832 as a Tory, and was in turn Secretary to the Admiralty and War Secretary under Peel. During the Aberdeen ministry he, as War Secretary, incurred much popular disavowal for the mismanagement of the Crimean War, but under Palmerston he effected many beneficial reforms while at the head of the War Office; greatly aided Florence Nightingale (q.v.) at Scutari. He was raised to the peerage in 1860. (1810-1861).

Herculaneum, Italy, overwhelmed in A.D. 63 and 79, with Pompeii and Stabiae by eruptions of Vesuvius, at the north-western base of which it was situated, 5 m. E. of Naples. So completely was it buried by the ashes and lava that its site was practically obliterated, and in time two villages sprang up on the new surface, 40 to 100 ft. below which lay a great part of the buried city. Relics were discovered while deepening a well in 1706, and since then a considerable portion of the town has been excavated, pictures, statues, etc., of the greatest value having been brought to light.

Hercules, the typical hero of the Greeks, son of Zeus and Alkmene, and persecuted from his cradle by Hera, who sent two serpents to devour him, which he strangled with his arms; grown into manhood, and distinguished for his strength, was doomed by Hera before he could claim his rights as his father's son to a series of dangerous adventures, the "Twelve Labours of Hercules": the first, the throttling of the Nemean lion; the second, the killing of the Lernean hydra; the third, the capture of the hind of Diana, with its hoofs of brass; the fourth, the taking alive of the boar of Erymanthus; the fifth, the cleansing of the stables of Augeas; the sixth, the destruction of the Stymphalian birds; the seventh, the capture of the Cretan bull; the eighth, the capture of the mares of Diomedes of Thrace; the ninth, the seizure



of the girdle of the queen of the Amazons; the tenth, the killing of Geryon and capture of his oxen; the eleventh, fetching the golden apples from the garden of the Hesperides; the twelfth, dragging Cerberus to the light of day. In addition, he strangled the giant Antæus, slew the robber Cacus, delivered Hesione, unchained Prometheus from the rocks of Caucasus, and smote the centaur Nessus, the last proving the cause of his death.

Hercules, *The Pillars of*, two mountains on the opposite sides of the Strait of Gibraltar, fabled to have been originally one, but separated by Hercules; Calpe on the Spanish coast and Abyla on the African.

Hercynian Forest, a forest in Germany, extending at one time from the Rhine to the Carpathian Mts., described by Cæsar as nine days' journey in breadth and sixty in length; now the district of the Harz Mountains.

Hereditaments, in English law, an obsolescent term meaning property which, unless devised by will or disposed of by the owner in his lifetime, must descend to the heir-at-law. They are almost always concerned with land, and are either *corporeal*—i.e., interests in land in possession—or *incorporeal*—i.e., rights in or over lands in the possession of another, such as contingent remainders. The term also includes heirlooms (q.v.).

Hereford, the county town of Herefordshire, England, on the Wye, 144 m. NW. of London; has some fine old buildings including a cathedral begun in 1079, ruins of a castle, etc.; seat of a bishopric since 676; it is noted for its roses and agricultural produce. Pop. 24,000.

Herefords, a famous breed of English, longhorn cattle of heavy build, with red coat, white chest, often with a white line along the back, long, curly, soft hair, and thick, short neck, with yellowish horns which bend upwards. They are very hardy, and good meat-producers, but are not so valuable as dairy animals.

Herefordshire, an inland county of W. England, lying on the Welsh border between Shropshire and Monmouthshire. It is a pretty agricultural county, through the centre of which runs the Wye. In the E. are the Malvern Hills, and in the SW. the Black Mts. (2,631 ft.). The rich red soil produces fine wheat, hops, and apples. There is some trade in timber, some stone and marble quarrying, and the cattle are noted. Area 842 sq. m. Pop. 112,000.

Heresy, a belief opposed in some essential article to that authorised by the body—usually a religious organisation—to which the heretic claims to belong. The early Christian Church was subject in the first centuries of its existence to numerous heresies, the most important being Arianism, Nestorianism and Monophysism. In the view of Roman Catholics, Protestantism is a heresy. Heresy is distinguished from schism inasmuch as the latter may concern only discipline, and not doctrine, its essential characteristic being defection from the body of the Church. In the Middle Ages heresy was generally considered an offence liable to punishment both by the Church and the State, a frequent penalty for unrepentant heretics being burning at the stake. See also *Inquisition*.

Hereward the Wake, a Saxon yeoman, born near Bourne, Lincolnshire, who made a gallant effort to rally his countrymen against the Norman Conqueror. He made his final stand on the Isle of Ely, Cambridge-

shire (1070-1071), cut his way through the besieging army, and escaped to the Fens. Subsequently it is supposed he became reconciled to William and held estates. His story is told in Charles Kingsley's *Hereward the Wake*.

Hergesheimer, Joseph, American novelist; author of *Three Black Pennys* and *Java Head*, among other books, all written in an elaborate style. (1880-).

Hergest, *The Red Book of*, an important volume of Welsh writings in MS., preserved at Oxford. It dates from the 14th Century, and the legends related—mostly Arthurian—are styled the *Mabinogion*; was compiled at Hergest Court, a family seat of the Vaughans, and is the most valuable Welsh MS. extant.

Heriot, a right of the landlord, under copyhold tenure, to the best live beast or property on a tenant's death, abolished in 1935.

Heriot, George, founder of Heriot's Hospital, a splendid educational establishment in his native city, Edinburgh; was a prosperous goldsmith there; did work for Anne of Denmark, consort of James VI. of Scotland; in 1603 removed with the Court to London, and, combining banking with his other business, he amassed a great fortune, which he left to endow the Hospital named after him. In 1837 the accumulated surplus funds were utilised in establishing 16 free schools in Edinburgh, which were closed in 1885, and the original Hospital reconstructed as a secondary and technical school, while a portion of the funds was used in subsidising the Heriot-Watt College and in founding bursaries. (1563-1624).

Heri Rud, or Hari Rud, river of NW. Afghanistan, anciently Arius. Rising in the Hindu Kush, and for part of its course pursuing the Afghan-Iran frontier, it loses itself in the Kara Kum desert, Turkmenistan. Length 650 m.

Herkomer, Sir Hubert von, born in Waal, Bavaria, came to England in 1857, and studied at the Southampton School of Art; he was a prolific artist, and many of his portraits have become celebrated; the "Last Muster" (1875) is reckoned his finest work; was twice Slade professor at Oxford, and in 1890 was elected R.A.; the School of Art at Bushey was founded by him. (1849-1914).

Hermann. See *Arminius*.

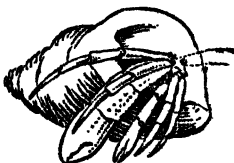
Hermaphrodite, a living organism forming both male and female functions. The state is common in many of the lower orders of animals, such as the leech and snail. Some flowering plants—e.g., the orchid—are hermaphroditic; self-fertilisation is prevented by a space of time intervening between the arrival at maturity of the male and female parts.

Hermes, in Greek mythology the herald of the gods and the god of eloquence and of all kinds of cunning and dexterity in word and action; was the son of Zeus and Maia; wore an embassy a winged cap, winged sandals, and carried a herald's wand as symbol of his office. His Roman equivalent was Mercury.

Hermitage, a red wine obtained from yards near Valence in Drome, with a character like fine claret. The word is also used of the dwelling of a hermit, especially of a cell made for the purpose, either in a remote solitude or built against, but without communication with, a monastery or church. Hermits differed from Anchorites, who, though also solitary, had no fixed abode but wandered about; and from the Coenobites, who, though also ascetics, lived in communities.

Hermit Crab, a family of marine Crustaceans (the

Paguridae), having a soft and spirally-twisted abdomen, which is usually protected by the empty portable shells which they select to live in. The common Hermit Crab (*Eupagurus bernhardus*) is found on English shores, and usually selects a whelk shell.



HERMIT CRAB

Hermion, Mount, the second highest mountain of Syria, the culminating point of the anti-Lebanon range, estimated at 10,000 ft. It rises to a truncated cone, some 2,500 ft. above the radiating ridges, and has a most imposing aspect. It has three summits situated like the angles of a triangle, about a quarter of a mile from each other.

Herne, colliery town of Prussia, in Westphalia, 15 m. N.W. of Dortmund. It has powder-mills and manufactures machinery. Pop. 99,000.

Herne Bay, town in Kent, England, on the N. coast of the Isle of Thanet; a popular and growing summer holiday resort. Pop. 17,500.

Herne Hill, residential district of S.W. London, in the Boroughs of Camberwell and Lambeth, once the residence of Ruskin, and home of a well-known athletic track.

Herne the Hunter, a figure in early English legendary history, who was reputed to wander at night near "Herne's Oak" in Windsor Forest. The tree was blown down in 1863, an act attributed to the hunter's evil spirit.

Hernia, or **Rupture**, a protrusion of an internal organ, especially a part of the intestines. It is a condition more common amongst men than amongst women, the most usual form being inguinal hernia. Treatment consists of replacing the intestines in position and wearing a support, or truss, to maintain it. It is not as a rule dangerous or a source of great inconvenience, except in the case of "strangulated" hernia of the abdomen, when the blood-supply of the part is cut off.

Hero, a priestess of Aphrodite at Sestos, in Thrace, beloved by Leander of Abydos, who swam the Hellespont every night to visit her, but was drowned one stormy evening, whereupon at sight of his dead body on the beach she threw herself into the sea.

Hero, a mathematician, born in Alexandria in the first half of the 2nd Century; celebrated for his experiments on condensed air, and his anticipation of the pressure of steam; invented a water-clock and hydraulic organ.

Hero, a name given by the Greeks to human beings of such superhuman faculties as to be regarded as the offspring of some god; applied in modern times to men whose intellect, force of character or physical courage inspires ordinary mortals with something like religious regard.

Herod, the name of a family of Idumean origin but Jewish faith, who rose into power in Judea shortly prior to the dissolution of the Jewish nationality; the chief members of which were **Herod the Great**, King of the Jews by favour of the Romans, who made away with all his rivals, caused his own children to be strangled on suspicion of their conspiring against him, and died a painful death in 4 B.C., the true date of the Nativity of Christ; and **Herod Antipas**, his son, tetrarch of Galilee, who beheaded John the Baptist, and to whom Christ was remitted by Pilate for examination; he died in exile at Lyons.

Herodians, a sect referred to in the New Testament as adversaries of Jesus. They were a political party who strongly supported the dynasty of Herod.

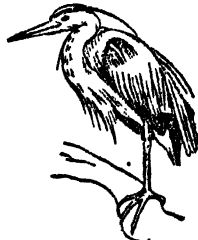
Herodotus, "Father of History," born at Halicarnassus, in Caria; travelled over Asia Minor, Egypt and Syria, and in his old age recorded the fruits of his observations and inquiries, the main object of his work being to relate the successive stages of the strife between the free civilisation of Greece and the despotism of Persia for the sovereignty of the world. (484-408 B.C.).

Heroic Verse, a term applied in English poetry to rhymed iambic couplets, called heroic couplets. Chaucer was the first English writer to employ it. Dryden and Pope used it with skill, and this verse form is a feature of the work of Pope, Byron and Swinburne.

Heroin, a drug obtained from morphine, and administered by injection. It acts in much the same way as morphine, but on account of its special influence on the nervous system of the breathing apparatus is used to relieve paroxysms of coughing. The drug habit is sometimes so acquired.

Heron, the name given to a number of birds of the Ardeidae (Ileron)

family, which also includes the Bitterns. They are widely distributed. The Common Heron (*Ardea cinerea*) which nests (in "Ileronries") in Great Britain and Ireland, has a long neck and legs, slender body and striking plumage, and is found frequenting lakes and marshes, where it wades searching for molluscs, fish, frogs, worms, etc., which it spears with its long bill. They nest in trees. "Ospreys" are secured from the herons as well as from the Egrets in the mating season.



COMMON HERON

Herpes, a skin disease which attacks the lips, nostrils and other parts of the face, causing irritation, swollen red patches and blistering. It may also affect the genital organs and buttocks, as well as the mucous surfaces. Herpes Zoster is more commonly known as Shingles (q.v.).

Herrick, **Robert**, a Caroline poet, born in London, of good family; was incumbent of Dean Prior in Devonshire; author of the *Hesperides*, published in 1648, and of *Noble Numbers*, both collections of lyrics of great beauty and merit. (1591-1674).

Herring (*Clupea harengus*), a fish of the *Clupea* genus, widely distributed over the N. Atlantic above Lat. 45° N. It is about 10 ins. long, with bluish-green back and silver underneath. It lives in shoals and migrates from deeper to shallower parts of the ocean for spawning. It is preyed upon by hake, dog-fish, gulls, etc.; is caught throughout the year, and is a most nutritious article of food. Herrings are cured and smoked as bloaters, or split and smoked as kippers. Other fish of the same family are the pilchard, anchovy and whitebait. The herring industry is of great importance on the British coast, especially in Scotland and in E. Anglia.

Herriot, **Edouard**, French politician, was for years mayor of Lyons and a Socialist leader. He became Food Minister for a short time during the World War, and later Foreign Minister; in 1924 became Premier for a year, and visited London to confer with Ramsay MacDonald

on international co-operation. From 1934 to 1938 he was Minister without Portfolio; in 1935 he left the Radical-Socialist party. (1872-).

Herschel, Sir John, astronomer; only son of Sir William Herschel; followed with great diligence and success the same researches as his father; spent four years at the Cape carrying out a survey of the stars of the southern hemisphere; added much to our knowledge of the stars and carried out experiments in connection with the wave theory of light. (1792-1871).

Herschel, Sir William, a distinguished astronomer, born in Hanover; son of a musician, and intended for that profession; came to England at the end of the Seven Years' War, and obtained sundry appointments as an organist; gave his leisure time to the study of astronomy and survey of the heavens; discovered the planet Uranus in 1781, which he called *Georgium sidus* in honour of George III.; discovered also the two innermost belts of Saturn, and drew up a catalogue of 5,000 heavenly bodies or clusters of them. (1738-1822).

Hertford, the county town of Hertfordshire, England, on the Lea, 26 m. N. of London. Some few remains of its 10th-Century castle still exist, and there are several charity schools, a castle built in James I.'s time, and Christ's Hospital for girls. The chief trade is in corn, malt and flour. In the vicinity is Haldenbury College. Pop. 12,000.

Hertfordshire, or **Herts**, an inland county of England, occupying a central position between Buckingham and Bedford on the W. and Essex on the E. The surface is undulating and much covered with wood. The Lea and the Colne are the chief rivers. Large crops of barley, wheat and hay are raised; straw-plaiting and the manufacture of paper, silk and chemicals are carried on extensively, while Ware is a centre of the English malting trade. Watford is the largest town. Pop. 401,000.

Hertz, Heinrich Rudolf, German physicist, born in Hamburg; after studying civil engineering, became Helmholtz's assistant at Berlin university in 1880; professor of Physics at Karlsruhe in 1885; and in 1889 at Bonn, where he died; published (1887) his discovery that the ether-waves produced by electrical discharges could be received for examination by an appropriate instrument—thus laying the foundation for radio. (1857-1894).

Hertz, Joseph Herman, Jewish ecclesiastic, born in Czechoslovakia; educated in the U.S.A.; rabbi at Johannesburg from 1898, but expelled as pro-British during the Boer War; in 1913 was elected Chief Rabbi of the British Empire, thereafter residing in London. Has written numerous works on Jewish subjects. (1872-).

Hertzog, James Barry Munnick, South African politician. He served as a Boer general in the South African War, and subsequently became an ardent nationalist. He took office in 1910 as Minister of Education, and in 1914 showed tolerance to De Wet's rebellion. Elected leader of his party in 1915, he succeeded Smuts as Prime Minister in 1924, and was largely responsible for the institution of the separate South African flag. In 1933 his Nationalist party fused with Smuts's South African party, and he remained in office as premier of a coalition of the united parties. From 1936 onwards he pressed strongly for the transfer to the Union Government of the native protectorates. (1866-).



GENERAL
HERTZOG

Herzegovina, mountainous district of SE. Europe, in the NW. of the Balkan peninsula. In 1908 it was with Bosnia annexed by Austria-Hungary. After the World War it became part of Yugoslavia.

Herzl, Theodor, founder of Zionism, born of Jewish parents in Budapest, studied for law; lived chiefly in Vienna, as journalist and playwright; Published, 1896, a pamphlet, *Der Judenstaat*, which launched the movement; arranged first Zionist Congress, which took place at Basle, 1897. (1860-1904).

Hesiod, one of the earliest Greek poets, born in Boeotia, lived in the 8th Century B.C., chiefly at Orchomenos; probably of humble birth; of the works ascribed to him the principal are the *Works and Days*, and the *Theogony*. His poems treat of the quiet pursuits of ordinary life, the origin of the world, the gods and heroes.

Hesperides, in Greek mythology, maidens appointed to guard the golden apples presented to Hera by Gaia on her marriage with Zeus, assisted in their office by the dragon Ladon. The apples were stolen by Hercules, but restored by Athens.

Hesperus, the personification of the evening star and an object of worship to the Greeks.

Hesse, a state of Germany, lies partly in, and partly on the border of, SW. Prussia; consists of two large portions, divided by a strip of Hesse-Nassau, and 11 enclaves. Area 2,980 sq. m. Half the land is under cultivation, and the greater part of what remains is covered with forest. Its many rivers belong mostly to the Rhine system. Corn is raised in large quantities, iron and manganese are found, and there are flourishing manufactures of leather, upholstery, tobacco, etc. Mainz is the largest town, and Darmstadt the capital. Pop. 1,430,000.

Hesse-Cassel, a government district in Hesse-Nassau (q.v.). As an electorate sided with Austria in 1866, which brought about its incorporation with Prussia.

Hesse-Nassau, a Prussian province in the SW. of Germany, between the Rhine on the W. and Bavaria and Saxony on the E.; formed in 1868 out of the electorate of Hesse-Cassel, Duchy of Nassau, etc. Area 6,500 sq. m. The country is hilly, abounds in minerals, which are extensively worked, but agriculture and cattle-rearing are the chief industries. The medicinal springs of Homburg, Wiesbaden, etc., are celebrated. Cassel is noted for its gold and silver ware. Damasks and other textiles are produced at Fulda, and at Hanau are flourishing ironworks; Marburg has a university. Pop. 2,585,000.

Heston-Isleworth, borough of England, a residential suburb of London; includes Hounslow, a civil aviation centre. Pop. 88,000.

Hesychasts, a religious sect of the 14th Century belonging to the Greek Church and professing a kind of Quietism.

Hetaira, a term applied in ancient Greece to a courtesan of the cultured class.

Heterodyne, a method used in wire-reception of continuous wave signals, by the production of beats between the incoming waves and the oscillations of the receiving set itself.

Hetman, Polish title for a commander-in-chief in the absence of a King. It was held by the head of the Cossacks.

Hetton, or *Hetton-le-Hole*, urban district, of Durham, England, 5 m. N.E. of Durham. Coal is mined in the vicinity. Pop. 17,700.

Hever Castle, 15th-Century castle near Edenbridge, Kent, formerly occupied by the Boleyn family, including Anne Boleyn; now restored as a residence of Viscount Astor.

Hewart, Rt. Hon. Gordon, Lord, British politician and judge. He entered Parliament in 1913; was Solicitor-General from 1916 to 1919; he became Attorney-General that year, and held the post till he was made Lord Chief Justice in 1922. (1870-).

Hewlett, Maurice Henry, novelist, born at Addington, Kent; held appointment in Civil Service; began literary career with *Earthwork out of Tuscany* in 1895, and followed with *The Forest Lovers*, *Little Novels of Italy*, *The Queen's Quair*, *The Fool Errant* and other romantic historical novels. (1861-1923).

Hexachord, a term in music for a tones or for a major sixth; also for an ancient six-stringed musical instrument.

Hexameter, a form of verse used by the Greeks and Latins for epic and heroic poetry, having six accented feet in each line. The *Odyssey* and *Iliad* of Homer and *Aeneid* of Virgil illustrate this form.

Hexateuch, the name given to the first six books of the Bible.

Hexham, an old town in Northumberland, land, England, prettily situated on the Tyne, 24 m. W. of Newcastle; has a fine cruciform abbey church, portions of which belong to the 12th Century, and beautiful remains of a 7th-Century monastery; the staple industries are glove and hat making; the river is spanned by a stone bridge of nine arches. Pop. 9,000.

Heysham, seaport and seaside resort of Lancashire, England, 4 m. SW. of Lancaster, the terminus of regular steamboat services to the Isle of Man and Ireland. Pop. 5,000.

Heywood, a town of Lancashire, England, 9 m. N. of Manchester; owes its rapid growth to the neighbouring coalfields and the development of the cotton industry; has also flourishing iron and brass foundries and woollen factories. Pop. 26,700.

Heywood, Thomas, English dramatist; prolific writer of plays and pageants, among them *The English Traveller*, *Edward IV.* and *The Fair Maid of the West*. (c. 1574-1650).

Hezekiah, a King of Judah; reigned distinguished for his zeal in the worship of Jehovah and for making a parade of his wealth; reigned in the golden age of Hebrew prophecy, Isaiah and Micah being his contemporaries.

Hibbert Lectures, unsectarian lectures instituted by the trustees of Robert Hibbert, a West India merchant, and devoted to the discussion of unsolved problems in theology.

Hibernation, term denoting the dormant condition which certain animals assume during cold weather, owing usually to the failure of the food supply. Such animals include the bear, bat, badger, dormouse and hedgehog as well as many reptiles. An accumulation of fat during summer enables the animal to survive during this period of its life. There is little respiration, a slight lowering of the body temperature, and alimentation and excretion cease. Hibernation usually takes place in caves, hollow trees and under leaves, etc.

Hibernia, the classical name for Ireland, which to the ancient world was in the main a *terra incognita*.

Hibiscus, a genus of plants of the natural order Malvaceae,

mostly herbaceous, including some 160 species, found in tropical and sub-tropical climates. Some species are cultivated for their bark, their showy flowers (especially *Hibiscus Rosa-sinensis*, the shoe-flower), and for mucilage, the young fruit being used in soups (especially of *H. esculentus*). A few occur in Europe.



HIBISCUS
(*Rosa-sinensis*)

Hiccough, sometimes called Hiccup, an interruption of respiration due to a sudden contraction of the diaphragm, caused usually by irritation of the stomach membrane. Temporary attacks are relieved by drinking cold water, or a dose of bismuth.

Hichens, Robert Smythe, novelist; born first novel, *The Green Carnation*, 1894, was a brilliant skit on Oscar Wilde before his fall. Many of his later works deal with the Orient. *The Garden of Allah*, 1905, and *Bella Donna*, 1909, have been dramatised by himself—the latter in 1911, the former in 1920. (1864-).

Hickory, a genus of 12 trees of the order Juglandaceae, native to the eastern parts of N. America, and cultivated for the sake of the wood which is valuable as fuel and for other purposes. One species bears the edible pecan nut, somewhat resembling the walnut.

Hicks, Sir (Edward) Seymour, actor-manager, was born at St. Heller, Jersey; son of an army officer; first appeared at the Grand Theatre, Islington, in 1887, in *In the Ranks*; was principal light comedian from 1894 at the old Gaiety Theatre. His wife is Ellaline Terriss. He has written and produced more than 60 plays, including *Bluebell in Fairyland*, *The Catch of the Season* and *The Earl and the Girl*. Knighted, 1935. (1871-).

Hicks-Beach, Sir Michael Edward, Viscount St. Aldwyn, British politician, entered Parliament in 1864 and in 1874 became Secretary for Ireland. Four years later he was Colonial Minister, Chancellor of the Exchequer and Leader of the House of Commons in 1885, Secretary for Ireland in 1886, President of the Board of Trade in 1888, and in 1895 again Chancellor of the Exchequer. (1837-1916).

Hidalgo, a Spanish title of the lesser nobility, literally meaning "Somebody's Son"; roughly equivalent to our "gentleman" in the narrow sense.

Hierapolis, (1) an ancient city of Syria now in ruins, situated between Antioch and Mesopotamia, 14 m. W. of the Euphrates; was famous for its great temple of Astarte. (2) A city of ancient Phrygia, 5 m. N. of Laodicea; the birthplace of Epictetus, and where Paul founded a church.

Hierarchy, the governing body of the church, consisting of bishops, priests and deacons.

Hiero I., tyrant of Syracuse; broke the naval power of Etruria by victory over the Etruscan fleet near Cannae, 474 B.C.; was an enlightened patron of men of letters, many of whom he entertained at his Court, Aeschylus, Pindar, and Simonides among the number. (d. 467 B.C.).

Hiero II., King of Syracuse, for nearly half a century the steadfast friend and ally of the Romans; disliked display, and was accustomed to appear in public in the garb of a common citizen. He ruled his country well. (308-210 B.C.).

Hieroglyphics

(sacred writing), the name by which the picture-writing of the ancient Egyptians was known to the Greeks and Romans. Two forms of this ideographic written language are known, the *hieratic* or cursive (employed by the priestly class), and the *demotic*, or popular, style. The discovery of the Rosetta (q.v.) stone, with its trilingual inscription, gave the key to the decipherment of hieroglyphics and to their relation to the Greek alphabet.



HIEROGLYPHICS

Hierro, or **Ferro**, smallest and most westerly of the Canary Is. Valverde is the chief town. Area 106 sq. m. Pop. 6,000. From the "Longitude of Ferro"—which does not, however, actually pass through the island—as the most westerly land then known, all longitudes were formerly measured.

Higham Ferrers, municipal borough of Northamptonshire, England, 15 m. N.E. of Northampton. The making of boots and shoes is the chief industry. Pop. 3,000.

Highbridge, market town of Somerset, set, England, 6 m. N.E. of Bridgwater, with locomotive works, saw-mills and brick and tile works. Pop. 2,500.

Highbury, residential district of N. London in the Borough of Islington. Here is the ground of the Arsenal Football Club.

High Church, that section of the Anglican Church which attaches supreme importance to the administration of word and sacrament by clergy duly ordained, whose ministrations it considers necessary as the divinely appointed instruments of grace.

High Commission, Court of, a judicial tribunal set up in 1559 to try ecclesiastical cases. It consisted of clerical and lay Crown nominees, and later encroached on the province of the common law courts with the result that it was abolished by the Bill of Rights, 1689.

High Commissioner, a term of varying import, generally used to signify a high administrative officer in a dependency or protectorate, or a Dominion's chief representative in London. Thus, there are six High Commissioners in London representing respectively, India, Canada, Australia, New Zealand, the Union of South Africa and the Irish Free State. In the last few years, High Commissioners representing the United Kingdom Government have been appointed in Canada, Australia and South Africa; and, in 1938, one was appointed in New Zealand; they act as confidential channels of communication between the United Kingdom and Dominion Ministers.

High Court of Justice.

See **Justice**, **Royal Courts of**.

Highgate, a suburb of London, 5 m. N. of the City; the burial-place of Coleridge, George Eliot, Faraday and Karl Marx; has an important grammar school founded by Sir Roger Cholmeley in 1565. Dick Whittington's Stone is near the foot of Highgate Hill.

Highland Dress, the former national costume of the Scottish people, now seen only on ceremonial occasions. It consisted of a plaid, a long piece of tartan cloth, called a *filibeg*, secured at the waist by a belt. The upper portion was fastened with a brooch on the left shoulder,

leaving the right arm free. The tartan was of a chequered pattern of stripes against a background of another colour, and indicated the wearer's clan or district. It was generally red or green.

Later the lower part of the *filibeg* became the kilt, which stopped short at the knees, while in front was worn a sporran, or goatskin-purse. The Highland bonnet was a cloth cap adorned with leather, or eagle's plumes in the case of a chief. Highland regiments to-day are known by their plumed bonnets. The shoulder cloth has now become a mere ornament. The knife, or other weapon, was carried thrust through the belt. When riding on horseback, the kilt gave way to "trews," which served as breeches and stockings combined, and were made from one piece of tartan cloth.

Highland Regiments, those originated in the Scottish Highlands. They include, in order of precedence, the Black Watch, Seaforth Highlanders, Gordon Highlanders, Queen's Own Cameron Highlanders, Princess Louise's Argyll and Sutherland Highlanders. These regiments wear the kilt and the tartan; most of them were raised in the latter part of the 18th Century after the pacification of the Highlands.

Highlands, extensive areas of land where the average height is over 5,000 ft. They occur principally in the E. of Europe, E. Australia and Eastern N. America. They include branching valleys, formed either by denudation, the washing out of valleys (as in the case of those of Scotland), or by volcanic action. Parallel valleys are rarely found in highlands, though they are well marked in the Appalachian Mts. of N. America. Highlands occur in broad expansive masses and, unlike mountainous districts, have few outstanding peaks. They are often covered with forest or heather, and provide homes for deer. Those of Scotland are largely visited for deer and grouse-shooting.

High Places, elevated spots on which altars were erected by the ancient Semitic peoples for worship, in the belief that, as they were nearer heaven than the plains and valleys, they were more favourable places for prayer. The practice of worship on these spots became frequent among the Jews, and was with difficulty abolished in spite of the warnings of the biblical prophets.

High Priest, in Biblical times the head of the Jewish priesthood. From 153 B.C. until the time of Herod the royal and priestly authority was united in members of the Asmonean (Maccabee) family. The Biblical book of Leviticus contains an elaborate code of conduct for the High Priest.

High School, a term often applied to a State-aided secondary school, but in the U.S.A. officially used to denote those schools which prepare pupils, both boys and girls, for the technical schools and universities.

High Seas, as understood in international law, means the entire sea or ocean area which lies beyond a three-mile belt of coast water. This coastal strip is called the *mare clausum*, and the rights of fishing, etc., in it are reserved to the country upon which it borders.

High Sheriff, a county or city officer enjoying wide judicial and executive authority. Their duties are defined by the Sheriffs Act of 1887. Among them are attendance upon judges during assizes, the acting as returning officers during parliamentary elections and the preparation of lists of jurors. City Sheriffs are appointed annually on Nov. 9.

High Steward of England.

See *Steward, Lord High*.

High Tor, precipitous rocky hill of Derbyshire, England, just S. of Matlock on the left bank of the Derwent. A grotto beneath it is remarkable for its crystals.

Highwaymen, mounted robbers who roads during the coaching days of the 17th and 18th Centuries. The most famous in history are Dick Turpin (1705-1739), Claude Duval (1643-1770) and Jack Sheppard. They were the "heroes" of many romantic or picaresque novels, and their profession thus acquired a meretricious glamour. Lord Lytton's *Paul Clifford* and Harrison Ainsworth's *Roadwood* both deal with highwaymen. Those roadside robbers who were unmounted were called "footpads." With the disappearance of coaches from the highways these "gentlemen of the road" gradually disappeared.

Highways, a term embracing in common or bridge-paths, footpaths, or any other public ways, and in general any way through or over lands of any ownership open to the public by an Act of Parliament, prescriptive right or by express or implied dedication. The Highways Act also includes under the term bridges (not being county bridges, or those repairable by the inhabitants of a "hundred"), towing-paths and navigable rivers, but not railways.

The public right of use in a highway is that of merely passing along it. There is no right to use it as a place for public meetings. A public right of way is restricted to the surface of the land over which it goes. Under the Highways Acts of 1835 and 1894, two justices have power to grant a certificate to stop or divert a highway with the approval of the district or parish council. The growth of modern traffic has caused a great increase in regulations concerning highway traffic, and general directions are summarised in the Highway Code.

High Willhays, hill of Devon, England, the highest point on Dartmoor (2,039 ft.). It lies 4 m. SW. of Okehampton.

High Wycombe, or Chipping Wycombe, municipal borough and market town of Buckinghamshire, England, 30 m. W. of London. Furniture is made. Pop. 30,000.

Hilary, St., Bishop of Poitiers, of which he was a native; distinguished himself by his zeal against the Arians; wrote hymns and polemical treatises. (d. 367). Festival, Jan. 13.

Hildebrand. See *Gregory VII*.

Hildesheim, a quaint old town in Hanover, Prussia, on the Innerste, 24 m. SE. of Hanover; has several ancient churches, notably a noble cathedral of the 11th Century, with famous bronze gates; trades in corn, linen, etc. Pop. 82,500.

Hill, Octavia, social reformer, was born at Wisbech; about 1852 began work among poor children in London; with Ruskin's money, bought lease of slum-houses in Marylebone; managed and improved this property, which was added to by other donors. From 1884, managed South London property of Ecclesiastical Commissioners; served on Royal Commission on Poor Laws, 1905. (1838-1912).

Hill, Rowland, a popular but eccentric preacher, born at Hawkeston, came under the influence of Whitefield and the Methodist movement. He took orders in 1774, but continued open-air preaching till 1783, when he established himself in London in an unlicensed place of worship. He

originated the first Sunday School in London. His works include a volume of hymns. (1744-1833).

Hill, Sir Rowland, originator of the penny postage, born at Kidderminster; a teacher and educationist; interested himself in the colonisation of South Australia; published in 1837 his pamphlet, *Post-Office Reforms*, and saw his scheme of uniform postal rates adopted three years after, though not till 1854 did he become secretary to the Postmaster-General or have full power and opportunity to carry out his views. He received a sum of £13,000 in 1846 in public recognition of his services. (1795-1879).



SIR ROWLAND HILL

Hill, Viscount, British general, born in Fifteen, Shropshire; entered the army at fifteen, served under Sir John Moore, and under the Duke of Wellington in the Peninsula and at Waterloo, where he commanded a division; succeeded Wellington in 1828 as commander-in-chief. (1772-1842).

Hill 60, a low ridge 2½ m. SE. of Ypres, April 1915, recaptured by the Germans in May, held by the British again for a time in June 1917, and finally captured in Sept. 1918.

Hillel, a Jewish Pharisee preacher and rabbi; born in Babylon about 112 B.C.; wrote a summary of the Jewish law, and founded an important school in opposition to his great and stricter rival Shammai; still revered as one of the greatest Jewish religious teachers; died at a great age in the early years of the Christian era.

Hill-forts, the name applied to fortifications, or mountain-crags. Many are of great age, and were used as the last refuge of an earlier race defending themselves against invaders. Famous ones in Britain include those at White Caterchun in Dorsetshire, Arborio Fort in Lanarkshire and Dun Aengus in the Aran Isles.

Hill Tipperah, or Tripura, a native of Bengal. It is thickly forested, and produces also rice and cotton. Agartala is the chief town. Area 4,086 sq. m. Pop. 382,500.

Hilversum, market town and summer resort of the Netherlands, in the province of North Holland, 18 m. SE. of Amsterdam. Blankets and carpets are made. Pop. 67,000.

Himalayas ("the abode of snow"), a stupendous mountain chain stretching 1,600 m. along the northern frontier of India, and dividing that country from Tibet. Forty-five of its peaks attain a greater height than those of any other mountain system in the world; Mount Everest, the loftiest, reaches 29,141 ft. The best known pass is the Karakoram Pass (18,550 ft.), leading into Eastern Turkestan. There are few lakes, but amid the snowy heights rise the rivers Ganges, Indus and Brahmaputra.

Hinckley, a town of Leicestershire, 13 m. W. of Leicester; has an interesting old parish church of Edward III's time; does trade in hosiery, baskets and boots. Pop. 18,000.

Hindemith, Paul, German violinist and composer, born at Hanau. Studied at Frankfurt; leader, afterwards conductor, of opera there, 1912-1923. In 1923, joined Amas quartet. From 1927, professor of Composition at the State High School of Music, Berlin. Has composed several song-cycles, including *Die Junges Mädchen*, and one-act operas, among them *Sandara* and *Cardillac*. (1895-)

Hindenburg, Silesia, Prussia, formerly Zabrze, Alt and Klein, and other small industrial centres now combined, about 60 m. S.E. of Oppeln. It has coke-kilns, engineering works, blast-furnaces, beer and other manufactures, and in the district, coal-mines. Pop. 130,500.

Hindenburg, Paul von, German general and statesman.

He joined the Prussian army at the age of 18, served in the Austro-Prussian and Franco-Prussian Wars, retiring in 1911. At the outbreak of the World War in 1914 he was recalled, put in charge of the campaign in East Prussia, and won the battle of Tannenberg. He tried to capture Warsaw, and beat the Russians at Kutno, and from 1916 to the end of the war he was in supreme command of the German forces on all fronts. In 1919 he again retired, but in 1925 and again in 1932 was elected President of the German Republic. (1847-1934).



PAUL VON
HINDENBURG

Hindenburg Line, a highly fortified line constructed by the Germans in France in 1916, running from Arras to Laon. It was to this line that the German army retreated after the battle of the Somme, and it was not until the summer of 1918 that the Allies smashed it.

Hindhead, a beautiful district near Haslemere, Surrey, England, including the famous "Devil's Punch Bowl" and Gibbet Hill. Much of the neighbourhood is covered with gorse and heather.

Hindley, a manufacturing town in Lancashire, England, 3 m. S.E. of Wigan; the staple industry is the manufacture of cotton; in the vicinity are large coal-mines. Pop. 21,600.

Hinduism, the religious system of the Hindus, in its developed form a highly philosophical pantheism, but in its more popular manifestations a polytheistic creed of many sects, mostly devoted to the worship of either Vishnu or Shiva under one of many names. Its chief peculiarities are the caste system, the honoured place assigned to the cow, and the high value it places on extreme asceticism. There are some 240 millions of Hindus in India.

Hindu Kush, a lofty mountain range stretching 365 m. from the western extremity of the Himalayas, from which it is cut off by the valley of the Indus, into Afghanistan, which it divides from Turkestan. It attains an elevation of 23,000 ft.; is crossed by several passes, and is rich in minerals, especially iron. The tribes that inhabit it are chiefly Shins and Dards.

Hindustani, a name sometimes loosely applied to the entire Indian peninsula, but, strictly speaking, embracing only the country of the upper valley of the Ganges, divided into NW. Provinces, Oudh and Bihar. The language most widely spoken in an Indo-Germanic language, on which Hindustani is based, but with large Persian and Arabic admixtures.

Hindustani, the most widely used language of Hindu India, that spoken by Indian Mohammedans being known as Urdu.

Hinkler, Bert, Australian aviator. Born in Bundaberg, Queensland, he took to flying and came to England in 1914. In 1928 he carried out a lone flight to Australia in 15 days, covering 10,000 m. After disappearing on a trans-European flight, his body was found in Italy. (1894-1933).

Hinterland, a term of German origin lies behind coastal colonies, and, as a rule, looked upon by the settlers as an area reserved for their development in due course. Jurisdiction is often claimed over such lands, but has no justification until actual occupation or conquest takes place.

Hip, or (in animals) **haunch,** the joint or femur, where the head of the thigh-bone, meets the ilium at the pelvis socket. Like that of the shoulder, it is a ball-and-socket joint. It is held in place by three main ligaments: the ligament of Bigelow, which maintains the body's erect position and is shaped like an inverted Y; the *ligamentum teres*, which is absent in some animals; and the cotyloid ligament.

The hip joint is subject to several diseases. Pre-pubertal hip disease may result in dislocation or ankylosis. Rheumatoid arthritis sometimes affects the joint, while sciatica, sometimes called "hip-gout," is caused by inflammation of the sciatic nerve at the hip-joint. Scrofula, especially in children, may lead to a breaking-down of the tissues of the hip, and if not checked, result in lateral displacement and shortening of the leg.

Hipparchus, ancient Greek astronomer, born in Nicaea; lived in the 2nd Century B.C.; discovered among other things the precession of the equinoxes, determined the place of the equinox, and catalogued 1,000 fixed stars.

Hipper, Franz von, German naval commander; was in command of a squadron of the German fleet in 1914, and took part in the Battles of the Dogger Bank and of Jutland; in 1918 became Commander-in-Chief of the German navy, in which capacity he negotiated for the fleet's surrender to Great Britain at the end of the World War. (1863-1932).

Hippocrates, Greek physician, the father of medicine, born in Cos, 460 B.C.; a contemporary of Socrates and Plato; settled in Thessaly and died at Larissa; no fewer than 60 writings are ascribed to him, but only a few are genuine.

Hippocrene (Ht. "the fountain of the horse"), a fountain on Mount Helicon, in Boeotia, sacred to the Muses, and said to have sprung up after Pegasus (q.v.) had struck the spot with his hoof.

Hippodrome, a stadium used in horse and chariot races; the word is now frequently applied to any race-track, even for greyhounds; and to theatres and music-halls.

Hippogriff, a fabulous creature re-horse with the head of a griffin. It was used as a symbol by medieval alchemists.

Hippolyte, Queen of the Amazons, slain by Hercules in order to obtain and carry off her magic girdle.

Hippopotamus, literally "river-horse," a family of

even-toed (artiodactylate), ungulate mammals belonging to the pig (Suina) sub-order, once very common in Europe (including Britain) and in India, but now represented by only two species found in Africa. The chief of these two, the *Hippopotamus*



HIPPOPOTAMUS

amphibius, is slightly smaller than the elephant, is covered with thick hide and has very short legs. It lives on river-banks, and may be very destructive to crops in cultivated areas. The Pigmy Hippopotamus (*H. (Charopsis) liberiensis*) is no bigger than a

Wild Boar, is comparatively rare and found in W. Africa only.

Hippo Regius, an ancient ruined city of Algeria, principally famous as the bishop's see of St. Augustine, who died there in A.D. 430.

Hiram, King of Tyre, contemporary with David and Solomon; provided David with artisans and materials for the building of his palace. Solomon paid yearly tribute to him. He conducted a campaign against Cyprus to enforce tribute, and fortified the Island of Tyre.

Hire-purchase, a hire-purchase agreement is one by which a seller agrees to lease goods, such as furniture, motor-cars or wireless sets, to another person for a certain period on hire, in consideration of fixed payments by instalments, the latter person having an option to purchase the goods by paying the whole of the instalments. The goods remain the property of the seller until all instalments are paid. They cannot be taken into execution by the hirer's creditors, but they may be distrained on for rent owing in respect of the premises where they are kept. If the hirer defaults on his instalments, the seller may seize the goods and retain all the money received by him from the hirer, but he may not break open doors or windows to obtain possession.

Most firms or companies who sell goods by hire-purchase have printed forms of agreement for signature by their customers; but an intending hirer should see that he fully understands such a document before signing it. Abuses of the system long excited complaints, and in 1938 an Act, sponsored by Miss Ellen Wilkinson, was passed to check them, providing protection for the hirer from unreasonable demands and conditions, and allowing for the termination of an agreement by return of the goods hired after a specified number of instalments has been paid. A hiring agreement must be stamped with a 6d., or, if under seal, with a 10s. stamp.

Hirohito, Emperor of Japan, bearing the title Dai Nippon Teikoku Tennō, or Imperial Son of Heaven of Great Japan, and descended from a dynasty that claims to go back to 660 B.C.; educated partly in England, he succeeded his father, Yoshihito, on the throne in 1926; married Princess Nagako in 1924, and has six children (four daughters, of whom three are living, and two sons, Akihito being the Crown Prince). Amongst British honours has been awarded the K.G., G.C.B. and G.C.V.O. (1901-).

Hiroshima, a seaport on the south coast of Honshū I., Japan. It is a great commercial centre, and lies opposite Miyajima I., with its famous temple dedicated to the goddess Bentin. Pop. 310,000.

Hispaniola. See **Haiti**.

Hissar, (1) a district in the Punjab, India; for the most part sandy, yet in rainy years produces good crops of rice, barley, etc., and is noted for its white cattle; the capital, bearing the same name, is situated on the Western Jumna Canal, 103 m. W. of Delhi. (2) Also a district in Central Asia, lying N. of the Oxus River, and separated from Bokhara by a branch of the Tian Shan Mts.; has a fertile soil, and exports corn, sheep, etc., to Bokhara.

Histology, the study of the structure and classification of the tissues of animals and plants. The chief animal tissues are epithelial tissue, connective tissue including fat, bone tissue, cartilage tissue, muscular tissue and nervous tissue.

The tissue unit is the cell, which can frequently be preserved for study outside the body. Vegetable or plant histology is pursued as a *separate* science with methods of its own.

Historiographer, a writer of history; the title has sometimes been given as a mark of honour by European courts to various learned historians. Racine was historiographer to Louis XIV., Voltaire to Louis XV. The post of King's historiographer in Scotland was revived in the 18th Century and still exists.

History, the branch of knowledge which investigates and describes the past of mankind and the natural and physical conditions which have influenced human life, and closely linked with such other subjects as geology and geography. Part of the story of mankind is the record of his triumphs over natural obstacles, while in a narrower sense the word history indicates merely a record in chronological order of those events which have either happened to man or he has himself brought about. Its study is valuable in defining the relation of human action to the changing conditions which beset him; and the philosophical historian seeks to probe the causes of events and to elaborate a general theory of historical evolution. His duties are therefore first to collect facts, and secondly to sift evidence and draw reasonable conclusions. The work necessarily involves much exhaustive research.

History is generally divided into three periods: ancient, medieval and modern. Ancient history covers the period up to the fall of the Roman Empire. It studies the records of the Hebrew, Mesopotamian, Egyptian and other races as well as the history of Greece and Rome. The centuries which are called "medieval" are divided into the "dark ages" and the "middle ages." The former term covers the somewhat obscure history of the 6th to the 9th Centuries, during which barbarian races settled in Western Europe, became Christian, and developed into the great European nations of modern times. The latter period begins with the revival of the Empire about 950, and may be said to end with the Renaissance.

Modern history is usually considered to begin in 1453 with the fall of Constantinople, an event which led to the Renaissance, or Revival of Learning (see *Renaissance*), the discovery of the New World, and the rapid intellectual development of the Western races, and hence to the complex civilisation of to-day.

Modern research has led to a closer specialisation on minor points, such as the history of law, the Church, commerce, etc., while in recent years the study of local history has formed an excellent avenue to the wider study of general history. The history of the great countries of the E., China, Japan, India, etc., is only now beginning to be treated in association with that of Europe and the Near East.

Hitchin, a very old and still prosperous town of Hertfordshire, England, on the Hiz, 14 m. NW. of Hertford; does a flourishing trade in corn, malt and flour; brewing and straw-plaiting are important industries, and it has long been noted for its lavender and lavender water. Pop. 14,300.

Hitler, Adolf, dictator of Germany since 1933, was born at Braunau, Austria, and is nominally a Roman Catholic. After attending schools at Linz and Steyr, he went to Vienna, and later to Munich (1912), where he worked as a painter. Served as corporal in the German Army in the World War; wounded, Oct. 1918. In 1920 helped to found the new National Socialist German Workers' Party, whose main plank was anti-Semitism; was editor of *Volksischer Beobachter*, and leader of party, 1921.

He led an abortive rising in Munich, 1923, was sentenced to five years' imprisonment, but released after a period; set forth his aims in *Mein Kampf*. In 1932, having become a naturalised German, he unsuccessfully stood

for the Presidency of the Reich against Hindenburg, who in 1933 made him Chancellor.

The National-Socialist (or "Nazi") revolution of that year was accomplished by his decree. On Hindenburg's death (Aug. 1934) Hitler abolished the Presidency and proclaimed himself *Führer*. In 1936 he came to an understanding with Mussolini, dictator of Italy, both recognising the Spanish insurgent leader, Franco, as ruler of Spain. Early in 1938 he ordered German troops to enter Austria, and added that country to the German Reich. In Oct. he secured Sudetenland. (1889-).

Hittites, an ancient non-Semitic Eastern people of whom many monuments have recently been found in Asia Minor and Syria; they are mentioned in the Bible. An important Hittite settlement was Boghaz-Keni in Cappadocia. They fought bitterly with Egypt; appear to have attained a high civilisation; but disappear from history about the beginning of the 7th Century B.C.

Hoang-Ho. See Hwang-Ho.

Hoare, Sir Samuel John Gurney, British politician; entered Parliament in 1910, and became Secretary for Air in 1922, retaining office until 1929 except in the 1924 Labour Government; in 1931 became Secretary for India, and in 1935 Foreign Secretary, resigning later in the year when the Hoare-Laval scheme for a partition of Abyssinia between Italy and Haile Selassie proved unpopular; in 1936 became First Lord of the Admiralty, and Home Secretary the following year. Has effected considerable prison reforms during his period of office. (1880-).

Hoar Frost, frozen dew which deposits itself upon trees and grass in winter, in place of dew, when the temperature is below freezing-point.

Hoatzin (*Opisthocomus hoazin*), a singular bird, the only one

in its family (Opisthocomidae), found near rivers in S. America from the Amazon to Bolivia. In appearance it is not unlike the Guans though probably more closely related to the Cuckoos. The posterior part is flattened out into a naked surface on which it sits when at rest. It feeds on fruit and leaves and is awkward in flight. The young birds have a well-developed claw on the wings and move about the branches by means of foot, bill and claws.

Hobart, capital of Tasmania, is situated on the estuary of the Derwent, at the base of Mount Wellington; is handsomely laid out in the form of a square; is the seat of government, and has many fine public buildings; has a splendid natural harbour, the manufacture of flour, jam and leather, with brewing, shipbuilding and iron-founding, are its chief industries; it has extensive suburbs, and is a favourite health resort. Pop. 62,000.

Hobbema, Meindert, a famous Dutch landscape-painter, born in Amsterdam; lived chiefly in his native town, and died in poverty. His fine, subdued pictures of woodland life and scenery are ranked amongst the masterpieces of Dutch landscape-painting, and may be seen in the National Galleries in London, Berlin, Vienna, etc. (1638-1709).

Hobbes, Thomas, an English philosopher, psychologist and moralist, born in Malmesbury; was educated at Oxford; connected all his days with the Cavendish family, with members of which he

travelled on the Continent; translated Thucydides, wrote a number of works, of which the best-known is the *Leviathan*, in support of his doctrine that absolute sovereign power in all matters of right and wrong is vested in the State. (1588-1679).

Hobbs, John Berry, British cricketer. Surrey in 1905, he speedily established his reputation as a batsman, and played for England in Australia and S. Africa as well as in Test matches at home. He was the first man to beat the record number (126) of centuries scored by W. G. Grace, having, when he retired in 1934, made 197 centuries in first-class cricket. In 1925 he aggregated 3,024 runs in 48 innings; and he made 100 centuries for Surrey. (1882-).

Hobby (*Falco subulcus*), one of the smaller birds of the Falcon (Falconidae) family, a familiar British summer visitor. It is grey on the back, mottled underneath, has long wings and a short tail and preys chiefly on small birds (e.g. on larks).

Hobhouse, John Cam, first Baron Broughton, English politician and friend of Byron; educated at Westminster and Cambridge; Liberal M.P. successively for Westminster, Nottingham and Harwich; after holding various offices, succeeded to a baronetcy in 1831 and was raised to the peerage in 1851; author of *A Journey Through Albania with Lord Byron*. (1786-1869).

Hoboken, a city of New Jersey, U.S.A., on the Hudson R., adjoining Jersey City and opposite New York; is an important railway terminus and shipping-port; does a large trade in coal, lead-pencils, iron-casting, etc. Pop. 59,000. Also the name of a suburb of Antwerp, with a ship-building industry and a pop. of 31,000.

Hobson, Thomas, a Cambridge job-master, who let out horses on hire, the choice always limited to the one next the door, the one that had been longest in, hence the saying "Hobson's Choice"; was the subject of two humorous epitaphs by Milton.

Hoccleve, or *Occleve*, Thomas, an early English poet; had an appointment in the Exchequer Office in Henry V.'s time; his chief work is the *Government of Princes*, but his poems have more linguistic than poetic interest; has left us an interesting portrait of his contemporary, Chaucer. (1368-1448).

Hock, a sparkling white wine originally made at Hochheimer in Germany. The name is now used for most white Rhinish wines. The alcoholic strength is from 9 to 13 per cent. The well-known *Liebfraumilch* (Virgin's Milk) is a variety of hock.

Hockey, a British winter game derived from Irish hurley. The Wimbledon club drew up rules in 1883, and the game is now played internationally, at the universities, schools and a number of clubs throughout the country. The Hockey Association was formed in 1886, the first Oxford v. Cambridge game played in 1890 and a Women's Association formed in 1895, the year in which England first met Ireland. It occupies in girls' schools much the same position as football does for boys.

Hocking, Joseph, religious novelist; born at St. Stephen's, Cornwall. At first a land surveyor; ordained a Methodist minister, 1884; pastor at Woodford, Essex, till 1910. His first book, *Jabez Esterbrook*, appeared in 1891. *The Scarlet Woman*, 1899, caused some stir in Free Church circles. (1860-1937).

Hocking, Silas Kito, religious novelist, elder brother of Joseph; born at St. Stephen's, Cornwall. Was a Methodist minister from 1870 until 1896. In 1879 appeared his best-known book, *Her Benny*,



HOATZIN

where it yields a useful timber and its bark is used for tanning. In Britain it occurs as an ornamental evergreen bush 20 to 30 ft. high.

Holofernes, in the Apocrypha, the Assyrian general whom Judith, entering his camp as it invested her native place, slew with her own hand, bearing his head as a trophy back to the town.

Holograph, any document, such as a letter, deed or will, entirely in the handwriting of the person whose composition it purports to be. By English law a holograph will must be signed by two witnesses; in Scottish law no witnesses are necessary to such a will.

Holst, *Gustav*, British composer, born and educated in Cheltenham. He produced two operas, *The Perfect Fool* and *At the Boar's Head*, besides a number of hymns and songs. His best-known work is *The Planets* (1915). (1874-1934).

Holstein, formerly, with Schleswig, formed the Prussian province of Schleswig-Holstein (q.v.); it was till 1866 a Duchy of Denmark, but in that year was annexed by Prussia; the northern part was returned to Denmark in 1919 under the Treaty of Versailles.

Holy Alliance, an alliance of the sovereigns of Russia, Austria and Prussia on the fall of Napoleon, professedly to maintain the European *status quo*, but really for the suppression of political liberty and the maintenance of absolute power.

Holy Coat of Trèves, a relic in (Trier) cathedral, alleged to be the seamless robe of Christ, deposited there by the Empress St. Helena.

Holycross, a village of Co. Tipperary, Ireland (Eire), 3½ m. SW. of Thurles. It is noted for the beautiful ruins of its ancient riverside Cistercian Abbey.

Holyhead, an important seaport of Anglesey, N. Wales, on the N. side of an island of the same name, 2½ m. W. of Bangor; is the chief mail-packet station for Ireland and has excellent harbourage. Pop. 11,000.

Holyhead Island, a rocky islet forming a part of Anglesey, from which it is separated by a narrow strait, dry at low water, and crossed by an arched causeway.

Holy Island, or *Lindisfarne*, an islet of Northumberland, 9½ m. SE. of Berwick; is separated from the mainland by a stretch of sand bare at low water, and some 3 m. broad; has interesting ruins of a Benedictine priory church where St. Cuthbert (q.v.) once ministered; a centre of the diffusion of Christianity among the Anglo-Saxons.

Holyoake, *George Jacob*, publicist and rationalist, born in Birmingham; lived a busy life as an agitator, lecturing and writing. He espoused the cause of Garibaldi, and was the last man to be imprisoned in England on a charge of atheism (1841); was a zealous supporter of co-operation and all movements making for the betterment of the social condition of the working classes. His numerous works include *History of Co-operation in England and Sixty Years of an Agitator's Life*. (1817-1906).

Holy Office, a Roman Catholic congregation of cardinals in charge of the defence of the faith against heresy; also a name for the Inquisition (q.v.).

Holy of Holies, in the ancient inner compartment within the outer or holy place. It was a cube of exactly ten cubits. Into it none might enter save the high priest, and he only on specified occasions to offer sacrifice. It was separated from the Holy Place by a veil.

Holyoke, a city of Massachusetts, U.S.A., 8 m. N. of Springfield, on the Connecticut R., whose rapid current supplies the water-power for the many large paper-mills, cotton and woollen factories. Pop. 57,000.

Holy Orders, the superior ranks of the Church of England, the three holy orders are bishops, priests and deacons; in the Roman Catholic Church, where bishops are not considered as a separate order, but as priests with added powers, the subdeacon is also held to be in holy orders. They are also called "major orders," as distinct from the four minor orders of acolyte, reader, exorcist and porter. The name is also applied to the sacrament by which the order is conferred.

Holy Roman Empire, a name applied to the empire founded by Charles the Great (Charlemagne) in 800 and suppressed in 1806. It was a revival of the ancient Roman Empire of the W. At the time of its formation the Papal Church was beset by many enemies, and Charles's support of the Pope was rewarded by the Imperial title. By the end of the 9th Century Barbarian invasions had practically destroyed the Carolingian Empire.

It was revived, however, in 936 under Otto, whose line continued until 983, Germany and Italy being the two principal territories of the Empire. Disputes between the Pope and the Emperor were almost continuous, but towards the end of the 12th Century the imperial power manifested itself more strongly under Frederick I. and II. After the latter's death an interregnum occurred until 1273, when Rudolf, the first Hapsburg Emperor, was elected. Henceforth the Empire was in fact a German institution; in 1648, after the Thirty Years' War, its centre shifted to Austria, and its glory gradually waned until in 1806 the last Emperor, Francis II., abandoned the title after a long and unsuccessful struggle against Napoleonic France. It was not revived on the resettlement of Europe after Waterloo.

Holyrood, an abbey founded at Edinburgh in 1128 by David I.

in honour of the Holy Cross, a casket of gold shaped like a cross brought to the country by St. Margaret in 1070; the palace, afterwards attached, became



HOLYROOD

the chief seat of the Scottish sovereigns of the Stuart dynasty, and in recent years has again been used by royalty on visits to Scotland.

Holy Sepulchre, Church of, the one which is built over the supposed site of the tomb of Christ, sometimes called the Church of the Resurrection. Various Christian bodies have rights in different parts of it, and it is visited by pilgrims in large numbers. It was originally built by the Crusaders. A Rockefeller grant made restoration possible in 1936.

Holy Spirit, or **Holy Ghost**, in Christian theology one of the three Persons of the Holy Trinity, equal in Godhead with the Father and the Son. The gift of the Holy Ghost was promised by Christ to His Apostles before His death, and the promise was fulfilled at Pentecost, when He is said by the New Testament to have fallen upon the assembled disciples in the form of fiery tongues. The Anglican, Catholic and Orthodox churches teach that the gift of the Holy Spirit is bestowed on each individual Christian in a special degree by the rite or sacrament of Confirmation. The relation of the Holy Ghost to the Father and the Son has

been the subject of much controversy between the Western and Eastern Churches.

Holytown, a town of Lanarkshire, Scotland, 12 m. from Glasgow. It has extensive iron and steel works and collieries nearby. Pop. 8,800.

Holy Water, a mixture of salt and water blessed by a priest and used in the Roman Catholic Church for devotional purposes, being sprinkled over persons and things as a symbol of spiritual purification. It is generally kept in vessels called stoups, fixed by the doors of churches, for the use of worshippers.

Holy Week, the week before Easter, so called as consecrated to the commemoration of the Passion of Christ and His death on the Cross.

Holywell, a market town of Flintshire, Wales, 15 m. NW. of Chester. The principal industry is the smelting of lead, iron, copper and zinc ores obtained from the surrounding mines. The famous well of St. Winefride is over-built by a fine Perpendicular chapel. Pop. 5,500.

Homage, in feudal law, the formal acknowledgment made by a feudal tenant to his overlord on receiving the investiture of a fief or acquiring it by succession, that he was the latter's vassal; hence, any recognition by an inferior of the position and power of a superior.

Homburg, a fashionable watering-place in Hesse-Nassau, Prussia, beautifully situated at the base of the Taunus Mts., 8 m. NW. of Frankfurt-on-the-Main; has fine chalybeate and saline springs. A type of men's soft felt hat has taken its name from the town. Pop. 11,000.

Home Counties, the counties in the neighbourhood of London—namely, Essex, Hertfordshire, Kent, Middlesex and Surrey; Berkshire, Buckinghamshire and Sussex are sometimes included in the term.

Home Office, in England, the department whose political chief, the Home Secretary, is the authorised channel of communication between the King and his subjects. Petitions or addresses to the King pass through his hands. He advises the Crown as to the prerogative of mercy, including commutation or reduction of sentences. He has the general superintendence and control over prisons, criminal lunatic asylums, inebriate reformatories and approved schools. The Metropolitan Police are under him, as the police authority for the Metropolis. He appoints recorders and stipendiary magistrates; administers the Aliens Naturalisation Acts; conducts Extradition proceedings; and operates the Factory Acts and Shops Acts. He is also the medium of communication between the King and the Church of England; prepares patents of nobility for peers; and has various ceremonial duties.

Homer, the great epic poet of Greece, traditionally author of the *Iliad* and the *Odyssey*, though many modern critics deny that one poet can have written both works; for the honour of being the place of his birth seven Greek cities contended; he is said to have been blind, and to have wandered from city to city reciting his verses; the poems attributed to him date c. 1000-800 B.C. At the end of the 19th Century there was a tendency, now discarded, to deny his existence, and attribute the epics to more than one hand.

U.E.



HOMER

Home Rule, a form of local self-government, which in its application to Ireland was for long a bone of contention between Liberals and Conservatives. Gladstone introduced the first Home Rule Bill in 1886, and others followed in 1893, 1912 and 1913, all of which were defeated. In 1914 a Bill was passed, but was to remain inoperative till after the World War, when the Southern Irish refused to accept it, and civil war followed till 1922, when the Irish Free State

Home Rule for themselves.

Homicide, the killing of one human being by another. It may be justifiable, as when it is unavoidably necessary for the prevention of a forcible and atrocious crime, or excusable, when it occurs from misadventure or in self-defence, or felonious, when committed with malice or without justification. Felonious homicide may be either murder, if "of malice aforethought"; or manslaughter, if due to killing "on a sudden affray," or to culpable negligence.

Homildon Hill, in Northumberland, England, 1 m. NE. of Wooler; the scene of Hotspur's famous victory over the Scots under Earl Douglas, Sept. 14, 1402.

Homœopathy, a method of treating diseases advocated by Hahnemann (q.v.) which professes to cure disease by administering in small quantities drugs that would produce it in a healthy person.

Homology, a term in biology referring to the common origin of organs or parts of various plant or animal organisms. Thus the arm of a man, the fore-leg of a dog and the wing of a bird are homologous.

Honan, an inland province of China. Its northern portion is intersected by the Hwang-ho, but the greater portion of the province is watered by the headstreams of the Hwei-ho and its tributaries, and in the SW. by the affluents of the Han-Kiang, all of which have their sources in the mountainous country in the W. of the province, where the Fu-ni range rises to a considerable height. The E. is flat and low-lying. Cotton and cereals are grown. Capital of the province Kai-fengtu. Area 67,950 sq. m. Pop. 35,500,000.

Honduras, a maritime republic of northern Central America, whose northern sea-board fronts the Gulf of Honduras in the Caribbean Sea, between Nicaragua on the S. and S.E. and Guatemala on the W., less than four-fifths the size of England. Area 44,280 sq. m. The coast lands are low and swampy, but the interior consists chiefly of elevated tableland diversified by broad, rich valleys. The Cordilleras traverse the country in a NW. direction, and form the watershed of many streams. Large numbers of cattle are raised, and fruits, india-rubber, indigo, etc., are exported, but agriculture is backward. Its mineral wealth is very great. Silver ore is abundant, and other minerals, such as gold, iron, copper, are found; Honduras became an independent State in 1821; the Government is vested in a President and six ministers, and the legislative power in a Congress of 43 members. The population (983,000) is mainly composed of Spanish-speaking Indians with some mixture of Spanish blood; Tegucigalpa is the capital.

Honduras, British, a Crown colony in Central America situated on the Caribbean Sea, and bounded on the north by Yucatan and on the west and south by Guatemala; it was originally called Belize, which is now only the name of its capital. The first settlers arrived about 1688. The chief exports are logwood and mahogany. Area 8,600 sq. m. Pop. 55,000.

T

Hone, William, miscellaneous writer and political satirist, born in Bath; threw up his position as a law clerk in London and started a print and book shop; became a busy contributor to newspapers, and involved himself in serious trouble by the freedom of his political parodies and satires. Of his many squibs, satires, etc., mention may be made of *The Political House that Jack Built*, *The Queen's Matrimonial Ladder*, *The Political Showman*, all illustrated by G. Cruikshank. (1780-1842).

Honesty (*Lunaria biennis*) a plant of the order Cruciferae, grown in British gardens. It bears racemes of scentless lilac-coloured flowers.

Honey, a thick syrup made by bees of flowers, in widespread use as an article of human food, bees being kept in all ages and countries for the sole purpose of producing it. The colour is dependent upon the plant on which the bees feed, and ranges through many shades from white to deep yellow or brown. It was in wide use in classical and medieval times as a substitute for sugar.

Honey Dew, a sweet exudation found on leaves in small drops deposited by aphides (q.v.).

Honey-eaters, or **Honey-suckers**, a family of small birds (the Melliphagidae), characteristic of the fauna of Australia and possessing an extensible forked tongue, with which they extract honey from flowers. They are for the most part brightly-coloured birds with curved beaks and long tails, the sub-family Myzomolaine being very like the Sun-birds.

Honeysuckle, or **Woodbine** (*Lonicera Periclymenum*), a

climbing shrub found as a hedge-plant in Great Britain, and frequently cultivated. It bears white flowers, which turn yellow after fertilisation by hawk-moths, which takes place at night. The fruit consists of red berries.



HONEYSUCKLE

Hon fleur,

a seaport of France, situated on the estuary of the Seine, opposite Havre; has a good harbour; exports dairy produce, cattle, etc.; has sugar refineries and tanworks. Pop. 8,700.

Hong-Kong, an island lying off the S. China; ceded to Britain in 1842; hilly and unproductive, but well watered and tolerably healthy; owes its great importance as a commercial centre to its favourable position, its magnificent harbour, and to its having been made a free port and the headquarters of the European banks; opium is the chief import, silk and tea the principal exports; Victoria, a handsome city on the N. side, is the capital and seat of the British governor. The territory of Kowloon on the mainland adjoining is now part of the colony, which has a total area of 390 sq. m. Pop. 850,000, nearly all Chinese.

Honiton, an ancient market-town of the Otter, 17 m. N.E. of Exeter; is famed for its pillow-lace, an industry introduced by some Flemish refugees in the 16th Century. Pop. 3,000.

Honolulu, capital of the Hawaiian and strip of land on the S. side of Oahu; is well laid out after the manner of a European town, and has the only good harbour in the archipelago. Pop. 138,000.

Honorius, the name of four Popes; H. I., the most famous, Pope from 626 to 638. H. II., Pope from 1124 to 1130. H. III., Pope from 1216 to 1227. H. IV., Pope from 1288 to 1287.

Honorius, Flavius, Emperor of the West, born in Constantinople, son of Theodosius the Great, a weak ruler, only able to resist the invasion of the Goths so long as Stilicho, his minister, lived; after the murder of the latter some of his finest provinces were snatched from his grasp. (384-423).

Honour, a distinction or dignity. A heritable or personal title is an honour bestowed by the King, who, constitutionally, is the source of all honours. "Honours lists" are generally issued at the New Year and on the King's Birthday, recommendations for inclusion in them being made by the Prime Minister or by the Governments of the Dominions concerned. "His Honour" as a title of address is now restricted to County Court judges. A Maid of Honour is a lady who attends on the Queen when she appears in public.

Honourable, a title given in the United Kingdom to peers, members of their families and certain public functionaries. Marquesses are "Most Honourable," Earls, Viscounts, Barons, Privy Councillors, the Chairman of the London County Council, and the Lord Mayor of London are "Right Honourable," "Honourable" is applied by courtesy to the younger sons of earls and all children of viscounts and barons, as well as to Maids of Honour and High Court Judges. In America and some of the Dominions, Governors of States, judges, members of Congress or Parliament, Senators, and others holding offices of dignity and trust are styled "honourable."

Honourable Artillery Com-

pany, the oldest unit of the British volunteer forces, consisting of the archers of Henry VIII., from whom it received a charter of incorporation in 1537. Milton and Sir Christopher Wren were members. The unit achieved distinction during the South African War of 1899-1902 and in the World War. The King is their Colonel. The headquarters have been at Finsbury for almost three centuries.

Honshiu, (Mainland), the largest of the islands which comprise Japan proper. It contains all the most populous centres, all the large cities and the bulk of the population. Chief towns Tokyo, Nagoya, Osaka, Kyoto, Kobe, Yokohama. Area (with adjacent small islands) 88,920 sq. m.

Hooch, Pieter de, Dutch painter, born mainly at Delft, painting chiefly bright domestic interiors, and later in Amsterdam. Specimens of his work outside Holland are rare; but they exist in Leningrad, Paris, London, New York and Philadelphia. (1629-c. 1680).

Hood, Horace Lambert Alexander, British admiral. A member of the famous naval family of Hoods, he entered the service at 13, saw service in the Nile in 1897, took charge of Osborne College, and in 1916 commanded the third battle-cruiser squadron at Jutland, going down on the *Invincible*, his flagship. (1870-1916).

Hood, Robin, a famous traditional outlaw of the time of Edward II., assigned by some writers to Richard I's reign; of yeoman descent, though attempts have been made to identify him with the Earl of Huntingdon. He and his followers, all noted archers, roved the extensive forest of Sherwood between Nottingham and Yorkshire, winning popular favour by their attacks on the nobles and ecclesiastics who oppressed the poor.

Hood, Samuel, Viscount, a distinguished admiral, born at Thorncombe; entered the navy in 1740, and rising rapidly in his profession evinced high qualities as a leader. In 1782 he brilliantly outmanœuvred De Grasse in the West Indies, and under Rodney played a conspicuous part in the destruction of the French fleet at the battle of Dominica, for which he was rewarded with an Irish peerage; defeated Fox in the celebrated Westminster election, became a Lord of the Admiralty, and as commander of the Mediterranean fleet during the revolutionary wars, captured the French fleet at Toulon and reduced Corsica. In 1796 he was created a viscount. (1724-1816).

Hood, Thomas, poet and humorist, born in London; gave up business and engraving, to which he first applied himself, for letters, and beginning as a journalist, immortalised himself by his *Song of the Shirt*, *The Bridge of Sighs* and *Dream of Eugene Aram*; edited the *Comic Annual* and wrote *Whims and Oddities*, in all of which he displayed both wit and pathos. (1798-1845).

Hoof, the horny extremity of the foot, in mammals of the order Ungulata, corresponding to the toenail in man. In many ungulates the hoof is cloven. The brittle nature of the horse's hoof led from early times to the practice of protecting it with iron "horseshoes," which are known to have been used for several centuries before Christ.

Hooghly, or Hughli, (1) the most important and most westerly of the several branches into which the Ganges divides on approaching the sea, breaks away from the main channel near Santipur, and flowing in a southerly direction past Calcutta, reaches the Bay of Bengal after a course of 145 m.; navigation is rendered hazardous by the accumulating of shifting silt; the "bore" rushes up with great rapidity, and attains a height of 7 ft. (2) A city on the western bank of the river, 25 m. N. of Calcutta, founded in the 16th Century by the Portuguese; is capital of a district, and has a college for English and Asiatic literature. Pop. 32,000.

Hook, Theodore Edward, comic dramatist, born in London; wrote a number of farces sparkling with wit and highly popular; appointed Accountant-General of Mauritius, came to grief for peculation by a subordinate under his administration; solaced and supported himself after his acquittal by writing novels. (1788-1841).

Hookah, a water tobacco pipe in use in the Near East and India. The bowl is connected by a tube with a vessel of water to ensure cool smoking. It is also called a "hubble bubble" or narghileh.

Hooke, Robert, natural philosopher, born in Freshwater, Isle of Wight; was associated with Boyle in the construction of the air-pump, and in 1665 became professor of Geometry in Gresham College, London; in some important points anticipated Newton's theory of gravitation, and foresaw the application of steam to machinery. He discovered amongst other things the balance-spring of watches, the anchor-escapement of clocks, the simplest theory of the arch, and made important improvements in the telescope, microscope and quadrant. (1635-1703).

Hooker, Richard, English Church theologian and ecclesiastical writer, born in Exeter; famous as the author of *Ecclesiastical Polity*, in defence of the Church against the Puritans. His life was written by Isaac Walton. (1554-1600).

Hook of Holland (*Hoek Van Holland*), a village in the Netherlands, standing at the mouth of the Hoek van Holland promontory. It is the landing-place of a steamer service from Harwich to the Continent.

Hookworm, a parasitic worm found in warm climates (Egypt, India, Ceylon, the S. States of the U.S.A. and the Far East), which often finds a lodging in the bare foot or in cracks in skin of human beings, producing "ground itch." It then enters the blood-stream, reaching the heart and lungs, and finally the intestines, where its eggs are produced and discharged to recommence the life sequence. The painful disease so caused is called ankylostomiasis or "miner's anemia."

Hooper, John, trained for the Catholic ministry, was converted to Protestantism, and had to leave the country; returned on the accession of Edward VI. and was made Bishop of Gloucester; was committed to prison in the reign of Mary, condemned as a heretic, and burned at the stake in Gloucester. (1195-1555).

Hoopoes (Upupidae), a family of birds comprising the true Hoopoes

(Upupinae) and the Wood-Hoopoes. The true Hoopoes are reddish-coloured with diverse markings, and include the migrant Common Hoopoe (*Upupa epops*), named after its cry, about the size of a thrush, with a long, curved bill, and marked crest of feathers on the forehead; found in temperate

Europe and Asia, and visiting and occasionally breeding in England. It hunts insects and worms on the ground, and nests in holes in trees. The Wood-Hoopoes are found only in Africa.



COMMON HOOPOE

Hoover, Herbert Clark, American politician. His early years were spent as a mining engineer in Australia and China. In 1914 he became chairman of the American Relief Committee and later American Food Controller. Under Harding he was Secretary of Commerce, and in 1928 was elected thirty-first President of the U.S.A. as a Republican, but was defeated by F. D. Roosevelt at the election of 1933. (1874-).

Hop (*Humulus Lupulus*), a perennial climbing herb of the order Cannabaceae, extensively cultivated in Europe and America for its cones, which are used in the manufacture of beer. In England hop-cultivation is extensively practised in the South-Eastern and W. Counties, particularly Kent. The plants are grown on poles.

Hope, Anthony, nom de plume of Sir Anthony Hope Hawkins, novelist, born in London, educated at Oxford; called to the Bar; author of *Men of Mark*, *Prisoner of Zenda* and other novels. (1863-1933).

Hopetoun, Sir John Hope, fourth son of second Earl; of general; second in the Walcheren expedition; served with Sir John Moore in Sweden and Spain; completed the embarkation at Corunna after Moore's death, and was Wellington's chief support in the Peninsula, succeeded his half-brother as Earl, 1816. (1765-1823).

Hopkins, Sir Frederick Gowland, British scientist; professor of biochemistry at Cambridge; carried out analytical work for the Home Office; awarded the Nobel Prize for medicine in 1929 for his researches in connection with vitamins; President of the Royal Society, 1931, and of the British Association, 1933. (1861-).

Hoppner, John, English portrait-painter; born in London; being appointed to the suite of the Prince

Regent he became the fashionable painter of beauties of the day and eminent men; examples of his work are in the National Gallery. (1758-1810).

Horace (Quintus Horatius Flaccus), Roman poet, born at Venusium, in Apulia; fought under Marcus Brutus at Philippi, after which he submitted to Octavius and returned to Rome to find his estate forfeited; later attracted the notice of Virgil and was introduced to Maecenas, who bestowed upon him a small farm on which he lived in comfort for the rest of his life. His works, all in verse, consist of odes, satires and epistles, and reveal an easy-going man of the world, of great practical sagacity and genial wisdom; they abound in happy phrases and quotable passages. (65-8 B.C.).

Horatii, three brothers who in Roman legend were chosen to fight against three brothers from Alba Longa, the Curiatii, to decide supremacy between the two towns. Two were slain, but the third emerged victor.

Horder, Sir Thomas Jeeves Horder, physician-in-ordinary to King George VI; son of Alfred Horder, of Wiltshire; trained for the medical profession at St. Bartholomew's Hospital, of which he became assistant-physician. He was knighted in 1918, made a baronet in 1923; received the K.C.V.O. in 1925 and was ennobled in 1933; has written on *Clinical Pathology in Practice*, *Cerebro-Spinal Fever* and *Essentials of Medical Diagnosis*. (1871-).

Horeb, a mountain in Arabia belonging to the same ridge as Mount Sinai, where is still pointed out the rock from which water issued at the blow of Moses.

Hore-Belisha, Leslie, English politician; educated at Clifton College and Oxford; entered Parliament (as a Liberal) for Devonport in 1923; became a junior minister in 1931, Financial Secretary to the Treasury in 1932, and Minister of Transport in 1934, attaining fame in that office by drastic measures of traffic control and the institution of "Belisha beacons" to mark road crossings. In 1937 he became Secretary for War, introducing far-reaching changes in Army organisation during his term of office. (1894-).

Horehound, White (*Marrubium vulgare*), a perennial herb

of the order Labiales growing in Europe (including Great Britain, where it is somewhat uncommon, occurring only in chalk or sandy soils), N. Africa and W. Asia. It grows about 1 ft. high, has woody stems and a short root. Foetid Horehound (*Ballota nigra*) is another species of the same natural order occurring in Britain.

Hormones, complex organic compounds secreted by glands or other specialised parts of an organism, and possessing specific functions such as control of the growth or stimulation of certain organs; the name (from the Greek meaning to impel) was introduced by Starling in 1906 to describe a substance, secretin, which stimulates the pancreas. Important hormones are insulin, adrenalin, thyroxin and pituitary extract.

Of these, insulin is produced in the pancreas and regulates the concentration of glucose (g.v.) in the blood. Glucose is produced during the digestion of starchy foods, and unless the pancreas is functioning properly, the concentration of the sugar in the blood may rise considerably above the normal value of 8-1



WETTED (BLACK)

per cent., and the disease known as *diabetes mellitus* finally results wherein glucose may be detected even in the urine. It was shown in 1922 by F. G. Banting and C. H. Best that the glucose-controlling hormone could be extracted from those tissues of the pancreas known as the islets of Langerhans, and from its location they described it as "insulin."

Insulin occurs also in the pancreas of sheep, cattle, pigs and other animals, and may be extracted by treatment of the finely-chopped material with dilute sulphuric acid and then with alcohol. It is a white, crystalline solid, soluble in water, and probably resembles the proteins in structure, though it contains no phosphorus. Medicinally it is administered subcutaneously in the form of a solution of its compound with hydrochloric acid, and though it does not necessarily cure *diabetes mellitus*, it completely removes the symptoms if regularly applied.

Adrenalin, the hormone which controls the blood pressure, occurs in, and can be extracted from the suprarenal glands (near the kidneys), and is used as a heart-stimulant. Pituitary extract is obtained from the pituitary body, which is situated near the front of the brain; it contains at least two distinct hormones, and is used to stimulate movement of the intestines, to decrease the excretion of urine, and to raise the blood pressure.

Horn, a brass wind instrument of ancient origin, used formerly for military purposes and in hunting, and now, in the more developed form of the French horn, employed as an orchestral instrument. It has several spiral volutes and a wide mouthpiece.

Horn, Cape, the most southerly point of America, is a lofty, precipitous, and barren promontory of Hermit I., in the Fuegian Archipelago.

Hornbeam (*Carpinus Betulus*), a small, bushy, beech-like, catkin-bearing tree of the natural order Betulaceae, common in Great Britain. The timber is tough, and is used in turnery for cogs of wheels, etc. The inner bark yields a yellow dye. It bears a one-seeded nut with a leafy wing with three lobes on one side of it.

Hornbill, a family (Bucerotidae) of allied to the Kingfisher. The bill, from which they take their name, is exceptionally large, giving the bird a top-heavy appearance, though in reality it is only composed of a cellular tissue covered with a horny shell. The flight is heavy and clumsy. Some species are almost omnivorous (including mammals, reptiles, etc.), but in most the food consists chiefly of fruit and berries, the birds, especially the 60 species of the sub-family Bucerotinae, living in thick forest and jungle. During the incubation of eggs the female is walled up in the nest and fed from the outside by the male.



HORNBILL

Hornbook, a sheet of vellum or paper upon which were inscribed the rudiments of education, on which were inscribed the alphabet in black or Roman letter, some monosyllables, the Lord's Prayer and the Roman numerals; this sheet was covered with a slice of transparent horn, and was still in use in the reign of George II.

Horncastle, a market town and urban district of Lincolnshire, England, 21 m. from Lincoln. There are remains of a Roman fort. The annual horse

fair in August is one of the largest in the kingdom. Pop. 3,500.

Hornchurch, a large urban district in Essex, England, 2 m. S. of Romford, a rapidly-growing "dormitory" of London. It includes the villages of Upminster and Rainham. Pop. 56,000.

Horne, Henry Sinclair, Lord, British general. He joined the Royal Artillery, served in India and the Boer War, and in 1914 went to France in command of the Artillery, 1st Corps. In 1915 he took command of the second division, served in Gallipoli, and returning to France took command of the fifteenth corps at the Battle of the Somme; was knighted that year, and for the rest of the war led that corps. In 1919 he was raised to the peerage. (1861-1929).

Horne, Robert, first Viscount, British politician. He entered Parliament in 1918, became Minister of Labour in 1919, President of the Board of Trade in 1920, and Chancellor of the Exchequer in 1921, retiring on the defeat of the Coalition in 1922; raised to the peerage in 1937. (1871-).

Horneblende, a silicate of iron and magnesia abundant in many igneous rocks; it is a black mineral of the amphibole group.

Hornet, an insect of the Vespidae or Wasp family, common in S. Britain and most of Europe. It is very voracious, and feeds on fruit, honey and insects. The sting is painful and accompanied by considerable swelling.

Horning, in Scottish legal procedure, "letters of horning" denote a writ to compel a debtor to discharge his obligations under penalty of being considered a rebel, the origin of the term being the ancient custom of blowing three blasts on a horn to indicate the defaulting debtor as a rebel.

Hornpipe, a lively dance, a former favourite of sailors, so called from an old wind-instrument on which it was originally accompanied.

Horns, growths on the heads of certain animals which serve as weapons, sometimes, as in the deer, bony outgrowths of the skull, in other cases, at any rate before maturity, quite separate from it. In the giraffe they are covered with hair; that of the rhinoceros is of real horn. They are generally borne by both sexes.

Hornsey, Middlesex, a hilly and populous borough of N. London, including Highgate, Muswell Hill, etc. The Alexandra Palace and Park, with its racecourse and television station, are in the borough, which is otherwise mainly residential. Pop. 95,000.

Horology, the science dealing with the principles and construction of clocks, watches and other time-pieces. Wheel clocks came into use in the 12th Century, portable clocks during the 14th, and watches with a coiled spring in the 15th. The pendulum was introduced by Huygens in the 17th Century. Apparatus designed to record minute divisions of time are called chronometers.

Horse. The evolution of the horse from a smaller ancestor is better known in its details than that of any other mammal. Its ancestry appears from fossilised remains to be traceable to the Pleistocene Age, when it was confined mainly to Europe and Asia; from rough drawings scratched on bone it seems to have differed little in form from the horse of to-day. There is evidence that the horse was domesticated during the Late Stone Age, and the horses used in Britain at the time of the Roman invasion were probably descended from this stock. Wild horses were found as late as the 18th Century in Europe, though in decreasing numbers. Probably

many of these were descended from originally tamed stock; and certainly the mustang of S. America is the wild descendant of the domesticated species. In the open steppe lands of Central Asia, the tarpan or wild horse is still to be found in large numbers. Another breed is found in S. America.

In Egypt the first representations of domestic horses date from the period of the Hyksos, about 1800 B.C. They were probably introduced into Egypt from Mesopotamia. The Persians and Parthians were celebrated for their horsemanship in the first millennium B.C., and they introduced horses into India, where they were not formerly known as a wild breed.

Of domesticated breeds to-day, one of the most important is the Arab. Arabs are similar in type to the African "Barbs," with long legs, grace and endurance, combining muscularity with slowness of build. They were introduced into Arabia from Asia Minor in the early Christian era. The English race-horse is an exclusive breed, the product of carefully selected native stock with an admixture of Arab blood. Characteristics are the wide forehead, delicate muzzle, long body with the forelegs set close together; the colour is generally bay or brown, legs and mane black.

Hunters are bred less exclusively and vary widely, all, however, possessing strength, endurance and speed. The legs of a hunter are shorter and stronger than those of the race-horse. Ponies, bred in the Shetland Isles, Hebrides and Orkneys, are remarkably docile and agile, and are frequently trained for circus. They are stocky, hardy animals, about 11 hands high, and have rough, matted coats. New Forest ponies are very similar, being also sure-footed and enduring.

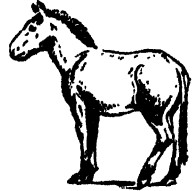
Of cart-horses, the chief are the English Shire Horse, the Clydesdale and the Suffolk Punch. The first is black, with a white-starred forehead, slow and lacking in mettle, but possessing great strength. It stands 17 hands. The Clydesdale stands 16 hands, and is more compact in build. The Suffolk Punch is known for its pertinacity and doggedness, though it is ugly and cumbersome in form.

Horse, Master of the, a political officer of the Royal Household, who attends the King on State occasions and in ceremonial processions. His offices are at the Royal Mews, Buckingham Palace, but the administrative duties of the mews are carried out by the Crown Equerry.

Horse Chestnut, or **Buck-eye**, a genus (*Æsculus*) of deciduous trees of the natural order Hippocastanaceae, common in Great Britain and most of Europe. They bear dark green foliage and handsome flowers. The wood is soft, and the nutty fruit, which is enclosed in a prickly shell, is used as food for cows, pigs, etc., after the bitterness has been removed by alkaline treatment. The chief species are the common Horse Chestnut (*Æsculus hippocastanum*), native of N. Greece and Albania and bearing "candles" of white flowers, and *Æsculus carnea*, the Red Horse Chestnut.

Horse Fly, a large fly common in England and causing irritation to horses by blood-sucking.

Horse Guards. The, a regiment of 1550, having its headquarters in Whitehall; also applied to the building in Whitehall, once the headquarters of the commander-in-chief of the British army, and now of the



MONGOLIAN
WILD HORSE

General Staff, to signify the centre of military administration.

Horse Latitudes, a part of the N. Atlantic Ocean noted for long periods of calm, said to be so called from the frequent necessity when horses formed part of a cargo, of throwing them overboard during the times when the ship was becalmed and water was scarce.

Horse Mackerel, or *Scad* (*Scomber trachurus*), a fish closely related to the common mackerel, being another species of the same genus of Scombridae. It is plentiful on occasions in British waters (especially off the coasts of Cornwall and Devon), is rather smaller than the common mackerel and its flesh is considered coarser.

Horse-power, a unit of measurement of the rate of doing work or supplying energy. An engine which is developing 33,000 foot-pounds of energy per minute is said to be working at 1 horse-power. The horse-power is therefore calculated by dividing the number of foot-pounds per minute by 33,000. The term was invented by James Watt to represent the ordinary rate of working of a good horse.

Horse-racing, was among the sports included in the Greek Olympic games, and has been known in England from early times. It was encouraged by Charles II. In late years it has flourished under royal patronage.

Flat-racing begins in the third week of March and ends on Nov. 30. The ruling authority is the Jockey Club, founded in 1750. Though self-constituted, its control is unquestioned. The most important races, though not necessarily the most valuable, are those called "classic," for 3-year-old horses: i.e., the 2,000 Guineas (1 m.) for colts and fillies, the Oaks (1½ m. 5 yd.) and the 1,000 Guineas (1 m.) for fillies, the Derby (1½ m. 5 yd.) and the St. Leger (1 m. 6 furlongs 132 yd.) for either colts or fillies.

The oldest is the St. Leger, founded in 1776; the Oaks followed in 1779, and the Derby in 1780. The Derby and Oaks "double" has been won 3 times; the "triple crown" (2,000 Guineas, Derby and St. Leger), 11 times.

Other important English flat-races are the Lincolnshire Handicap (1 m.), the City and Suburban Handicap (1½ m.) held at Epsom, the Coronation Cup (1½ m. 5 yd.) at Epsom, the Ascot Stakes (2 m.), the Royal Hunt Cup (7 f. 155 yd.), the Gold Cup (2½ m.) and the Alexandra Stakes (2½ m. 74 yd.) at Ascot; the Eclipse Stakes (1½ m.) at Sandown Park, the Steward's Cup (6 f.) and the Goodwood Cup (2 m. 5 f.) at Goodwood; the Ebor Handicap (1½ m.) and Gimcrack Stakes (6 f.) at York; the Cesarewitch Stakes (2½ m.) at Newmarket, and the November Handicap (1½ m.) at Manchester.

The Rules do not allow of any race less than 5 furlongs, and two races of at least 1 m. must be run at each meeting. Besides races for horses of a particular age, there are Weight-for-Age handicaps and Selling Races. In the former allowances are made for age and sex, and vary with each month of the year.

Racing under National Hunt Rules is held principally in the winter. Races are run over hurdles or fences, the latter being known as steeplechases. The two most important meetings are at Liverpool and Cheltenham; at the former (Aintree) the Grand National takes place over a distance of 4 m. 856 yd., the race being run twice round the course. The National Hunt Committee is the governing body. Very few trainers or jockeys engage in both branches of racing. Amateurs may ride under N.H. rules.

Pony-racing, with headquarters at Northolt Park, has recently come into considerable favour. The chief race is the Northolt Derby, run in June, value 21,000. The season is the same as for flat racing.

Horse Radish (*Cochlearia Armoracia*), a cultivated plant of the order Cruciferae. The thick root, which has a strong, pungent taste, is used for sauces, and in medicine as a stimulant.



Horsham, market town district of Sussex, England, 26 m. NW. of Brighton; with a fine Early English church, and a thriving trade in brewing and tanning. Christ's Hospital (popularly called the Blue Coat School) is in the neighbourhood. Horsham stone is the name given to a building material which is much used in Sussex. Pop. 21,000.

Horthy de Nagybánya, Miklós, ruler of Hungary since 1920; born at Kenderes, Eastern Hungary, of noble family; educated at the naval academy at Fiume; entered Austro-Hungarian navy, 1886; in World War captained successively the *Habsburg* and the *Novara*; severely wounded at Otranto, 1917. Became vice-admiral, 1918. On the collapse of the Communist Government in 1919, led counter-revolutionary forces into Budapest. Elected regent by the national assembly, he repulsed the ex-Empress Karl's attempts in 1921 to become king, and by a bill passed in 1937 he received all the rights and privileges of a king—a bill generally interpreted as diminishing the prospect of a Hapsburg restoration. (1868-).

Horticulture, or gardening, is the vegetables, fruits and ornamental plants in gardens. Success in horticulture depends upon the nature of the sub-soil, the best being a dry bed of clay overlapping sandstone. Seeds are deposited after thorough soil preparation by digging, draining and pulverisation, and if necessary nourishing by artificial matter. The best top-soil is a good loam mixed with humus.

Horus, son of Osiris, in Egyptian mythology, the sun-god, equivalent to the Greek Apollo.

Horwich, a town and urban district of Lancashire, England, 15 m. NW. of Manchester. Bleaching and cotton spinning are carried on. There are several coalpits in the vicinity of the town, and the L.M.S. have extensive locomotive works there. Pop. 15,700.

Hosea, a Hebrew prophet, a native of the contemporary of Isaiah. His book in the Bible, the first of the *Twelve Minor Prophets*, denounces Israel's sins against Jehovah, and tells the story of the prophet's own—perhaps symbolical—marriage.

Hosiery, a general name for knitted fabrics worked into underwear, especially socks and stockings. The hosiery trade is a serious rival to weaving, owing to the ease of production. In woollen goods elegant effects are obtained from long-fibred yarns worked in fancy colours. The enormous development of the artificial silk (rayon) industry in recent years has revolutionised the hosiery trade.

Hospital, an institution for the treatment of diseases and injuries, the training of doctors and nurses, and the prosecution of medical research. Hospitals are of ancient origin; there is record of them in India before the Christian era, and one was founded in Baghdad in A.D. 703. In London a leper hospital was erected in 1118, while St. Bartholomew's Hospital dates from 1123 and St. Thomas's from 1200.

There are now many great general hospitals

in London, as well as a large number of smaller institutions, both public and private, for the treatment of special diseases, while in the provinces the hospital system has been greatly developed, largely with the help of local municipal authorities. On the Continent and in the U.S.A. it is usual for hospitals to be subsidised and administered by the State or by municipalities. In England maintenance often depends upon voluntary contributions, and expenditure is in many cases in excess of income.

Originally hospitals were intended for the treatment of the poor, but to-day many patients of moderate means use them on payment of part of the cost of their treatment. King Edward's Hospital Fund, founded in 1897, has been of great financial advantage to the hospital movement. Valuable contributions are also made by the Hospital Saturday Fund, the Hospital Savings Association, and the Hospital Sunday Fund.

The largest hospital in Britain is the Royal Infirmary, Edinburgh, founded in 1730, and there are important hospitals with medical schools in most large provincial centres. The term hospital is also applied to certain schools, endowed or supported by voluntary subscriptions—e.g., Christ's Hospital, Horsham—and to certain institutions for pensioners, such as the Greenwich and Chelsea Hospitals.

Hospitallers, a religious brotherhood of the Middle Ages under vow to provide and care for the sick and wounded, originally in connection with pilgrimages and expeditions to Jerusalem; also called the Order of St. John of Jerusalem. The St. John Ambulance Association is in a sense a modern revival of the Order.

Host, a term for the consecrated bread in the Christian sacrament of the Eucharist or Lord's supper.

Hostage, a person left as a pledge or surety for the performance of the articles or conditions of a treaty. If the terms were observed, the hostages were returned, but in the event of violation they were put to death. The demanding of hostages was common in ancient mediæval warfare.

Hotchkiss Gun, an early form of machine gun invented by an American, Benjamin Hotchkiss (1826-1885).

Hotchpot Clause, a clause inserted in marriage settlements to ensure that any sum advanced from the portion to the younger children during the father's lifetime shall be taken into account in estimating the share they are to receive at his death.

Hotel, an inn, generally of the better class, which provides lodging and refreshment for travellers, and may be set up without licence unless excisable liquors are sold. A hotel proprietor is bound to supply the needs of anyone who applies to him unless the applicant is diseased or intoxicated. He may also retain the property of a client who fails to pay his account, and is liable for the loss of his customers' property to the value of £30, unless it can be proved that the customer was in fault.

Hotspur, a name given to Henry of Northumberland, killed at the Battle of Shrewsbury in 1403 when fighting against King Henry IV.

Hottentots, a name first applied by the negro inhabitants of the Cape of Good Hope, who, however, comprise two main tribes, the Khoikhoi and the Bushmen, in many respects dissimilar, but speaking languages characterised alike by harsh and clicking sounds, a circumstance which induced the incoming settlers to call them *Hottentots*, which means

in effect "jabberers"; they are still found in diminishing numbers, in the W. of South Africa.

Houdin, Jean Eugène Robert (called "Robert-Houdin"), French conjurer, born at Blois; for seven years from 1845 gave "soirées fantastiques"—first at the Palais-Royal, afterwards at the Passage de l'Opéra; wrote several works on his art. (1805-1871).

Houdini, Harry (real name Ehrich Weiss), American conjurer; son of a Hungarian-Jewish rabbi; was born at Appleton, Wisconsin; named himself after Houdin (q.v.), whom he afterwards came to surpass; did not succeed until removal to England, 1900, when he appeared at the Alhambra, London; exceeded all rivals in ability to escape from confinement; investigated and condemned spiritualism. (1871-1926).

Houdon, Jean-Antoine, an eminent French sculptor, born of humble parentage in Versailles. At 20 he won the *Priz de Rome*, and at Rome produced his great statue of St. Bruno. In 1805 he became professor at the Paris *École des Beaux-Arts*. He was unrivalled in portraiture, and executed statues of Rousseau, Voltaire, Diderot, Mirabeau, Washington, Napoleon and others. (1741-1828).

Houghton, Richard Monckton Milnes, Lord, poet and patron of letters, born of good family at Fryston Hall, Pontefract; graduated at Cambridge; entered Parliament as a Conservative, but subsequently went over to the other side, and in 1863 was raised to the peerage by Palmerston; was a man of varied interests, a traveller, leader of society, philanthropist, and above all the friend and patron of authors. (1809-1885).

Houghton, (William) Stanley, comic playwright, born at Ashton-on-Mersey, a Manchester cotton-broker, and dramatic critic to the *Manchester Guardian*. His first play was *The Dear Departed*, 1908. Among his later plays were *Marriages in the Making*, 1909; *The Younger Generation*, 1910; *Rinde Wakes* (the most famous), 1912; *The Perfect Cure*, 1913. (1881-1913).

Houghton-le-Spring, a township and urban district, 6 m. N.E. of Durham, England. It has collieries and iron-works. Pop. 10,500.

Hougomont, a village near Waterloo and the scene of most of the critical fighting during that famous battle. It was Wellington's success at Hougomont which led to the final victory.

Houndsditch, a street in the eastern part of the City of London, and a centre of the wholesale drapery trade; named from the ancient City ditch, a portion of which it covers.

Hounslow, a town of Middlesex, 10 m. S.W. of London; in the vicinity are an airport, barracks and the famous Hounslow Heath, once the resort of highwaymen; now part of Heston-Isleworth.

Hour, the twenty-fourth part of a day. In most countries twelve hours are counted from midnight to midday, and then twelve more to midnight, but in many European countries, and generally for air travel, a twenty-four hour numeration from midnight to midnight is employed. The hour is divided into 60 minutes. Before the coming of clocks the hour was measured by an hour-glass. (q.v.).

Hour-glass, a device for measuring time, consisting of two glass bulbs connected by a narrow neck, through which sand is allowed to pass at a fixed rate, the transfer of the sand from one bulb to the other occupying an hour. Hour-glasses are sometimes found fixed to pulpits in

old churches; a similar device, timed for three or four minutes, is in common kitchen use to mark the time required for boiling eggs.

Houri, a beautiful maiden whose embraces the Moslem hopes to enjoy in Paradise.

House, a building erected for human habitation as distinguished from one built for public purposes, religious or civil. It may range from a dwelling of a single room to a palace. The earliest human dwellings were probably caves, or erections built on piles on the border of lakes.

In Greece and Rome, houses were of unburnt brick coated sometimes with stucco, and consisted of several storeys, in Rome sometimes as many as six. In England, in the Dark Ages, houses were mainly of wood, but in the 13th Century stone was used.

In the 15th and 16th Centuries half-timbered houses were built, such as Speke Hall, near Liverpool. The character of the English house has varied with time, and in large towns the single-family house is largely giving way to the "flat," or set of rooms in a large dwelling intended for a number of households.

House, Col. Edward Mandell, American politician. After America's entry into the World War in 1917 he came to Europe to consult with the Allies on the adoption of co-operative measures, and acted as confidential adviser to President Wilson throughout the Peace Conference, completely dominating the President. His *Diaries* are an important source for post-war history. (1858-1938).

House Fly, a very common and widely-distributed dipterous insect, the *Musca domestica*. They have a sucking proboscis and lay their eggs in dung heaps. They infest houses in summer and are largely responsible, by polluting food, etc., for the spread of various diseases among mankind.



HOUSE FLY

Household, Royal, the corps of court officials in personal attendance on the King and the other members of the Royal Family. It is headed by the Lord Chamberlain, and includes, besides his special department, those of the Private Secretary, the Keeper of the Privy Purse, the Financial Secretary and the royal medical consultants. Many household offices, such as those of Bargemaster, or in Scotland (which has a separate Royal Household) Botanist and Historiographer, are nowadays merely honorary appointments. The best known of these is that of Poet Laureate.

Household Brigade, a body of troops consisting of the Royal Horse Guards, the 1st and 2nd Life Guards, and the Grenadier, Coldstream, Scots, Irish and Welsh Guards.

Houseleek (*Sempervivum tectorum*), a succulent plant of the natural order Crassulaceae, with purple, star-shaped flowers, found in Europe, Asia and Africa; in England sometimes planted on roofs of cottages to bind the slates. The leaves are fleshy and reproduction is by offsets.

Housing, became a social problem with the industrial revolution, when small villages grew rapidly into towns. The consequent planless erection of houses gave rise to overcrowding, congestion and insanitary conditions. Legislation on housing reform dates from the middle of the 19th Century, and in 1886 a Housing of the Working Classes Act first gave power to local authorities to acquire land for housing by compulsory purchase.

Actual town-planning did not receive attention until 1899, after which places such as Port Sunlight, Bournville and the Garden Cities of Letchworth and Hampstead led the way. One of the results of the World War was that the housing problem became acute, building having practically ceased for five years. Various Acts were passed requiring a certain standard of accommodation, and local housing authorities were required to submit housing schemes to the Ministry of Health. In order to encourage the resumption of private building, the Government offered a subsidy of £150 to £260 for houses built within 12 months. Other Acts and schemes followed, including the Addison Scheme, which produced 150,000 houses, and the Chamberlain Housing Act of 1923, which encouraged private enterprise, while the Wheatley Act of 1924 aimed at the production of working-class houses at an economic rent.

After the Housing Act of 1932, which ended subsidies, the rate of building declined. Meanwhile the core of the problem, new houses for those affected by slum clearance, remains unsolved, though some progress is being made by local authorities. The London County Council has tackled the problem with energy and imagination, and has covered several large suburban estates with houses offered at low rents. In 1933 a suggestion of the Moyne Committee that a National Housing Board, financed by a public loan with a government guarantee, should be set up, was rejected.

Housman, Alfred Edward, British poet. After a time in the civil service he became a professor at London, and later at Cambridge. In 1896 he produced his best-known volume of verse, *The Shropshire Lad*. (1859-1936).

Housman, Laurence, British author of preceding; writer of poetry, imaginative tales and a number of novels and plays, including *An Englishman's Love-Letters* (a novel) and *Little Plays of St. Francis*. (1865-).

Houston, capital city of Harris Co., Texas, U.S.A., head of the Buffalo Bayou navigation. It is an important railway centre, and has many manufactories and railway workshops. It was named after Samuel Houston, first President of Texas. Pop. 292,000.

Houston, Samuel, President of the Texas, Texan Republic, born in Virginia; was adopted by a Cherokee Indian, and rose from the rank of a common soldier to be Governor of Tennessee in 1827; as commander-in-chief in Texas he crushed the Mexicans, won the independence of Texas, and became the first President of the republic in 1836; subsequently represented Texas in the United States Senate; was elected governor and deposed in 1861 for opposing secession. (1793-1863).

Hove, a municipal borough in Sussex, England, immediately W. of Brighton; is, like the latter, a flourishing seaside resort. It includes Aldrington, Preston Rural, and parts of Patcham and West Blatchington. There are facilities for golf and tennis, and in the district fine downs and woods; also Hollingsbury Castle, a Roman encampment. Its proposed incorporation with Brighton is strongly opposed by the inhabitants. Pop. 55,000.

Howard (Family), one of the noblest of England's great families, descended from Sir William Howard, of East Wynch, near King's Lynn, Justice of Common Pleas under Edward I. His great-great-grandson, Sir Robert, married Margaret, daughter of the first "Mowbray," Duke of Norfolk, and since 1483 the ducal title of Norfolk has been held by the family. Other peerages now held by Howards descended from "Howard,"

Dukes of Norfolk, are the earldom of Ealingham; the earldom of Carlisle, bestowed, 1861, on a descendant, through "Baud Wille" of Naworth (1563-1640), of the fourth Duke; the earldom of Suffolk, separated, 1889, from the barony of Howard de Walden; held since 1745, with earldom of Berkshire, created 1620; the barony of Howard of Glossop, bestowed, 1869, on second son of thirteenth Duke; the viscountcy of Fitzalan of Derwent, bestowed, 1921, on third son of fourteenth Duke; the barony of Howard of Penrith, bestowed, 1930, on a descendant of the Earl of Arundel who was father of fifth Duke. William Howard, Viscount Stafford, victim of the Titus Oates "plot," was great-grandson of fourth Duke. The Earl of Wicklow and Baron Strathcona, though bearing the surname Howard, have no traceable connection with the foregoing.

Howard, Catherine, fifth wife of Henry Duke of Norfolk; was granddaughter of the Duke of Norfolk; was married to Henry in 1540 after his divorce from Anne of Cleves. Two years later she was found guilty of immoral conduct prior to her marriage, and was executed. (1520-1542).

Howard, John, a noted philanthropist, born at Hackney, London. His experience as a French prisoner of war and as sheriff of Bedfordshire roused him to attempt some reform of the abuses of prison life. He made a tour of the county jails of England, and the mass of information which he laid before the House of Commons in 1774 brought about the first prison reforms. He continued his visitations throughout the United Kingdom and the Continent. During 1785-1787 he made a tour of inspection through the principal lazarettos of Europe, visited plague-smitten cities, and voluntarily underwent the rigours of the quarantine system. He died at Kherson whilst on a journey to the East. He published at various times accounts of his journeys. (1727-1790).

Howe, Richard, Earl, admiral, born in London, son of an Irish viscount; first saw service under Anson against the Spaniards; distinguished himself during the Seven Years' War; in 1783 became First Lord of the Admiralty, and was created an earl. During the French War in 1793 he commanded the Channel Fleet, and gained "the glorious first of June" victory off Ushant. (1726-1799).

Howells, William Dean, a once very popular American novelist, the son of a journalist, born at Martin's Ferry, Ohio; adopted journalism as a profession, produced a popular *Life of Lincoln*, and was editor of the *Atlantic Monthly*, *Harper's Magazine* and the *Cosmopolitan*. His novels include *A Chance Acquaintance*, *A Foregone Conclusion*, *A Modern Instance* and *An Indian Summer*. (1837-1920).

Howitt, William, miscellaneous writer, who, with his equally talented wife, Mary Howitt (1799-1888) (née Botham), did much to popularise the rural life of England; born, a Quaker's son, in Heanor, Derbyshire; served his time as a carpenter, but soon drifted into literature, and made many tours for literary purposes; was a voluminous writer of histories, accounts of travel, tales and poems. Amongst these are *Rural Life in England*, *Visits to Remarkable Places*, *Homes and Haunts of the Poets*, etc. (1792-1879). His wife was the first to translate the fairy-tales of Hans Andersen.



CATHERINE HOWARD

Howitzer, a type of gun used in war made to throw a projectile at a high angle. It is accurate at long range and can be fired from concealed positions owing to the high trajectory of the shells.

Howrah, or **Haura**, a flourishing manufacturing town on the Hooghly, opposite Calcutta, with which it is connected by a floating bridge. Pop. 225,000.

Howth, a town and watering place on a tall promontory, the "Hill of Howth," on the N. side of Dublin Bay, 9 m. N.E. of Dublin. There are ruins of an ancient abbey, and a lighthouse. Pop. c. 5,000.

Hoxton, a populous district of E. Shoreditch, London within the borough of its golf-links. Cabinet making is largely carried on. Pop. c. 50,000.

Hoy, a steep, rocky islet in the Orkney group, about 1 m. SW. of Mainland or Pomona, remarkable for its huge cliffs.

Hoylake, watering-place in Cheshire, at the seaward end of Wirral Peninsula, 8 m. W. of Birkenhead; noted for its golf-links. Pop. 19,750.

Hradec Králové, a town of Czechoslovakia, formerly known as Könitzgratz (q.v.).

Hubert, St., Bishop of Liège and Maastricht, the patron-saint of huntsmen; was converted when hunting on Good Friday by a milk-white stag appearing in the forest of Ardennes with a crucifix between its horns; generally represented in art as a hunter kneeling to a crucifix borne by a stag. (656-728).

Huckleberry (*Gaylussacia*), a genus of 40 species of shrubs of the order Ericaceae, found in America. The name is also sometimes given (the blue Huckleberry) to the *Vaccinium pennsylvanicum*, another N. American species of Ericaceae. See also **Whortleberry**.

Hucknall, formerly called Hucknall Torkard, a town in Nottinghamshire, England, 8 m. from Nottingham. The Torkard family were once the lords of Hucknall. The Church of St. Mary contains the vault of the Byron family, and the poet is buried there. There are extensive collieries in the vicinity, and manufactures of cigars, hosiery, etc. Pop. 17,800.

HUCKLEBERRY
(*Gaylussacia resinosa*)

Huddersfield, a manufacturing town in the W. Riding of Yorkshire, England, in a coal district on the Colne, 36 m. N.E. of Manchester; is substantially built, and is the northern centre of the "fancy trade" and woollen goods; cotton, silk and machine factories and iron-founding are also carried on on a large scale. Pop. 113,500.

Hudson, in New York State, one of the American rivers, rises amid the Adirondack Mts., and from Glen's Fall flows S. to New York Bay, having a course of 350 m.; is navigable for steam-boats as far as Albany, 145 m. from its mouth.

Hudson, Henry, English navigator; made three unsuccessful efforts to discover a north-east passage in the Arctic, then went north-westward, and reached the river, strait and bay which bear his name. His sailors in his last expedition in 1611 mutinied, set him and eight others adrift in an open boat, and his exact fate was never ascertained.

Hudson, William Henry, English author, born in Argentina, where he spent his early life, coming to England in 1869; of his many books on Nature and bird-

life, the best known are *Birds and Man*, *Afoot in England* and *A Naturalist in La Plata*; a memorial, by the sculptor Jacob Epstein, erected to him in Hyde Park, London, after his death, was the subject of considerable artistic controversy. "Rima," the bird-woman, the central figure of the memorial, is the sculptor's conception of a character in Hudson's *Green Mansions*. (1841-1922).

Hudson Bay, a great inland sea in Canada, 850 m. long and 600 m. wide, communicating with the Atlantic through the Hudson Strait and with the Arctic through the Foxe Channel, Foxe Basin, Fury and Hecla Strait and the Gulf of Boothia. It is ice-bound for many months in the year, but a few ports, especially Churchill, the terminus of a railway serving the northern parts of Manitoba, are used when the Bay is open.

Hudson's Bay Company, an English trading company chartered in 1670. It had a monopoly of the trade throughout that part of N. America whose rivers flow into Hudson Bay. In 1870 its governing authority was transferred to the Crown. It is now a limited liability company, and still has a large trade in furs. Over a hundred of the company's steamers were sunk by German submarines during the World War. Its headquarters are in London, and it has large depôts at Winnipeg and other Canadian towns.

Hué, capital of the French protectorate above its mouth; is strongly fortified with walls and a citadel. Pop. 34,000.

Huelva, a seaport in Spain, 68 m. SW. of the Odiel and Tinto; fisheries and the export of copper, manganese, quicksilver and wine are the chief industries. It is capital of a province of the same name in Andalusia. Area (prov.) 3,900 sq. m. Pop. (prov.) 365,000; (town) 50,340.

Huesca, an interesting old Spanish town, 68 m. NE. of Saragossa; has picturesque old churches, a university, and a palace; manufactures linen and leather; capital of a province of the same name in Aragon, bordering on the French frontier. Area (prov.) 5,800 sq. m. Pop. (prov.) 240,000; (town) 15,000.

Hugh Capet, first king of the Capetson of Hugh Capet, Count of Paris; proclaimed king in 987. His reign was troubled by the revolt of the party that had raised him to the throne, and who refused to own his supremacy. (946-996).

Hughenden, a parish in Buckinghamshire, England, in the Chiltern district, 2 m. N. of High Wycombe; is interesting as the seat of Hughenden Manor, for many years the residence of Benjamin Disraeli, Earl of Beaconsfield. Pop. c. 2,000.

Hughes, Thomas, English author born at Rugby in Dr. Arnold's time, graduated at Oxford, and was called to the Bar in 1848. His famous story of Rugby school life, *Tom Brown's School-days*, was published in 1856, and was followed by *Tom Brown at Oxford* and other stories and biographies. He entered Parliament in 1865, and in 1882 became a Court County Judge. Throughout his life he was interested in social questions. (1822-1898).

Hughes, William Morris, Australian politician. The son of a Welsh carpenter, he emigrated to Queensland at the age of 20, and organised the Sydney dockers into a union. In 1894 he became a Labour member of the New South Wales legislature, and in 1904 Minister of External Affairs in Australia's first Labour Government. He was again in office in 1908, 1910 and 1914, and in

1915 he became Prime Minister, attended the Peace Conference in 1918, and was defeated by Bruce in 1923. In 1934 he was Minister for Health in the Lyons Government, and since 1936 Minister for Repatriation. (1864-).

Hugo, Victor-Marie, French poet and boy accompanied Joseph Bonaparte's army through the campaigns in Italy and Spain. At 14 he produced a tragedy. In 1827 was published *Cromwell*, which placed him at the head of the Romanticists, and in *Hernani* (1830) the departure from the old classic novels was more emphatically asserted. In a quick succession of dramas, novels, essays and poems, he revealed himself one of the most potent masters of the French language. He was admitted to the French Academy, and in 1845 was created a peer. He engaged in politics first as a Royalist and next as a Democrat, but fled to Brussels after the *coup d'état*. Subsequently he established himself in Jersey and then in Guernsey, where he wrote his great novels *Les Misérables*, *Les Travailleurs de la Mer*, etc. He returned to France in 1870, and became a senator. (1802-1885).



VICTOR HUGO

Huguenots, a name given to the Presumed to be a corruption of the German word *eingesessen*, i.e., sworn confederates, the history of whom and their struggles and persecutions fill a large chapter in the history of France. Their cause was espoused at first by many of the nobles and the best families in the country, but throughout was in disfavour at Court.

Hull, or Kingston-upon-Hull, a flourishing Yorkshire, England, at the junction of the Hull with the Humber, 42 m. SE. of York; is an old town, and has many interesting churches, statues and public buildings; is the third port of the kingdom, has immense docks, is the principal outlet for the woollen and cotton goods of the Midlands, and does a great trade with the Baltic and Germany; has flourishing shipbuilding yards, rope and canvas factories, sugar refineries, oil-mills, etc., and is an important centre of the east coast fisheries. Pop. 313,500.

Hull, a seaport and capital of Ottawa Co., Quebec, Canada. A suspension bridge over the Chaudière Falls connects it with Ottawa. It has an extensive lumber trade. Pop. 30,000.

Hulse, John, founder of the Hulsean Lectures; born at Middlewich, Cheshire; educated at St. John's College, Cambridge; bequeathed his Cheshire properties to his university for purposes of which the Lectures—now four annually—formed part. The trust was reorganised in 1860, a Hulsean professor being appointed. (1708-1790).

Humber, an estuary of the E. coast of England, and part of the boundary of Yorkshire and Lincolnshire. It is formed by the junction of the Ra. Ouse and Trent, 8 m. E. of Goole, and empties into the North Sea S. of Spurn Head. It is navigable to Hull by large ships. The Humber and its tributaries drain Yorkshire, Nottinghamshire, Leicestershire and Lincolnshire.

Humbert I., King of Italy, son of Victor Emmanuel I., whom he succeeded in 1878; took while crown prince an active part in the movement for Italian unity, and distinguished himself by his bravery. (1844-1900).

Humble Bee, or **Bumble Bee**, a member of the genus *Bombus* of the Bee family, of social, wasp-like habit. They are less prolific than the domesticated bee, and frequently nest in stones or soil.

Humboldt, **Friedrich Heinrich Alex., Baron von**, traveller and naturalist, born in Berlin; devoted his life to the study of nature in all its departments, travelling all over the Continent, and in 1800, with Aimé Bonpland for companion, visiting S. America, traversing the Orinoco, and surveying and mapping out in the course of five years Venezuela, Colombia, Ecuador, Peru and Mexico, the results of which he published in his *Travels*. His chief work is the *Kosmos*, or an account of the visible universe. (1769-1859).

Humboldt, **Karl Wilhelm, Baron von**, an eminent statesman and philologist, born in Potsdam, elder brother of the preceding; represented Prussia at Rome and Vienna, but devoted himself chiefly to literary and scientific pursuits; wrote on politics and aesthetics also. (1767-1835).

Hume, **David**, philosopher and historian, born in Edinburgh, the younger son of a Berwickshire laird; after trial of law and mercantile life gave himself up to study and speculation; spent much of his life in France, and fraternised with the sceptical philosophers and encyclopedists there; his chief works, *Treatise on Human Nature* (1739), *Essays* (1741-1742), *Principles of Morals* (1751) and *History of England* (1754-1761). His philosophy was sceptical, and Kant's positive philosophy was largely a reaction against it. His principal importance was as a political theorist and ethicist. (1711-1776).

Hume, **Joseph**, a politician, born in Montrose; studied medicine, and served as a surgeon under the East India Company in India, made his fortune, and came home; adopted the political principles of Bentham and entered Parliament, of which he continued a prominent member till his death; he was an ardent reformer, and lived to see many of the measures he advocated crowned with success. (1777-1855).

Humerus, a term in physiology for the bone of the upper arm, or in quadrupeds of the upper fore-leg.

Humidity. See *Hygrometer*.

Humming-

Birds, a family of birds of which there are 500 species, many of them very small. The humming is made by the vibration of their wings. They have long, slender bills, extensible tongues, with which they search flowers for the insects they eat, and bright metallic plumage.



HUMMING-BIRD

Humperdinck, **Engelbert**, German composer; born at Siesburg, near Bonn; studied at Cologne and Munich; was companion of Wagner in Italy during his last two years; while engaged in Hoch Conservatoire, Frankfurt, produced his masterpiece, *Hänsel und Gretel*, founded on folk-music; composed five other operas; from 1900 he was director of the Meisterschule, Berlin. (1854-1921).

Humphreys, **Mrs. W. Desmond**, English novelist, born in Inverness-shire, *née* Gollan; wrote under the pseudonym of "Rita." A most prolific and popular writer, her best-known novels include *Kitty the Beg*, *The Sinner*, *The Sin of*

Jasper Standish, *The Naughty Grandfather*, *Diana of the Ephraims*, etc., most of which had large sales but did not benefit her much financially. Her chosen theme was the sin and scandal of the smart set, and one of her most successful books was that entitled *Souls*, being founded on the supposed extravagances of that coterie. Published her autobiography under the title *Recollections of a Literary Life*. (1858-1938).

Hunan, a province of S. China in the basin of the Yangtse-Kiang, which forms its northern boundary. The northern portion is a fertile plain, and the southern is rugged. It produces coal, white marble, and among its crops are rice and tea. Area 83,400 sq. m. Pop. 4,500,000.

Hunchback, a condition in man in which the spinal column is deformed. It is generally due to Pott's disease or tuberculous ulceration, though a blow or fall may originate it. The vertebrae of the spine may gradually deteriorate and finally collapse completely. The condition, when it occurs in early childhood, may sometimes be cured or alleviated by the use of a carriage in which the patient can lie full length. Occasionally an operation is successful, and is often necessary when compression of the spinal cord is indicated.

Hundred, an ancient division of a county, possibly in origin the area occupied by a hundred families. It was formerly an administrative unit, but is now of no practical importance. In a few counties other names, such as *rape*, are found for a similar area.

Hundred Days, the name given to Napoleon's return from Elba and his abdication, from March 2 to June 22, 1815, after Waterloo.

Hundred Years' War, a struggle between England and France which began in 1338, when Edward III. claimed the throne of France. After the great English victories at Crécy and Poitiers, peace was made in 1360 at Bretigny, but the war was renewed in 1367, and by 1380 the English had lost most of the ground they had won in France. War was resumed in 1403, and assumed new significance when Henry V. claimed the French throne. He won the Battle of Agincourt, 1415, conquered Normandy, and by the Treaty of Troyes was recognised as Regent and future King of France. The turning point of the war occurred when Joan of Arc arrived to lead the French army. The struggle ended in 1452, England having lost all France except Calais.

Hungary, until 1918 part of the Austro-Hungarian Empire, formerly included Transylvania, Croatia and Slavonia, but after the World War was restricted to the Magyar territory proper, Czechoslovakia, Rumania and Yugoslavia receiving large areas of the old Hungary. In theory it is now a kingdom ruled by a Regent, but has never since 1918 had a King. (See *Horthy de Nagybányas*).

It is very fertile, and 50 per cent. of the population are employed in agriculture, producing wheat, maize, rye, barley, potatoes, oats and sugar beet. Other products include tobacco, saffron, hemp, flax, fruit (especially grapes) and cotton. Tokay wine is produced in the N. and near Lake Balaton.

Other industries are milling, distilling and textile manufactures. Rock-salt and precious metals are found in the Carpathian foothills. The fisheries on the Danube, Theiss and Lake Balaton are important. The chief rivers which water the great plain which comprises the greater part of the country are the Danube, Theiss and Drava. Its area is 35,875 sq. m., while the population is 8,690,000, 92 per cent. speaking Magyar and

over 6 per cent. German, the residue being Slovaks, Croats, etc.

Communications include some 6,000 m. of railways, some electric, several air lines, and some shipping on the Danube. All religions are tolerated, but 45 per cent. of the population are Roman Catholic and 2 per cent. Evangelicals. Education is free; there are four universities, Budapest, Szeged, Pecs, Debrecen. The chief towns are Budapest, the capital, Szeged, Pecs, Debrecen and Kocsmet.

Huns, The, a barbarian people of Mongolian origin who invaded Europe from the shores of the Caspian Sea in two waves, the first in the 4th Century, and the second in the 5th Century, ultimately under Attila, when the main body of them was driven back and dispersed. They have been described as a beardless race with broad shoulders, flat noses, and small black eyes.

Hunstanton, a parish and seaside resort in Norfolk, England, 17 m. N.E. of King's Lynn. St. Edmund the Martyr landed here when coming to receive the crown of East Anglia. It has good sands and safe bathing, sea-fishing, and an 18-hole golf course. Pop. 3,100.

Hunt, Leigh, essayist and poet; educated at Christ's Hospital, he was of the Cockney school, a friend of Keats and Shelley; edited the *Examiner*, a Radical organ; thriftless, and always in financial embarrassment, though finally he had a fair pension; lived near Carlyle, who styled his house a "poetical tinkerdome"; Carlyle soon tired of him, though he was always ready to help him when in need. Dickens's "Skimpole" is said to have been based upon him. (1784-1859).

Hunt, William Holman, painter, born in London; became a pupil of Rossetti, and joined the Pre-Raphaelite movement. He began with "worldly subjects," but soon, under Rossetti's influence, "rose into the spiritual passion which first expressed itself in his 'Light of the World,'" his famous painting now in St. Paul's Cathedral. Other works in this spirit are "The Scape-Goat," "The Finding of Christ in the Temple," "The Shadow of Death," "The Triumph of the Innocents" and "The Strayed Sheep." (1827-1910).

Hunter, John, anatomist and surgeon, born near East Kilbride, Lanarkshire; started practice as a surgeon in London, became surgeon to St. George's Hospital, and at length to the king; was distinguished for his operations in the cure of aneurism. He built a museum, in which he collected an immense number of specimens illustrative of subjects of medical study, which, after his death, was purchased by the Government. (1728-1793).

Hunter's Moon, the full moon next moon, following the Autumn Equinox. It rises an hour after sunset during the middle of October.

Huntingdon, the county town of Huntingdonshire, England, stands on the left bank of the R. Ouse, 59 m. N. of London; has breweries, brick-works and nurseries, and was the birthplace of Oliver Cromwell. Pop. 4,700.

Huntingdon, Countess of, an eccentric peeress who, at first a Methodist, founded a small religious body known as the "Countess of Huntingdon's Connexion," which still exists, but is now closely allied with the Congregationalists. (1707-1791).

Huntingdonshire, a small English county, N.E. of the Fen district, laid out for most part in pasture and dairy land; many Roman remains are to be found scattered about in it. Area 386 sq. m. Pop. 56,300.

Huntingtower, a village in Perth-shire, Scotland, whose ancient castle, formerly Ruthven Castle, was the place of confinement of James VI. and other conspirators after the "Raid of Ruthven" 1582. It is now a national monument.

Huntly, Aberdeenshire, Scotland, a modern town, 140 m. N. of Edinburgh at the confluence of the Rs. Bogle and Deveron. The rivers afford good trout-fishing. Has woollen and hosiery factories. Pop. 4,500.

Hupei, a central province of China with an area of 71,500 sq. m. It is largely agricultural; some mining is carried on. Capital, Wuchang. Pop. 28,600,400.

Hurlingham, a district in Fulham, SW. London, famous as the headquarters of the Hurlingham Club, where polo is played.

Huron, a lake in N. America, between Canada (Ontario) and the U.S.A. (Michigan), 263 m. long and 70 m. broad, the second largest of the five in the St. Lawrence basin, containing numerous islands.

Hurons, The, a tribe of Red Indians of the Iroquois family, now extinct, who were outside the Iroquois confederacy; gave their name to the lake (above).

Hurricane, a storm of wind, in strictness referring to those that are common in the West Indies, but now applied to any similar aerial disturbance, especially in the tropics. In the East the name more commonly used is typhoon.

Hurst Castle, a fortress in Hampshire, England, near Lymington, erected by Henry VIII. to defend the channel between the mainland and the Isle of Wight. Charles I. was confined in it in 1648. Pop. of village 1,600.

Hurstmonceux, a village in Sussex, 15 m. NW. of

Hastings; the only district in Great Britain where trug baskets are made. Hurstmonceux castle, built in reign of Henry VI. by Sir Roger de Fiennes, still stands. Pop. 1,200.



HURSTMONCEUX CASTLE

Husband and Wife. The modern law of husband and wife has been developed piecemeal through a series of changes always tending to the greater freedom of the married woman, while yet protecting her proprietary interests. A husband must maintain his wife, provided she is not guilty of desertion or adultery, for the duration of the marriage, and also after its dissolution if it be at her instance; in the latter event, the wife or former wife, as the case may be, can usually secure an order from the courts for a sum representing one third of the husband's income. The wife is also under a reciprocal obligation to maintain her husband if she has means. In respect of the guardianship and custody of their legitimate children, complete equality of right exists between the mother and father (Guardianship of Infants Act, 1925); and in a divorce case the sole factor in determining to which parent the control shall go is the children's welfare.

A wife is as free to enter into contracts as an unmarried woman. She can now acquire, hold and dispose of any kind of property; render herself and be rendered liable in respect of any contract or tort (actionable wrong); and be subject to the law of bankruptcy and the enforcement of judgment as if she were unmarried; and her separate property—i.e.,

what, before 1935, was said to be held for the wife's "separate use"—as the result of an Act passed in that year now belongs to the wife absolutely and regardless of "restraints on anticipation"—though the court can bind her interest for her benefit and with her consent.

Her property is also liable for her antenuptial debts. Money saved by a wife from a housekeeping allowance made by the husband belongs to the husband. Spouses can contract with each other, but may not sue each other in tort, with the exception that a wife may sue her husband for the protection of her separate property. The spouses can initiate criminal proceedings against each other for the protection of their respective persons, but not for the protection of their property unless they are not living together. Before 1935 the husband was liable for the wife's antenuptial debts to the extent of any property he might have acquired through her; but the Act of that year abolishes his liability for such debts, though he remains liable for his wife's necessities. The presumption that a wife committing a crime in the presence of her husband is acting under his coercion, and therefore is under no criminal liability, no longer holds (Criminal Justice Administration Act, 1925). The profits of the wife who carries on a separate business from her husband while living with him are in income-tax law deemed to be the husband's profits, and he also is liable for tax; and though he can apply for a separate assessment, yet even then in the last resort his property is liable.

Huss, John, a Bohemian church reformer; was a disciple of Wycliff, and did much to propagate his teaching, in consequence of which he was summoned in 1414 to answer for himself before the Council of Constance; went under safe-conduct from the emperor, but despite this was imprisoned; on his refusal to recant he was condemned to the stake and burnt. (c. 1370-1415).

Hussar, a soldier of the hussar regiments in the British army as light dragoons. The first British Hussar regiment was the 7th (now the Queen's Own) Hussars. Hussars were originally light horsemen of the Hungarian army. There are now nine regiments in the British army, most of which are being mechanised as armoured-car or light-tank units. Many of the regiments performed garrison duty in India and elsewhere during the World War as cavalry, while others rendered valuable patrol service in France in addition to the winning of distinctions in trench warfare.

Hussein, Ibn Ali, King of the Hejaz, who in 1916 proclaimed the independence of Arabia and co-operated with the Allies in raising Arab troops to fight the Turks. In 1924 he abdicated after an unsuccessful war against the Sultan of Nejd. Abdullah, Emir of Transjordan, is his son, as was also Faisal, late and first King of Iraq. (1856-1931).

Hussein, Kamil, Sultan of Egypt, who on the death of the Khedive Abbas Hilmi in 1914 was proclaimed Sultan, and remained at the head of affairs till his death. (1853-1917).

Hussites, followers of John Huss (q.v.). After his death his supporters took up arms under the leadership of John Ziska, and captured Prague. Later they split into a moderate party (Calixtines) and an extreme party (Taborites), the former eventually gaining the upper hand. In 1620 the Hussite creed was prohibited in Bohemia.

Hutchinson, Colonel, Puritan leader and republican, and a prominent actor in the Puritan revolt; signed the death-warrant of Charles I., but broke partnership with Cromwell when he assumed sovereign power, and refused to be reconciled to the Protector. (1616-1664).

Hutten, Ulrich von, a zealous humanist and reformer, born in the castle of Steckelberg, in Hesse, of an ancient and noble family; allied himself as a scholar with Erasmus, and then with Luther as a man; entered heart and soul into the Reformation of the latter and broke with the former, and by his writings did much, amid many perils, to advance the cause of Protestantism in Germany. (1488-1523).

Hutton, Leonard, English cricketer, playing for Yorkshire and in Test Matches for England against Australia; first played in county cricket in 1934; scored 1,108 runs in 1936 and in August 1938 scored 361 runs against Australia, beating Don Bradman's record. (1917-).

Huxley, Aldous Leonard, poet and novelist; third son of Leonard Huxley, and grandson of Thomas Henry Huxley; educated at Eton and at Balliol College, Oxford. Has produced many very popular novels and essays, especially *Anlie Hay* (1923), *Point Counter Point* (1928), *Brave New World* (1932) and *Ends and Means* (1937); his play, *The World of Light*, has been successfully staged. (1894-).

Huxley, Julian, British scientist, grandson of T. H. Huxley; professor of Zoology at King's College, London, 1927-1935; Fullerton Professor of Physiology in the Royal Institution, 1926-1929; Secretary of Zoological Society, 1935. Has written *Essays of a Biologist*, *What Dare I think?* and other scientific and popular works. (1887-).

Huxley, Thomas Henry, eminent natural historian, born at Ealing, Middlesex; professor in the Royal School of Mines, Royal College of Surgeons and Royal Institution; distinguished by his studies and discoveries in different sections of the animal kingdom, in morphology and palaeontology; a zealous advocate of evolution, in particular the views of Darwin, and a champion of science against the orthodoxy of the Church; president of the British Association at Liverpool in 1870; author of *Man's Place in Nature* and many scientific essays. (1825-1895).

Hwang-ho, or **Yellow R.**, a river of China. It rises in Tibet about 14,000 ft. above sea-level, traverses the Kansu Province; separates the provinces of Shensi and Shansi; crosses Shantung Province and empties into the Gulf of Pe-chi-li. Its chief tributary is the Wei-ho. It breaks its banks from time to time, floods immense areas, and has changed its course several times. During the Sino-Japanese hostilities in 1933 the banks were broken and immense tracts of land flooded, fighting in the provinces concerned being suspended.

Hyacinth, the name of a genus of plants of the order Liliaceae, comprising some thirty species mostly native to the Mediterranean and Africa. In Britain a number of species are grown as garden plants, the chief varieties being Bedding or Exhibition Hyacinths with flowers in solid candles of colour, Miniature Hyacinths and Roman Hyacinths. The well-known Bluebell or Wild Hyacinth (*Scilla festalis*) of English woodlands is another species of the same order.

Hyæna, a group of three carnivorous mammals found in Africa and Asia. They are carrion-eaters, with powerful teeth and jaws, cat-like and covered with coarse, shaggy fur, and utter a peculiar laugh-like howl. Remains of extinct allied species linking the living hyænas with the civet-cats



STRIPED HYÆNA

have been found in Europe, including Britain. The Striped (*Hyena striata*) and the Brown (*H. brunnea*) are the chief living species.

Hybla, name of three cities in Sicily in classical times, from one of which was obtained a honey (Hyblaean honey) in great repute among the ancients.

Hybrid, the offspring of two organisms belonging to different species. They are usually sterile, as in the mule, a hybrid between the stallion and the donkey or zebra. A hybrid between two varieties of one species—e.g., of dogs—is called a mongrel, and mongrels are often particularly fertile. With the exception of the mule, hybrids are of little economic value. Apparently only closely allied species, or occasionally genera, can produce hybrids.

Hydaspes, Indian river, a tributary of the Indus, now known as the Jhelum; on its banks in 327 B.C. was fought a great battle between Alexander the Great and an Indian ruler, Porus; after his victory Alexander founded beside it a town called Bucephala after his horse, Bucephalus, which died in the neighbourhood.

Hyde, a municipal borough and market town, Cheshire, England, on the R. Tame, 7½ m. from Manchester. The town owes its rise entirely to the cotton trade. It has extensive weaving and spinning factories, important engineering works and coalfields. Pop. 32,000.

Hyde, Douglas, Irish poet, littérateur and first President of Éire; as founder, and from 1893 till 1915 president, of the Gaelic League, initiated the movement for the revival of Irish as a living language; professor of Irish in the National University, 1909-1932; is affectionately known in his own land as An Craoibhin Aoibhinn; has written and edited many works on ancient Celtic literature; was chosen president by agreement between the Irish political parties in 1938. (1860-).

Hyde Park, a public park in London, famous for its political gatherings. Originally the property of Westminster Abbey, it passed to the Crown in 1535 and was opened to the public in 1670.

Hyderabad (also called the Nizam's Dominions), is the largest native State of India (82,700 sq. m. Pop. 14,500,000), in the Deccan. It produces cotton, oil seeds, sugar cane and rice; the capital is Hyderabad, a large city (Pop. 467,000), 6 m. in circumference, a Mohammedan centre, though the majority of the people of the State are Hindus. Another Indian city of the same name is in Sind (Pop. 82,000), near the apex of the Indus delta, and has manufactures of silks, pottery and lacquer ware.

Hydra, The Lernaean, a fabulous monster with a number of heads, that grew on again as often as they were chopped off, the destruction of which was one of the twelve labours of Hercules.

Hydrangea, a genus of some 25 species of shrubs or herbs of the

natural order Saxifragaceae, native to Asia and America. The common garden hydrangea (*H. hortensis*) comes from China, and was introduced into Great Britain in 1790. It produces brightly-coloured blue or red flowers according to the dressing of the soil (blue in a soil free of lime by watering with a solution of alum).

Hydrate, a term in chemistry denoting the crystalline substances obtained by dissolving certain substances in water and then evaporating the water.



GARDEN HYDRANGEA

Chlorine gas, for example, if dissolved in water and the solution cooled to 0° C., deposits yellow crystals of chlorine hydrate.

Hydraulic Press, a machine used for pressing bales of textiles, bending plates of metal, etc., invented in 1785 by Joseph Bramah; it operates by the use of hydraulic energy originated by a force-pump and transmitted to a ram.

Hydraulics, or **Hydromechanics**, that part of the science of hydrostatics (q.v.) concerned with the principles of machinery worked by utilising the kinetic energy of water.

Hydrocarbons are substances consisting of carbon and hydrogen only. They are of many different types, among the most important being the paraffins, the olefines, the acetylenes, the cycloparaffins, polymethylenes, or cyclanes, the benzene hydrocarbons, and the polycyclic hydrocarbons such as naphthalene and anthracene. Naphthenes are cycloparaffins.

The principal sources of hydrocarbons are: (1) the natural deposits of petroleum, and (2) the tar obtained during the manufacture of coal-gas. Petroleum was probably formed by the decay of microscopic marine life. It varies considerably in composition. Pennsylvanian oil consists mainly of mixtures of paraffins, while the Dutch East Indian oil contains large quantities of benzene and other cyclic hydrocarbons, and the Russian a high proportion of naphthenes. The paraffins (q.v.) are characterised by their comparative lack of chemical activity, and will form derivative compounds only by the replacement of some of their hydrogen atoms by other atoms or groups of atoms; they are said to be "saturated." The olefines and acetylenes, on the other hand, are reactive and "unsaturated," and will form derivatives not merely by replacement or "substitution," but by direct addition; thus the olefine C₂H₄, ethylene, will combine directly with bromine to form an "addition compound," ethylene dibromide C₂H₄Br₂.

The uses of hydrocarbons are both numerous and important. From petroleum by regulated distillation are obtained petrol, paraffin oil, lubricating oil, heavy fuel oil, vaseline, paraffin wax and petroleum pitch. Benzene is used as a motor fuel, but is also the starting-point in the manufacture of many dyes, drugs, perfumes, explosives, etc.; toluene, a compound related to benzene and found like the latter in coal-tar, furnishes the high explosive T.N.T. (trinitrotoluene). Naphthalene is the raw material for the manufacture of indigo; and low-boiling point hydrocarbons, coming off as "natural gas" in the American oil-fields, are a source of heat.

Hydrocephalus, the name of three diseases of the brain: (1) acute hydrocephalus or tubercular meningitis due to tubercular brain inflammation; (2) chronic hydrocephalus, a form of dropsy in the skull; (3) spurious hydrocephalus, a form of debility due to a poor blood supply to the brain.

Hydrochloric Acid, or **Hydrogen Chloride**, a colourless gas formed of hydrogen and chlorine readily soluble in water forming a strongly acid solution, commonly called "spirits of salts." It may be obtained by heating common salt with sulphuric acid. It is largely used as a cleaning agent.

Hydrocyanic Acid, or **Prussic Acid**, is prepared by the action of sulphuric acid on potassium cyanide, among other methods. When pure it is a colourless liquid with the odour of bitter almonds. It is extremely poisonous. Potassium cyanide, a salt of hydrocyanic acid, is used as a gold solvent.

Hydrodynamics is that branch of physics which deals with the flow of fluids (liquids or gases). The flow of a fluid is retarded by virtue of that property of the fluid, which is called its viscosity. At low speeds the flow of a fluid is of the type known as streamline flow, and the fluid moves steadily without the formation of eddies. As the speed of flow is increased, turbulence suddenly sets in at a particular speed, which depends upon the nature of the fluid and upon the shape and size of the channel through which the flow takes place. For streamline flow the viscosity is important in determining the rate of flow, but if the flow is turbulent the viscosity has little influence on the speed. In a wide channel turbulence sets in at a comparatively low speed, and a stream of highly viscous lava flows at a speed comparable with that of water. By streamlining a body moving in a fluid the amount of turbulence produced by it is decreased, and the resistance to the motion of the body is reduced.

Hydrogen, a chemical, non-metallic element, and the lightest of all known substances, 1 litre weighing only 0.0896 gm. at a temperature of 0°C., and a pressure of 760 mm. of mercury. Symbol H; atomic number 1; atomic weight 1.0078. Hydrogen was discovered in 1766 by Henry Cavendish, who called it "inflammable air"; it was named hydrogen—i.e. (Greek), "water-producer"—by Lavoisier, on account of the fact that when it is burned in air or oxygen it yields water.

Free hydrogen occurs in vast quantities in the atmosphere of the sun and other stars, and minute traces have been detected in the air; but on the earth hydrogen occurs mainly as its oxide, water (H_2O), of which it forms one-ninth by weight. Petroleum is for the most part a mixture of hydrocarbons (q.v.), while hydrogen is an essential constituent of all living matter and of most organic remains, such as coal.

In the laboratory, hydrogen is usually prepared by dissolving zinc in dilute sulphuric acid, though a variety of other methods is available and the gas is a cheap commercial product. Pure hydrogen is conveniently obtained by the electrolysis of a pure dilute aqueous solution of barium hydroxide, when hydrogen is evolved at the negative electrode (cathode), since it is an electropositive element; the only impurity is moisture, which can be removed by allowing the gas to stand in contact with an efficient drying-agent such as phosphorus pentoxide.

Hydrogen is a colourless, odourless and tasteless gas, non-poisonous but incapable of supporting life, and practically insoluble in water. It can be liquefied (boiling-point, $-252.5^\circ C.$) and solidified (melting-point, $-237^\circ C.$); liquid hydrogen has a lower density (0.07) than any other liquid or solid. It is comparatively reactive towards non-metals; thus a mixture of hydrogen and oxygen, or hydrogen and chlorine, will explode violently if ignited, forming water in the first case and hydrogen chloride (hydrochloric acid gas) in the second.

Compounds of hydrogen with metals are known, but in general present little importance. Hydrogen is present in all acids, the capability of which to yield a proton (hydrogen ion) to a molecule of water (H_2O) to form the hydroxonium ion, H_3O^+ , is the essence of their acidic nature; those properties which are usually described as "acidic" are actually properties of the hydroxonium ion. Owing to its great affinity for oxygen, hydrogen is a good reducing agent; thus the oxides of many metals are reduced to the metallic state when heated in a current of hydrogen, the hydrogen itself being oxidised to water—e.g., PbO (lead oxide) + $H_2 = Pb + H_2O$.

The chief uses of hydrogen are: (1) in the hydrogenation of coal, (2) in the synthesis of ammonia by the Haber and Claude processes, (3) in the hardening of oils—i.e., the conversion of liquid oils into solid fats, (4) as the lifting gas in lighter-than-air craft—though here it is replaced where possible by the more expensive but completely non-inflammable helium, and (5) in the oxyhydrogen flame. It is transported compressed in steel cylinders, or, when large quantities are required, in the form of liquid ammonia, which can easily be split up into nitrogen and hydrogen.

Hydrogen Peroxide, a colourless, syrupy liquid (formula H_2O_2), made by acting upon barium peroxide with phosphoric acid, and always marketed in aqueous solution. These solutions are labelled "10 volume," "20 volume," "130 volume," etc., in reference to the volume of oxygen obtained from one volume of the solution when the hydrogen peroxide in it is decomposed; thus 1 litre of 20 vol. hydrogen peroxide solution would yield 20 litres of oxygen. Hydrogen peroxide is a powerful oxidising agent and a useful antiseptic.

Hydrography, a term for the study of the waters of the earth, which includes marine survey, a knowledge of the physical properties of the water masses and the analysis of the distribution and movements of marine organisms such as plankton, etc.

Hydrolysis, the splitting-up of water, a term applied to those chemical reactions in which decomposition is brought about by the action of water.

Hydromechanics, that branch of science which deals with the application of hydraulics to the principles of machinery.

Hydrometer, a graduated instrument used to determine the density of a liquid. The hydrometer is allowed to float in the liquid, and the density is read off directly from the graduation, which is on the same level as the surface of the liquid.

Hydropathy, a method of treating diseases with water, including the use of warm baths, hot-air baths, hot compresses and wet packings. The treatment of disease by means of baths was first introduced into England by the Romans. The modern system was begun by Vincent Priessnitz (1801–1851), a farmer of Silesia, who treated his animals with cold-water bandages and then extended the treatment to himself.

Hydrophobia, a disease caused by suffering from rabies. Rabies is caught by dogs and other animals through the saliva of a rabid animal. Hydrophobia in man may take only a few weeks or much longer to develop. The symptoms are giddiness, chills, general feeling of unfitness, extreme thirst and lastly fits which become prolonged until exhaustion proves fatal.

Hydrophone, an instrument for listening to sound transmitted through water. There are various forms, one of which receives electric transmissions from the ship on which it is placed after striking the ocean bottom. The principle was used during the World War to locate enemy submarines.

Hydroplane, a form of aeroplane fitted with pontoons and made to alight on, rise from and glide upon water.

Hydrostatics, the study of fluids at rest. The force exerted by a fluid on unit area of the containing vessel is called the pressure of the fluid; this may be different at different points. In liquids the pressure at a

given point may be found by multiplying the weight of unit volume of the liquid by the distance of the point below the surface. Water, for example, weighs 63 lb. per cubic foot, so the pressure at a depth of 100 ft. is 6,300 lb. per sq. ft.

The pressure does not depend on other factors, such as the area of the surface of the liquid. As a consequence, the pressure at a given point on a dam is the same, whether the water held back by the dam extends back from it for miles or merely for a few yards, provided the depth of water at the dam is the same in both cases. Similarly, the pressure at the taps of a water supply depends only on the vertical height of the reservoir above the taps, and not on what hills and valleys the supply pipes cross on their way to the taps.

The effective pressure of a water or gas supply is the excess pressure of the water or gas over and above atmospheric pressure. The weight of a given volume of coal gas is smaller than that of a similar volume of air, so the pressure exerted by the gas in a long, vertical pipe is smaller than that of a similar column of air outside it. As a consequence, the effective pressure of a gas supply is greater at high points than at lower ones.

If a body is immersed in a fluid, the pressure is greater at points near the lower side of the body than at points near its upper surface, so the body experiences a resultant force directed vertically upwards. This force is called the upthrust, and is equal to the weight of the fluid displaced by the body. When an object floats, its weight is exactly balanced by the upthrust.

Hydrozoa, a class of coelenterate marine animals, including mainly the polyps, which feed by ingestion of animal matter. Some swim freely, some are attached permanently to other animals or objects.

Hyères, a town of the Riviera, dept. of Var, France. It has vineyards and orchards. The islands of Hyères (ancient Stoechades) include Port Cros, Porquerolles, Titan and Bagaud. Pop. 21,000.

Hygeia, in Greek mythology the Goddess of Health, and daughter of Æsculapius; is represented as a virgin in a long robe, with a cup in her hand and a serpent drinking out of it.

Hygiene, the science which treats of the preservation and promotion of health. It includes all practices which improve physical surroundings, and chiefly takes expression in the form of physical exercise, provision of fresh air and clean living-conditions. The maintenance of hygienic conditions in places of employment and abode is the subject of much legislation.

Hygrometer. The air always contains moisture,

but its amount fluctuates considerably. To express the moistness of the atmosphere at any particular time we determine its relative humidity, which is the weight of water vapour in a given volume of air divided by the weight of water vapour required to saturate the same volume of air at the same temperature. Hygrometers are instruments for measuring the relative humidity.

Chemical hygrometers consist of an apparatus in which are placed chemicals that absorb water vapour. The apparatus is weighed, a known volume of air is drawn through it, and it is then weighed again; the increase in weight is the weight of water vapour. From

reference tables, the weight of water vapour required to saturate the same volume of air at the same temperature can be ascertained, and hence the relative humidity can be calculated.

Other hygrometers work on the principle of determining the dew-point, or temperature at which dew begins to form. This can be done by taking a silvered tube (with the silver on the outside), placing in it a thermometer and some ether, and drawing a current of air through the ether. The latter rapidly evaporates, and in doing so becomes cool. Finally the tube is cooled to the point at which dew begins to form, which is immediately apparent owing to the dimming of the silver by the moisture. The temperature of the dew-point is read from the thermometer, and from tables of the vapour pressure of water the relative humidity can now be worked out.

Hyksos, or *Shepherd-Kings*, an Eastern people who invaded Egypt in the XIVth Dynasty. Contemporary inscriptions refer to them as "Asiatics" and "Barbarians." The Hyksos conquerors of Egypt were evidently experienced warriors, but little is known of their period, although it lasted for two centuries. The power of the Hyksos was overthrown by Ahmes I., the founder of the XVIIIth Dynasty.

Hylas, in classical mythology, a youth who was a favourite of Hercules; he was abducted by the Naiads, who fell in love with him while he was drawing water from a fountain in Mysia.

Hymans, Paul, Belgian Liberal Catholic statesman, born at Ixelles. Barrister, 1885; professor of Comparative Parliamentary History, Brussels University, 1898-1914; deputy, Brussels, from 1900; soon thereafter Liberal leader; Ambassador in London, 1915-1917; Foreign Minister: 1918-1920, 1924-1925, 1927-1934, 1934-1936; First president of Assembly of League of Nations, 1920. (1865-).

Hymen, in the Greek mythology, the God of Marriage, son of Apollo, and one of the Muses represented as a boy with wings; also a nuptial song sung at the departure of the bride from her parental home.

Hymenoptera, a large order of insects which includes bees, ants, wasps and many others. The order is characterized by a mobile thorax, large, compound eyes and membranous wings. The antennae are very variable in character, and generally longer in the males than in the females. Mandibles are present throughout the order.

Hymns, songs, especially those sung in services, praise of God at religious services. A few Greek Christian hymns survive from the 2nd Century. Syriac hymns first appear about 180 years later; Latin in the 4th Century; German, Italian and Bohemian in the 9th, 13th and 15th Centuries, respectively. The number of Christian hymns in the 200 or more dialects in which they have been written or preserved is not less than 400,000, mostly in Latin, German, English and Greek. Among notable early hymnologists were Gregory of Nazianzus, St. Ambrose and St. Hilary.

Hyndman, Henry Mayers, British writer and economist. Educated at Cambridge, he became a journalist, reported the Austro-Prussian War, spent several years abroad, and returned to England an ardent Socialist. He founded the Social Democratic Federation and wrote several books on economics. (1842-1921).

Hyoscine, an alkaloid, also known as scopolamine, used in medicine as a narcotic, especially, in cases of pregnancy, to induce "twilight sleep." One of its effects when taken as a drug is to produce a marked weakening of will-power.

HYGROMETER

Hyoscyamine, a poisonous crystalline alkaloid obtained from henbane (*q.v.*). When moist it has a stupefying odour; it is used as a sedative and as a mydriatic.

Hypatia, a woman teacher of Greek philosophy in Alexandria, distinguished for her beauty and purity of life, one day in 415, on her return home from her lecture-room, was massacred in the streets by the Christians, as a propagator of paganism. Her story is the subject of the well-known novel by Charles Kingsley.

Hyperæsthesia, a state in which the nervous system is abnormally sensitive: it is found in connection with many nervous and some muscular complaints, and with hysteria. It may take the form of producing nervous reactions when no stimuli appear to be present.

Hyperbole, a figure of rhetoric, implying exaggeration or the magnifying of an object beyond its natural bounds—*e.g.*, "as swift as the wind," "light as air." Our common forms of compliment are almost all of them hyperbolic.

Hyperboreans, a people blessed with health, youth and health, fabled by the Greeks to dwell in the extreme northern parts of the world. They lived free from disease and toll.

Hyperion, a Titan, son of Uranus and father of Helios (the Sun), Selene (the Moon) and Eos (the Dawn); and the title of a well-known poem by Keats (*q.v.*).

Hypermetropia, or **Longsightedness**, the inability to see near objects, a defect rectified by the use of a convex lens.

Hypermnestra, the only one of the Danaides (*q.v.*) who spared the life of her husband in spite of her father's orders.

Hypertrophy, overgrowth of a bodily tissue, owing to an increase in the size of its individual elements. Hypertrophy of the heart is due to the effort to increase the efficiency of a heart otherwise impaired. Sometimes a diseased condition in one organ induces hypertrophy in another, as in the case of the kidneys. Obesity, goitre (*q.v.*) and elephantiasis are all forms of hypertrophy.

Hypnotic, any drug used to induce sleep, opium and their derivatives such as morphine and chloral, are the commonest of such drugs.

Hypnotism, the process of inducing sleep by wearying out the optic nerve of the eyes, by making the patient fix them upon a certain spot for a time, generally situated where it is a little wearisome for the eyes to find it. The fatigue thus induced spreads from the ocular muscles to the system, causing deep sleep.

Hypo, popular name for the chemical substance used in photography, commonly known as hyposulphite of soda; the correct name is thiosulphate of soda.

Hypocaust, a chamber containing a fire, built beneath a bath, and used by the Romans for heating the bath above. The heat was distributed through earthenware pipes.

Hypochondriasis, a disorder of the nervous system. It may be attended with such conditions as furred tongue, loss of appetite and constipation, and is always accompanied with great anxiety about one's health; often due to digestive disorders. It may develop into melancholia. It is not a real disease, and the best cure is physical exercise and a change of habits and interests.

Hypodermic Syringe, a surgical instru-

ment used to inject drugs beneath the skin, which is pricked by a hollow needle, through which the drug enters the incision. Drugs so injected are generally local anæsthetics or narcotics.



HYPODERMIC SYRINGE

Hyposulphuric Acid, or **Hypo-sulphurous Acid**, obtained by dissolving zinc in a solution of acid sodium sulphite. It is a strong bleaching agent.

Hypotenuse, the side of a right-angled triangle opposite the right-angle. The square on the hypotenuse is equal to the sum of the squares on the other two sides.

Hypsometer, an instrument for measuring altitudes by observing differences in barometric pressures at different altitudes. The heights are ascertained by observing the boiling-points of water.

Hypsipyle, in Greek legend, daughter of Thoas, king of Lemnos and subsequently Queen of Lemnos herself, after the massacre of the men including as it was supposed, her father. She bore twin sons to Jason and was driven from the island when the Lemnian women discovered her part in her father's rescue.

Hyrax, a genus of ungulate mammals of the order Hyracoidea, commonly known as



HYRAX

coney; they are thick-set quadrupeds with short ears, very short tail, short fur, padded and clawed feet and incisors like those of rodents. They are found in the Middle East and South Africa.

Hyssop (*Hyssopus officinalis*), a shrubby plant found in Europe and the Near East, with narrow, pointed leaves, and bluish or white flowers. The bitter leaves are employed in medicine for external application; it is used in the preparation of absinthe.

Hysteria, a functional disorder of the nervous system, not exclusively confined to women, but occurring in persons of morbid impressionability of the nervous centres, or in whom there is a want of equilibrium between the nervous and other parts of the system. Its relation to the sexual functioning is nevertheless close, though rather on the side of the psychological factors in sexual life than the physical. It is remarkable for the wide range and indistinct character of its symptoms, or concomitant diseases, such as loss of voice, a barking cough, pleurisy, heart disease, difficulty of urinating, neuralgia and some inflammatory diseases.

In the condition called hysterics, the subject screams or resorts to fits of violent weeping or laughter, or the general appearance may resemble fainting, except that there is not usually pallor or a feeble pulse nor does the subject entirely lose voluntary control or consciousness, nor is the face distorted, as in epilepsy. The fit continues for an indefinite period, the subject, provided firmness be shown, may generally be allowed to recover by herself.

Hythe, a borough and Cinque port in Kent, England, 68 m. from London, of some repute as a holiday resort. The crypt of St. Leonard's church contains many skulls and other human remains. Pop. 8,600.

Iambic, in prosody, a foot consisting of one short and one long syllable or one unaccented and one accented. According to Aristotle, the iambic metre was originally applied to satirical poems, whence the term itself came to be used as a synonym for a lampoon. In English, iambics have been most frequently used in blank verse of five feet.

Ibañez, Vicente Blasco, Spanish novelist. He began his career as an extreme Radical journalist, was imprisoned, and later went to the Argentine, where he started novel writing. To the end of his life he remained a foe of the royal family, and was an exile from his country. *Blood and Sand* and *The Four Horsemen of the Apocalypse* are his best-known works. (1867-1928).

Iberia, the ancient name of Spain, or including Portugal, from the R. Ibro, the Latin form of which was Iborus; anciently also a territory inhabited by an agricultural population between the Black Sea and the Caspian, now called Georgia.

Ibex, a group of wild goats of the genus *Capra* of the ungulate order. There are four species found in the Alps, Pyrenees, Himalayas and other mountainous districts of the Old World. The male is brown or grey in colour, with long and curved horns; the female is grey, with shorter horns.

Ibis, a fairly numerous family of stork-like, wading birds (the Ibidae),

allied to the Spoon-bills, but possessing a long, curved bill. The species are widely distributed, the Glossy Ibis (*Plegadis falcinellus*) being an occasional visitor to Britain. The Sacred Ibis (*Ibis aethiops*), found in Africa and America, was regarded as an incarnation of deity and held sacred by the ancient Egyptians; it did not breed in Egypt, and was supposed to be of mystic origin. It arrives in Egypt when the Nile begins to rise.



SACRED IBIS

Ibn Sa'ud. See Sa'ud, Abdul-Aziz Ibn.

Ibrahim Pasha, Viceroy of Egypt, son and successor of Mehemet Ali; appointed generalissimo of the Egyptian army, remodelled it after the French fashion; was leader of the Turks against the Greeks; gained several victories over them in 1828, but was obliged to retire; overran and conquered Syria from the Sultan, but was forced by the Powers to surrender his conquest and restore it; he was Viceroy of Egypt only for a single year, and died at Cairo. (1789-1848).

Ibsen, Henrik, Norwegian dramatist and poet, born at Skien; trained for medicine; author of a number of plays of international repute, the best-known being *The Doll's House*, *Ghosts*, *Pillars of Society*, *The Master Builder*, *Hedda Gabler*, *Brand*, and *Peer Gynt*; his characters are vividly drawn as if from life; his work deals largely with social problems and the status of women. (1828-1906).

Icarus, son of Daedalus (q.v.) who, according to a Greek legend, flying with his father from Crete on wax-fastened wings, soared so high that the sun melted the wax and he dropped into the sea.

Ice, the solid form assumed by water when subjected to a sufficiently low temperature. It forms on fresh-water when the temperature is zero in the Centigrade and Réaumur systems, or 32° in the Fahrenheit system, and on salt-water at -2° C. Ice expands and suffers loss of density in the action of freezing, and conversely contracts in the action of melting until the point of greatest density (4° C.) is reached.

Ice Ages. See Glacial Periods.

Icebergs, detached portions of glaciers which float into the sea. Found largely in the N. Atlantic in the spring, they are a menace to shipping on account of the large proportion of a berg's mass, about eight-ninths, which is hidden under the surface. One of them caused in 1912 the loss of the *Titanic*. Since then a N. Atlantic patrol has been maintained jointly by England and the U.S.A., and operated by the U.S. Coastguard Patrol for the location and destruction of icebergs.

Ice Blink, the name given to a white, due to reflection from a field of ice immediately beyond.

Icebreaker, a boat designed to keep icebound ports open. They are capable both of ramming their way through ice and sliding on and breaking it by their own weight. They are largely employed in Russian, Scandinavian and N. American ports, and can break up ice of a thickness of 30 ft.

Ice Hockey, a game played widely by two teams each of six players, who propel over a surface of ice, with hockey sticks, a rubber disc called a "puck." The game is extremely strenuous, and is played at a great speed.

Iceland, a volcanic island larger by a third than Scotland, lying just S. of the polar circle, between Greenland and Norway, distant 250 m. from the former and 500 from the latter; consists of a plateau 2,000 ft. high, sometimes sloping to the sea, sometimes ending in sheer precipices, from which rise numerous snow-clad volcanoes, some, like Hecla, still active. The interior comprises lava and sand tracts and ice-fields, but outside these are river valleys and lake districts affording pasturage, and arable land capable of producing root crops. The climate is changeable, mild for the latitude, but somewhat colder than Scotland. There are few trees, and those small; cranberries grow among the heather, and Iceland moss is a plentiful article of food. The island exports sheep and ponies; the fisheries are important, including cod, seals and whales; sulphur and coal are found; the hot springs are famous, especially the Great Geyser, near Hecla. Discovered by Irishmen and colonised by Norwegians in the 9th Century, Iceland passed over to the Danes in 1383, who granted it home rule in 1893; since 1918 it has been an independent State, though ruled by the King of Denmark. The religion has been Protestant since 1550; the level of education is high. Reykjavik is the capital; most of the population is scattered in isolated farms;

stock-raising and fishing are the principal industries, with the manufacture of homespun for their own use. Area 39,700 sq. m. Pop. 117,000.

Iceland Moss (*Cetraria islandica*), a lichen abundant in Iceland, and found in parts of Britain; it is used in medicine, and a jelly prepared from it.

Iceland Spar, a transparent, crystalline form of calcium carbonate, showing the property of double refraction, so that print, for example, appears double when viewed through it.

Iceni, an ancient British tribe of whom Boadicea (q.v.) was queen; inhabited Norfolk, Suffolk, Cambridge and Huntingdon.

Ichabod, in the Old Testament, a child, son of Phinehas and grandson of Eli, so named by his mother when she learned of the loss of the Ark and the death of Eli and his sons. The name, explained as "the glory has passed away," is sometimes used as an interjection.

Ichang, a town and since 1876 a treaty port in Hupeh province, China, situated on the left bank of the Yangtse R.; it is an important point of transhipment for inland trade. Pop. 108,000.

Ich Dien (I serve), the motto of the Princes of Wales, first adopted by the Black Prince in the 14th Century with the well-known crest of three ostrich feathers.

Ichneumon (*Herpes ichneumon*), a species of mongoose, found in Egypt and in Spain, and also known as the Egyptian mongoose; formerly worshipped in Egypt as it destroys the eggs of noxious reptiles, and of the crocodile in particular; it is sometimes domesticated.

Ichneumon Fly, general name for members of a family of hymenopterous insects which, as larvae, are parasitic on caterpillars and spiders; they are remarkable for their long antennae. Several species, including the wingless genus *Pezomachus*, are found in Britain.

Ichthyosaurus, a genus of extinct reptiles including several species,

some attaining to a length of 30 ft., which flourished in the seas in Mesozoic times; it had a fish-like structure but brought forth its young alive.



ICHTHYOSAURUS

Icknield Way, an ancient pre-Roman road across Southern England, following the line of the Berkshire Downs. It is believed to have run from the neighbourhood of Norwich to the sources of the Kennet.

Icon, a representation of Christ, an angel or a saint, found in Greek and Orthodox Eastern Churches. It is painted on a flat surface, but portions are often covered with gold or silver embossed plates.

Iconoclasts (i.e., breakers of images), the name given to a sect of the Eastern Church who, in the 8th Century, opposed the presence of images in churches and the worship paid to them; serious controversies and riots arose in the Byzantine Empire as a result. They were eventually condemned, but the quarrel over images was one of the causes of the final separation of the Eastern from the Western Church.

Idaho, one of the NW States of the U.S.A., adjoining Washington and Oregon in the W., Nevada and Utah in the S., Wyoming in the E. and Montana from which it is separated by a branch of the Rocky Mts., in the NE. The short N. boundary touches Canada; the country is traversed by lofty

mountain ranges cut up into deep river valleys and cañons, is extremely rugged in its N. parts, and chiefly useful for cattle-raising. There is a plateau in the centre, some arid prairie land in the S., and lake districts in the N. and in the SE. Grain-farming (chiefly wheat) is restricted to fringes along the river-banks; the Snake R. flows through the whole S. Silver, lead, gold and copper-mines are worked successfully. The State was admitted to the Union in 1890. The leading religion is the Mormon. Boise is the capital. Area 84,000 sq. m. Pop. 437,600.

Idesleight, Earl of (Sir Stafford Northman, born in London; educated at Oxford; became private secretary to Gladstone in 1842, sat in parliament (from 1855) in succession for Dudley, for Stamford and for North Devon. He was Financial Secretary of the Treasury in 1859, and President of the Board of Trade in 1866; at the India Office in 1868, and Chancellor of the Exchequer in 1874. He succeeded Disraeli in the leadership of the Commons, and was raised to the peerage in 1885; was successively First Lord of the Treasury and Foreign Secretary under Lord Salisbury. He died a few days after resigning the last-named office. (1818-1887).

Idealism, that view of the universe which, in opposition to Materialism (q.v.), refers everything to a spiritual root; is Subjective if traced no further back than the *ego*, and Objective if traced back to the *non-ego* likewise, its counterpart, or other, in the objective world. Idealism in art is art more or less at work in the region of the ideal in comparative disregard of the actual.

Ides, the name given in the Roman calendar to a certain day in each month from which other days were counted; in March, May, July and October they fall on the 15th, in the rest on the 13th.

Idiocy, deficiency of mental and physical powers as a result of disease of the central nervous system, or of its failure to develop. Lighter forms of idiocy are referred to as imbecility, feeble-mindedness or mental deficiency. Idiocy may result from the mother receiving a severe shock during pregnancy, or from accident during birth; or it may be induced after birth by epilepsy, head injury, sunstroke, fright, etc., and consequent arrest of development.

More often the tendency to idiocy is inherited, and is due to a phthisical, neurotic or diseased heredity, or to intemperance in parents or grandparents. Idiocy is classified as congenital, developmental or accidental; some types are named from the physical appearance associated with it—e.g., Mongolian, Negro-like, etc.

Ido, an artificial international language, based on the recommendations of a committee set up in 1901. It is a form of Esperanto (q.v.) with fewer grammatical rules and a modified alphabet.

Idolatry, the worship of idols set up as supernatural being, common but not inevitable as a stage in the development of primitive religion. The making of idols for public and communal worship was probably a development from the making of fetiches for private adoration; and though at first these were simple in type, being frequently posts or pillars, they in time assumed human form. The practice of idolatry is closely allied to an advanced cultural development; thus it was an integral part of the religion of the Egyptians, Babylonians, Assyrians, Greeks, etc., but is absent in that of Hottentots, Bushmen and Eskimos.

Idumæa. See *Edom*.

Idyll, a poem in celebration of everyday life amid natural, often pastoral, even romantic, and at times tragic surroundings.

If, a French islet in the Gulf of Marseilles, with a castle built by Francis I., and afterwards used as a State prison. It was in this Chateau d'If that Monte Cristo, the hero of Dumas's great novel, was confined.

Iggdrasil, or *Yggdrasil*, in Norse mythology, a tree, rooted in the underworld, or kingdom of death, *Hela*, with its boughs spreading over the whole universe and its summit reaching to heaven; its roots were watered by the three Nornas, or Fates, who sat at its foot; it was a symbol of the whole world of living things.

Ignatius, Father, name assumed by the Rev. Joseph Levecoer Lyne, an Anglican clergyman, educated at St. Paul's School and Glenalmond, who commenced a movement to introduce monasticism into the Church of England, and built a monastery for monks and nuns at Llanthony Abbey near Abergavenny. (1837-1908).

Ignatius, St., called Theophoros, an Apostolic Father of the Church, Bishop of Antioch; died a martyr at Rome about 115, by exposure to wild beasts in the amphitheatre; said by tradition to have been the little child taken up by Jesus as a model to His disciples; several Letters written by him to the churches of various cities are extant.

Ignatius Loyola. See *Loyola*.

Igneous Rocks, those rocks formed by the solidification of molten magma (a) at a great depth (plutonic rocks), e.g., granite, (b) in intrusions near the surface (hypabyssal rocks), (c) on the surface (lava). They are of variable composition and structure and classified according to the proportion of silica; the acid rocks, granite and obsidians, have a large proportion, the basic rocks, gabbros, dolerites and basalts, a small proportion; syenites, diorites and andesites are intermediate in composition.

Ignis Fatuus (Lat., "foolish fire"), a light sometimes seen over marshy places or graveyards, usually after dusk in autumn; its cause is unknown; it may be due to the burning of marsh gas.

Iguana, a family of American lizards; the commonest, the *Iguana tuberculata*, is about 5 ft. in length, with long tail, serrated dorsal ridge, head covered with scales, and a large dewlap. Iguanas are mostly arboreal of habit; their predominating colour is green. They are eaten by natives. The family is represented in Fiji and Madagascar.



TUBERCULATED IGUANA

Iguanodon, an extinct dinosaur, of which many remains have been found in Belgium and some in England; of a length of about 20 ft., it was herbivorous and somewhat lizard-like in form, with a long and powerful tail.

Iguassu, river of Brazil, a tributary of the Parana, in its lower course forming the boundary between Brazil and Argentina. It is noted for its falls, in which it descends 220 ft. in a series of leaps.

Ile-du-Diable. See *French Guiana*, and *Saint, Isles du*.

Ileum, the right-hand lower portion of the small intestine in man, below the jejunum, opening into the large intestine by the ileo-caecal valve.

Ilex, a genus of plants of the order Aquifoliaceae. The *Ilex Aquifolium*, the common holly of Europe, is a tree or shrub with smooth, stiff, alternate leaves. The leaves may be plain, prickly, or toothed. Flowers are unisexual or hermaphrodite, the sexes occurring on different trees; the berries are red or black. From the leaves of an American species, *Ilex paraguayensis*, yerba maté or Paraguay tea is made.



HOLLY

Ilford, residential and manufacturing borough of Essex, England, 7 m. E. of London, on the Roding. Its ancient hospital, formerly for lepers, is now an almshouse. Paper and photographic materials are made. Pop. 146,000.

Ilfracombe, a popular watering-place on the coast of N. Devon, England, in the Bristol Channel; once an important seaport. Pop. 9,200.

Iliad, the great epic poem of Homer, consisting of 24 books, the subject of which is the "wrath of Achilles," and the events which followed during the last year of the ten years' Trojan War, so called from Ilium, one of the names of Troy.

Ilkeston, borough and market town of Derbyshire, England, 9 m. NE. of Derby. Hosiery and lace are made, and coal and iron mined near by. Pop. 33,000.

Ilkley, urban district and spa of Yorkshire, England, in the W. Riding, 15 m. NW. of Leeds. Roman remains have been found. Near by are Bolton Abbey and the well-known Ilkley Moor. Pop. 10,000.

Illawarra, coastal district of New South Wales, Australia, S. of Sydney. It has coal-mines and dairy-farming is carried on. The chief town, Illawarra North, has a pop. of 8,300.

Ille-et-Vilaine, a dept. of NW. S. of the Gulf of St. Malo. Rennes is the capital, and St. Malo and St. Servan are the chief ports. It is an agricultural region; fishing also is engaged in, and oysters are exported. Area 2,700 sq. m. Pop. 566,000.

Illegitimacy is, under English law, the state of a child born (a) out of wedlock, or (b) during wedlock if it is proved that through absence or other cause the husband cannot be the father, or (c) so long a time after its dissolution that it is physically impossible for the husband to be the father. The obligation to maintain an illegitimate child rests upon the mother, but if she can establish the paternity, the father may be ordered to contribute to its maintenance to an extent not exceeding £1 per week until it attains the age of 16 years, or such earlier age as the justices may determine, or until the mother marries.

An illegitimate child has no rights of inheritance in real or personal estate; he may, however, take a bequest under a will. The only persons entitled to succeed to his estate on his intestacy are his widow and children. By an Act of 1926 an illegitimate child whose parents marry after his birth becomes thereby legitimate, unless at the time of his birth either of them was married to a third person.

Illinois, one of the States of the U.S.A., as large as England and Wales, has the Mississippi for its western, the Ohio for its southern boundary, with Wisconsin and Lake Michigan in the N. and Indiana on the E.; third in population, seventeenth in area. "The Prairie State" is level, well watered, and extremely fertile; has a climate subject

to extremes, but, except in the swamps, healthy. It produces enormous quantities of wheat, besides other cereals, and temperate fruits. Flour-milling and pork-packing are the chief industries. There are extensive deposits of coal, petroleum and natural gas. With navigable rivers on its borders, and traversing it Lake Michigan, a great canal, and the largest railway system in the Union, it is admirably situated for commercial development. Originally acquired by Britain from the French, who entered it from Canada, it was ceded to the Americans in 1783, and admitted to the Union in 1818. The State contains six universities. Springfield is the capital; but Chicago is the largest city. Area 56,660 sq. m. Pop. 7,631,000.

Illiteracy, inability to read or write, in Europe and America is rapidly diminishing since the spread of universal compulsory education; in Great Britain those signing the marriage register by mark show a percentage of illiteracy of 0.3. Percentages of illiterates over 10 years old in representative countries as computed in different years since 1920 are: India, 84; Portugal, 65; Turkey, 55; Spain, 44; Poland, 33; U.S.S.R., 30; Italy, 27. Since 1920 enormous strides have been made in the reduction of illiteracy, especially in Russia and Turkey.

Illumination, the decoration and illustration in colour, often enriched with gold and silver. The art was brought to a high degree of perfection in the Middle Ages, and was applied especially to Missals and "Books of Hours"; it was generally pursued in monasteries. Among the finest examples are the 7th-Century Celtic *Book of Kells*, now in Dublin, and the Lindisfarne Gospels. The tradition continued unbroken until the 16th Century.

Illustration, a pictorial interpretation designed to accompany a printed or written description. In Europe probably the earliest illustrations were the paintings of initial letters and in the borders of manuscripts (see *Illumination*). With the invention of printing, these were replaced by line engravings in wood and metal. Early illustrations, such as those of Dürer, were taken from the original blocks, but later the making of engravings from line drawings and paintings became a separate art. Colour-printing was used for book illustrations as early as the 16th Century, and in the 18th mezzotinting and stipple were invented. In the 19th Century chromo-lithography led to the modern process work in colour, while photography and the consequent use of halftone blocks has made illustration a universal feature in books and periodicals.

Illyria, ancient name of a broad stretch of mountainous country of varying extent lying E. of the Adriatic Sea, along the coast of the modern Yugoslavia. The Illyrians were the last Balkan people to be civilised. Becoming a Roman province 35 B.C., Illyria furnished several emperors, among them Diocletian. Constantine extended the province to include all the country S. of the Danube. The name was revived by Napoleon, but has since been dropped.

Image, in optics, the representation of an object formed at the focus of a lens or mirror by rays of light refracted or reflected to it from all parts of the object. The figure of the object is reversed in the real image, but erect when the image is vertical. The image may be made to fall on a screen, photographic plate, or the retina of the eye.

Image Worship in the Christian Church is reverence, as distinct from the supreme adoration reserved to the Deity, paid to the crucifix and

to pictures, images, or statues of saints and martyrs, and offered through these to the personages whom they represent. The practice was prevalent in the 4th Century, provoked by its excesses a severe reaction in the 8th Century, but carefully defined by the second Council of Nice (787), has continued since both in the Greek and Roman communion. There is still controversy as to its propriety in the Anglican Church. The Lutherans use the crucifix freely, but other Protestant Churches have entirely repudiated the practice. See *Iconoclasts*.

Imâm, the title of the officer who leads the devotions in Mohammedan mosques, and in Turkey conducts marriage and funeral services, as well as performs the ceremonies connected with circumcision. The office was filled and the title borne by Mohammed, hence it sometimes signifies head of the faith, and was so applied to the Sultan of Turkey. Certain Mohammedan sects expect the future advent of an Imâm—the hidden Imâm—who shall be greater than the Prophet himself.

Imbros, fertile Turkish island of the Aegean, seat of a Greek bishop. Kastorn is the chief town. Here Sir Ian Hamilton had his headquarters during the Dardanelles campaign. Pop. 9,000.

Immaculate Conception, the doctrine held by the Roman Catholic Church that the Virgin Mary was conceived and born without taint of sin; first distinctly propounded in the 12th Century, at which time a festival was introduced in celebration of it, it became matter of dispute in the 14th Century, and it was only in 1854 that it became an article of the Catholic faith.

Immanence, a theological term implying the nature of God as indwelling in the universe, as opposed to transcendence, the separateness of God from the material world. The dual nature of God, immanent and transcendent, is a tenet of Christianity. The stressing of immanence alone leads to pantheism.

Immanuel ("God is with us"), the name of a child whose birth was predicted by Isaiah, and who was to be a sign from God to Ahaz during the Syrian War with Ephraim (Isaiah vii); accepted by Christians as a figure of Christ. The spelling in the New Testament is Emmanuel.

Immigration, the movement into a country of persons from another with an intention of permanent settlement. For the forty years immediately preceding the World War the United Kingdom lost population at an average annual rate of 100,000 by excess of emigration over immigration. After the war the British Government gave free passages within the Empire overseas to those ex-service men and women and their dependants who wished to settle overseas. In 1922 the Empire Settlement Act was passed providing for pecuniary and other assistance to people in the United Kingdom to facilitate their settlement in Empire countries overseas. The total movement after the War, however, did not at any time reach pre-war dimensions. The world-wide economic depression about 1930 caused immigration into the United Kingdom to exceed emigration from it. During the period of twenty years since the War the average balance of emigrants over immigrants has been roughly 60,000. In 1938 the Australian Government reopened assisted passage schemes for certain limited categories of British migrants. An Oversea Settlement Board, set up two years previously in England, has now reported adversely on unrestricted migration from England with its downward trend of population and suggested that the Dominions should increase their man-power by taking more alien immigrants.

Immingham, seaport of Lincolnshire, England, on the Humber, 7 m. NW. of Grimsby, a small village until in 1912 great docks were constructed here by the former Great Central Railway. Pop. 2,500.

Immortality, the doctrine of the continued existence of the soul of each individual after death, a belief common to Christians, Jews and Mohammedans, in a more or less developed form common to most religions except those which teach the eventual absorption of the individual in the deity or world soul.

Impaling, in heraldry, the placing of two coats of arms side-by-side on one shield.

Impeachment, the trial of a minister on charges of maladministration, in which the Lords act as judges and the Commons as accusers. It is begun by motion in the Commons, and on the motion being carried, the accused is impeached by a deputation of the Commons at the Bar of the Upper Chamber. The charges are set forth in "articles of impeachment." Certain Commoners called managers conduct the prosecution. Famous impeachments were those of Lord Bacon and Warren Hastings. The most celebrated case in the U.S.A., where the procedure is similar, was that of President Johnson in 1868.

Imperial Airways, the British national air

transport company; subsidised by the Government and carrying mails as well as passengers; Empire mails are carried at ordinary Empire letter-rates without additional charge; operates regular daily services in Europe from London to various European cities; bi-weekly services via Cairo, Karachi and Singapore to Port Darwin and Sydney in Australia (operated from Port Darwin by Qantas Empire Airways pilots, who there take over the controls of the flying-boats) and a bi-weekly service via Cairo and East Africa to Durban. In each case regular feeder services connect the ports of call with other parts of the country. An Atlantic air route in collaboration with Pan-American Airways is shortly to be inaugurated. Its fleet, which at present (1938) includes 54 machines of obsolete types is being strengthened by the addition of 31 Short Empire flying-boats and 6 specially stressed flying-boats for Atlantic operations, as well as 14 Armstrong Whitworth Ensign type 21-ton 42-seater land-planes capable of a top speed of 200 m.p.h. and a cruising speed of 170 m.p.h. and a number of de Havilland Fro-bisher type land-planes. Following some staff troubles a Parliamentary Committee of Inquiry was set up under Sir John Cadman. As a result of the Cadman report and recommendation that a whole-time Chairman should be appointed, the then Chairman resigned and Sir John Reith, former Director-General of the B.B.C., became Chairman.



IMPERIAL AIRWAYS
FLYING-BOAT CALEDONIA

Imperial College of Science,

a college at South Kensington, London, and a School of the University of London (q.v.); it was formed in 1907 by the incorporation of the Royal College of Science, the Royal School of Mines and the City and Guilds Engineering College.

Imperial Conference, a periodical meeting of Prime Ministers of the Dominions under the chairmanship of the Prime Minister of Great Britain, to discuss matters of common

interest, such as inter-imperial relations, foreign policy, defence, communications, shipping and migration. It was constituted by resolution of the Colonial Conference of 1907, the first conference to be officially styled "Imperial" being that of 1911. During the World War, the Imperial Conference was in abeyance, and Dominion representatives became temporary members of the Imperial War Cabinet. Since the War, Conferences have been held in 1926, 1930, 1932 (at Ottawa) and in 1937.

Imperial Defence, co-operation between the United Kingdom and the Dominions in the formulation of a policy of defence of the Empire in time of war, promoted by the existence of the Committee of Imperial Defence set up as the result of the deliberations of the Imperial Conferences (q.v.). The Dominion Governments are not members of the Committee, but their High Commissioners in London often attend its meetings. Uniformity of policy is also assisted by the existence of the College of Imperial Defence, set up in London in 1926 to create a basis for co-operation and co-ordination in training for and in organisation of imperial defence.

Imperial Economic Committee, established in 1925, and composed of representatives of the United Kingdom and Dominion Governments, investigates methods of marketing within the Empire and the production of Empire raw materials; prepares surveys of world trade, and reports on economic questions to the various Governments of the British Commonwealth. In some respects it has replaced the now defunct Empire Marketing Board.

Imperial Institute, South Kensington, London, founded by the exertions of the Prince of Wales (afterwards Edward VII.) in 187 to commemorate Queen Victoria's jubilee, was opened by her in 1893; was intended to include a complete collection of the products of the British Empire, a commercial intelligence bureau, and a school of modern Oriental languages; in 1916 it was placed under the management of the Secretary of State for the Colonies, assisted by an executive council; its principal work is the promotion of inter-imperial trade in raw materials, by investigations, exhibitions, etc.

Imperialism, a system of government by imperial authority. The term "imperial" is, however, applied to variously constituted forms of government, as in the case of the British Empire, where it indicates the authority of Great Britain in relation to that of other parts of the Empire; and in that of Holland as compared with her dependencies, although Holland is not designated an Empire. The term is also applied to a policy which seeks to draw together more closely the separate territories which owe allegiance to one flag.

Imperial Preference, a term used for the practice of giving preferential rates of duty in favour of imports from various countries within an Empire. In the British Empire preferences were first granted to goods from the United Kingdom as long ago as 1897, a preference of 33½ per cent. being allowed off the duties payable by United Kingdom goods. Preference was not extended by the United Kingdom to the Dominions until the passing of the Import Duties Act, 1932, under which the fiscal system reverted from "free trade" to protection. Preferences are also granted to British Colonial goods, and also by many Colonies to United Kingdom goods; and there is now a system of mutual preferences between the United Kingdom Government and all the Dominion Governments.

Imperial Service Order,

a decoration restricted to members of the Civil Services of the British Empire. The Order was founded by King Edward VII. in 1902, and its numbers may not exceed 700 (250 Home, 250 Dominions, Colonies and Protectorates and 200 Indian). It is awarded for long and meritorious service. The Ribbon has vertical stripes, crimson on the outside, blue in the centre.



Imperial War Museum,

opened at the Crystal Palace, 1920; removed thence to S. Kensington in 1924 and again in 1936 to the former Bethlehem Royal Hospital at Lambeth. The collection includes naval and military trophies and relics, ship and other models; an Art section of over 4,000 paintings and drawings, a library and a large photographic section.

Imports, goods which enter one country from another. In theory a country's imports are paid for by its exports; their respective values constantly tend to equality, and roughly, the difference between the money value of the imports and the exports represents profit or loss. Taxes on imports serve both as a means of raising revenue and also to reserve home markets for home industries. The first English import duties date from 1304, and were levied on foreign merchants only; but in the reign of Henry III. a levy was made on merchandise from abroad, which was, in effect, equivalent to an import duty.

Impressionism, the technique of the school of painters originating in France before 1870, and introduced into this country some 10 years later. It is a revolt against traditionalism in art, and aims at reproducing on canvas the "impression" which eye and mind gather, rather than representing actual fact. Among the leaders of the school were Pissarro, Degas, Manet and Monet.

Impressment, the former practice of compelling men to serve in the British navy or army, especially the former, for which they were enrolled by "press gangs."

Imprisonment, detention in a gaol or prison as punishment for a criminal offence or for contempt of court. In English criminal law imprisonment may be either penal servitude or imprisonment with or without hard labour (q.v.). The maximum sentence of penal servitude is for life, which, after the usual remissions, means for 20 years; the maximum term of imprisonment with hard labour cannot exceed 2 years.

Inca, an aboriginal tribe of Peru, found by Pizarro on his conquest of the country; the name was also applied in particular to their ruler, the Inca.

Incandescent Light,

name generally applied to the light produced by covering a non-luminous gas flame with a hollow "mantle" of fibrous material impregnated with a solution of metallic salts, usually the nitrates of thorium and cerium.

Incantation, a formula or set of words, often nonsensical, used with the intention of producing a magical or supernatural effect. Belief in the power of in-

cantations was common throughout the Middle Ages.

Incarnation, the assumption of a human nature by a divine being, in particular by Jesus Christ; appearances of gods in human form are also taught by Eastern religions, particularly Hinduism.

Ince-in-Makerfield, an urban district of Lancashire, England, adjoining Wigan. It has coal-mines, iron and wagon works, and cotton mills. Pop. 22,000.

Incese, a mixture of aromatic gums, and spices, which, when burnt, produce a sweet-smelling smoke, used for religious purposes by some Christian bodies, by the ancient Jews and by certain sects of Buddhists. Its use in the Church of England has given rise to much controversy. It is burnt in a vessel called a thurible or censers.

Incest, cohabitation between persons prohibited from marrying on grounds of kinship. In England intercourse by a male with his mother, daughter, sister or granddaughter is punishable by penal servitude. Marriage with a deceased wife's sister and with certain other relations by a previous marriage, formerly forbidden, has in recent years been legalised.

Inchcape, or Bell Rock, a dangerous reef in the Firth of Tay, Scotland, submerged at spring tides. A light-house stands on it; formerly a bell rang to warn mariners.

Inclined Plane, a mechanical contrivance for raising weights; the pressure of the plane balances the component of weight perpendicular to the plane, while the component of weight along the plane is overcome by effort applied by means of a continuous rope passing over a pulley.

Income Tax, in Great Britain a tax levied by the Government upon all forms of income. It has been continuously imposed since 1842. The amount has varied from 2d. in the £ in 1874 to 6s. in 1920. In 1909 a super-tax was first levied on incomes over £5,000. The "standard rate" (1938) is now 5s. 6d. in the £. Certain deductions from the taxpayer's gross income are allowed in respect of children, wife, etc., to establish his taxable income. About 3½ million persons in Great Britain now pay income tax. Failure to return a statement of income for tax purposes, when demanded, involves a fine. In 1935 income tax produced not more than £1,855,000, but to-day the yield from its various ramifications exceeds £325,000,000.

Increment, unearned, an expression denoting increase in the value of landed property due to increased demand and without any expenditure on the part of the proprietor.

Incubation, the act of sitting on eggs to hatch them; but the term is more commonly used in connection with the application of the necessary warmth by mechanical "incubators." All such machines are based on the principle of regulating the temperature of an apparatus within which the eggs are placed in trays. Artificial incubation is sometimes adopted for the rearing of premature or delicate children.

Incubus, a supposititious demon which caused nightmares; it was a common belief in the Middle Ages that the association of an incubus with a sleeping woman gave rise to deformed children.

Incumbent, a rector or other ecclesiastic with care of souls who has been legally instituted in his office. The incumbent has charge of the spiritual welfare of his parishioners, and his duties cannot be performed by other clergymen without his or his bishop's licence.



INCA PRINCE

Incunabula, a term applied to books printed before 1500 A.D.

Indecency, in law, the public exhibition of obscene books, pictures, or advertisements of indecent character relating to sexual ailments, or of certain parts of the body, punishable by a fine, or imprisonment, or both.

Indemnity, in law an agreement, express or implied, to render a person immune from a contingent liability. The word is also applied to compensation for property annexed by the State or local authority for public ends.

Indenture, a deed executed between its name from the fact that two or more copies of such contracts were formerly written on a single parchment and cut in indented form, so that their genuineness could later be established by fitting together their edges. The word is now generally applied only to contracts of apprenticeship.

Independence, Declaration of, the declaration by which, on July 4, 1776, the N. American States asserted their independence of Great Britain.

Independence, The War of, the struggle which the N. American colonists maintained against the mother country. It began in 1775, Washington being chosen Commander-in-chief of the colonial troops; on July 4, 1776, the Declaration of Independence was adopted, and after six years of fighting the war ended after the British defeat at Yorktown in 1783, England recognising the independence of the thirteen original United States.

Independence Day, a holiday throughout the United States annually on July 4 in celebration of the Declaration of Independence in 1776 that day.

Independent Labour Party, familiarly known as the "I.L.P.," a British Socialist organisation founded at Bradford in 1893. Its early influence under the leadership of Ramsay MacDonald and Philip Snowden was considerable, but after the institution of individual membership in the Labour Party it declined. Its organ is the *New Leader*; and its political views to-day (1938) are considerably more radical than those of the official Labour Party.

Independents, or Congregationalists, a Protestant sect which, repudiating both Episcopacy and Presbyterianism, holds that every congregation should manage its own affairs, and elect its own officers independent of all authority save that of Christ; they profess to derive all rules of faith and practice from the Scriptures, and are closely akin to Presbyterians in doctrine. Numerous as early as Queen Elizabeth's time, they suffered persecution then; many fled or were banished to Holland, whence, the *Mayflower* conveyed the Pilgrim Fathers to New England in 1620. Regaining ascendancy under Cromwell, their history has since resembled that of other dissenting bodies. Most of their churches are now affiliated to the Congregational Union. They now number over a million in England and Wales. See also Congregationalism.

Index (*Librorum Prohibitorum*), a list first drawn up in 1557 and from time to time revised, of books which members of the Roman Catholic Church are not permitted to read save in special circumstances.

India, Asiatic Empire under British Domination, consisting of the great peninsula in the S. of Asia between the Bay of Bengal on the E. and the Arabian Sea on the W., separated from the mainland by the Hindu-Kush and Himalaya Mts. Its centre is a great plateau called the Deccan, between

which and the Himalayas stretch the great fertile basin of the Ganges, the Thar Desert and arid wastes of the Indus Valley. Wide varieties of climate are met with, but the general temperature is high, the monsoons of the Indian Ocean determining the regularity of the rainy season, which occurs from June to October.

The country generally is insalubrious; the vegetation is largely tropical; rice, cereal crops, sugar and tobacco are grown, with cotton in Bombay and the Central Provinces, opium in the Ganges Valley, jute in Eastern Bengal and indigo in Bihar; coffee and tea are raised by Europeans in the hill country. The chief mineral deposits are extensive coalfields between the Ganges and the Godavari, salt in the Punjab, and iron in many parts of the country, which are worked only by native methods. European methods of manufacture are being largely introduced, and the young cotton-weaving industry flourishes.

The people belong to many different races, and speak languages representing at least six distinct stocks. The vast bulk of them are Brahmanists or Hindus, but there are many Mohammedans, six millions are Christians, and many other religions are represented. The total area of India is 1,575,000 sq. m., and the population 338,200,000. The British Provinces, as distinct from the native States, comprise 61 per cent. of the area with a population of 257,000,000.

India has been subject to many conquests; the Aryan, Greek and Mussulman invasions swept in from the NW.; the Portuguese obtained a footing on the SW. coast in the 15th Century; the victories of Plassey, 1757, and Seringapatam, 1799, established British rule throughout the whole peninsula, with the principle that native princes where they retained their thrones were vassals.

Sind was won in 1843 and the Punjab in 1849, and the powers of the East India Company transferred in 1858 to Queen Victoria, who was proclaimed Empress in 1877.

Since 1861 political control has been passing steadily into Indian hands. In 1885 the National Congress, now one of the chief forces in the furtherance of nationalist ambitions, first met. A growing realisation of the necessity of co-operation between Britain and India led in 1917 to the drafting of the Montagu-Chelmsford report on which was based the Government of India Act of 1919. This provided for the establishment of a chamber of Princes, presided over by the Viceroy, and single-chamber legislatures throughout the provinces with the principle of special representation for Moslems, Christians, etc. Lack of satisfaction with the reforms brought to the fore Mohandas Gandhi, leader of the National Congress, with his non-co-operation movement. Various outbreaks of violence led to the appointment in 1927 of a commission to inquire into the working of the 1919 constitution. Its report, published in 1930, recommended completely responsible government in the provinces, and the formation of a Federal Government.

In Dec. 1930 the first Round-Table Conference, composed of British and Indian delegates, representing the Princes and all communities, assembled in London. The Princes immediately expressed their willingness to co-operate in federation. After much discussion a White Paper was published in March 1933 embodying the conclusions of experts on finance and franchise, and in April a Parliamentary Committee was appointed to report on their suitability as a basis for legislation.

On this report, published in Oct. 1934, was based the Government of India Act, 1935, which came into force in 1937. Its chief provisions are as follows: (1) Provincial

executive control, except for certain "special responsibilities" and the final word in matters of law and order, to be in the hands of Indian ministers. Provincial legislative assemblies (two-chambered in some provinces—e.g., Bengal, Bombay) to be elected for five years. (2) Central executive, covering military control, foreign affairs and "special responsibilities," to be in the hands of the Viceroy; the legislature to consist of two chambers, the Council of State and Legislative Assembly, the former to be elected directly, the latter indirectly through the provincial legislatures and on a communal basis. (3) Finance: a reserve bank free of political bias to be established to deal with the question of financing the provincial governments. (4) Army: to remain almost completely under the control of the Central Government. (5) The powers formerly vested in the Secretary of State to pass into the hands of the Government of India.

Indiana, one of the smaller but most lies between Lake Michigan and the Ohio R., with Ohio on the E. and Illinois on the W. The climate is marked by extremes of heat and cold; the country is somewhat hilly in the S., is mostly level, well watered and very fertile. Agriculture is the chief industry, cereals and tobacco forming the chief crops. There is great mineral wealth, with extensive and varied industries, embracing steel products, furniture, motor cars, glass and soap; oil, coal, limestone, pig-iron and natural gas are extensively worked. First occupied by the French, Indiana was acquired by Britain in 1763, ceded to America 1783, and admitted to the Union in 1816; besides Indianapolis, the capital, the largest towns are Fort Wayne, South Bend, Evansville and Gary. Area 36,350 sq. m. Pop. 3,238,500.

Indianapolis, capital of Indiana, U.S.A., on the White Ford R., in the centre of the State; a fine city, with wide, tree-lined streets, large iron, brass and textile manufactures and canned-meat industry; is a great railroad centre. Pop. 364,000.

Indian Army, the army, made up of a combination of native and European troops, which defends British India: since the World War a process of "Indianisation" has largely transformed it, and in many units the former British officers have been in part or wholly replaced by native officers. In the World War nearly 1½ million officers and men served with the Allied forces outside India with over 100,000 casualties. At present the Indian Army consists of about 140,000 native and 60,000 British troops, apart from reserves and the forces of the Native States (numbering about 46,000).

Indian Civil Service, a service, besides embracing the ordinary departments of civil administration, includes judicial, medical, territorial and even military staff appointments; the proportion of Indians employed is being rapidly increased.

Indian Ink, or Chinese Ink, a variety of ink first manufactured in China, composed of lamp-black and gum, and moulded into sticks; it is sometimes perfumed. In China it is used with a small brush for ordinary writing, and in Europe for illustrative work.

Indian Millet, a stout cereal grass, a species of *Panicum* (*P. maximum*) largely grown in the Mediterranean regions and the East. It is produced in drier climates in place of rice, and bread of good quality is made from it. It is believed to have been the first wild grain to be cultivated. It also serves as cattle and poultry food and the plant as green fodder, and is sometimes called guinea corn and kamr corn.

Indian Mutiny, a widespread rebellion, chiefly of the Sepoys, against British authority in 1857. The Sepoys' esteem for the British had declined owing to the weakness of certain generals in the Afghan and Sikh campaigns. Also, there had never been so many native and so few British soldiers under the East India Company's flag; in that year there were 39,000 British soldiers as against 311,000 Sepoys. Discontent was increased by the fact that Indians in the army were not allowed to rise in rank. Furthermore, with the introduction of the Lee-Enfield rifle a new type of greased cartridge was used, which enabled agitators to report that cow's fat was employed—the cow being sacred to the Hindu. The rebellion broke out on May 10, 1857, at Meerut, with the murder by the mutineers of their officers, but it was eventually suppressed by a strong force under Sir Colin Campbell in the following year.



SEPOY

Indian National Congress, or All-India National Congress, inaugurated in 1885 as the intended nucleus of a native Parliament, the earliest delegates, numbering 72, being mainly students, teachers and journalists, with a tendency to support Western ideals. In 1916, when they numbered over 400, they joined hands with the Muslim League to launch an Indian Home Rule movement, and from this union sprang the Nationalist agitation led by Gandhi (q.v.) directed to secure a complete measure of responsible government in India. In 1931 Gandhi, after a campaign of civil disobedience, patched up a truce with the Viceroy, Lord Irwin (later Lord Halifax), and the All-India National Congress, as it was now called, gave the former a free hand to negotiate on its behalf at the Second Round-Table Conference in 1932-1933. After the passage of the Government of India Act in 1935 the Congress Party refused to work it, but after negotiation with the Viceroy their attitude was changed, and in July 1937 they consented to form governments in the six provinces in which they had obtained a majority at the elections of that year. The goal of the Congress is expressed in their phrase "purna swaraj," first interpreted as "complete independence," but later modified as meaning "partnership at will."

Indian Ocean is that stretch of sea between Africa on the W. and Australia, Java and Sumatra on the E., which separates in the N. into the Arabian Sea and the Bay of Bengal. The monsoons, or trade-winds, blow with great regularity; from April to October they are strong from the SW., from October to April more gentle from the NW. There are many islands and reefs of coral formation, such as the Maldivé group; St. Paul's and Mauritius are volcanic, while Madagascar and Ceylon are typical continental islands.

Indians, American. See American Indians.

Indian Territory, a stretch of the south central U.S.A., in the basin of the Arkansas, Canadian and Red Rivers, formerly set apart for occupation by the Indian tribes of the western prairies, the "five civilised nations" of Cherokees, Choctaws, Chickasaws and Seminoles; in 1907 it was combined with Oklahoma territory to form the state of Oklahoma.

India Office, the British Government department set up in 1858, to administer the affairs of India. Its head, the Secretary of State for India, is

assisted by an Under-Secretary, and there is also a consultative council. The India Office estimates are defrayed from Indian funds.

Indicator, a substance which, by a change in its colour, indicates the completion, or arrival at a definite stage, of a chemical reaction. Vegetable extracts such as tincture of violets and the juice of red cabbage were formerly employed to test whether a given substance was acid or alkaline; thus litmus, a colouring matter extracted from certain *Leranthine* lichens, is red in acid solution and blue in alkaline solution. A wide variety of synthetic indicators later became available, and the study and use of these has become almost a science in itself. The most common occasion on which an indicator is required is when the degree of acidity of a solution is to be ascertained.

When a coloured substance is being converted into a colourless one, or *vice versa*, it may itself act as its own indicator. Potassium permanganate, for example, is of a purple colour, and in using it the end-point of the reaction is taken to be the point at which the purple colour is no longer discharged by the solution to which the potassium permanganate is being added.

Indictment, a written accusation of a crime, generally drawn upon the commitment of justices, on which the accused is put upon trial before a jury. Until a few years ago the indictment had to be first laid before a grand jury, which body then took enough evidence to satisfy themselves that there was a *prima facie* case; but the grand jury has now disappeared.

Indies, term vaguely applied to include India, Indo-China, the Malay Archipelago, etc. (the East Indies), or to the West Indian islands.

Indigestion, or **Dyspepsia**, inability to digest food or difficulty in doing so. It takes the form of perhaps an hour's discomfort following a meal, succeeded by heartburn and, sometimes, vomiting. Indigestion may last beyond the period when the food is in the stomach, and cause constipation or diarrhoea. Relief may be obtained by regulating the hours of and number of meals, by exercise and cold baths and early rising. Food should be well masticated; small meals taken frequently and condiments avoided, particularly salt. A suitable diet is eggs, fish, thick soups, and tapioca, cornflour and rice puddings, etc.; milk and cream should be the staple food.

Indigo, a blue dye used from time immemorial and formerly prepared—chiefly in India—from leguminous plants of the genus *Indigofera* (e.g., *tinctoria* and *Amil*). In 1890 Houmann found that indigo could be cheaply synthesised from naphthalene (the compound familiar as "moth-balls"). Practically the whole of the indigo on the market is now synthetic, and the Indian indigo trade, at one time worth over three million pounds annually, is almost extinct.

Indigo is insoluble in water, so that before it can be used it has to be converted into a soluble compound, indigo-white, by reduction with hyposulphite or other reducing agent. The fabric is steeped in the solution and then exposed to the air,

when indigo is gradually re-formed on the fibres. To dye wool, the indigo is converted into the soluble indigo-carmin or indigo-disulphate, and a solution of which directly dyes wool, the well-known "navy blue."



Indigofera tinctoria

Individualism, a political or economic theory which asserts the rights of the individual as against those of the community; the opposite of socialism. The extreme form of individualism in political and economic theory is that of "laissez-faire" (q.v.).

Indo-China, called also Farther India, the name given to the large peninsula which lies between the Bay of Bengal and the China Sea, lying almost wholly within the Torrid Zone, and embracing Burma (under British rule), Annam, Cambodia and Tongking (under French rule) and Siam (an independent kingdom). It is sparsely peopled, owing to its mountainous character and the swampy lands, and the natives are mainly of the Mongolian type.

Indo-China, French, consists of the colony of Cochin-China and the four protected States of Annam, Cambodia, Laos and Tongking. It is administered by a Governor-General; the total area is about 285,000 sq. m., and the pop. 23,250,000, including some 31,000 Europeans. For further particulars see separate articles on the States named.

Indo-European, an epithet applied to a family of languages spoken in Europe and Asia, supposed to be descended from a single original, and including Latin, Greek, Sanskrit, Persian and the various Slavonic, Celtic, Romance and Teutonic tongues, English among them; the term is sometimes, but incorrectly, used of the races speaking these languages.

Indonesia, term sometimes used for the Malay Peninsula, Indo-China and the islands of the Malay Archipelago.

Indore, (1) a native principality, in Central India, somewhat larger than Wales, embraces the Vindhya and Satpura Mts., and is traversed by the Nerbudda R. There are great forests on the mountains; the valley of the river is fertile; wheat, sugar, cotton, tobacco and large quantities of opium are raised; the climate is sultry, and at certain seasons unhealthy. The natives are chiefly Mahratta Hindus; among the hills are Bhils and Gond, the wildest tribes of India. The State is governed by a Maharajah styled Holkar, under supervision of a British agent; education is progressing. Area 9,900 sq. m. Pop. 1,325,000. (2) Indore, on the Kuthi R., the capital, formerly a poor city now being rapidly embellished with fine buildings; it is connected by rail with Bombay, distant 400 m. SW., and with Ajmere; it was the scene of a massacre of British during the Indian Mutiny. Pop. 127,300.

Indra, Indian god, ruler of heaven and war deity, brought into the country by the Aryans; in later Hinduism has lost much of his importance, and is now often identified with *Shiva* (q.v.).

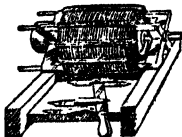
Indre, a dept. of Central France, occupying a plateau watered by the R. Indre and Creuse. Châteaurenault is the chief town. The interests are mainly agricultural; grain, grapes, chestnuts, sugar beet, etc., being grown and sheep reared. Area 2,666 sq. m. Pop. 246,000.

Indre-et-Loire, dept. of Central France, watered by the R. Loire; produces cereals, wine, pottery and iron. Capital, Tours. Area 2,380 sq. m. Pop. 345,000.

Inductance, the effect of the electric current flowing in a coil caused by the magnetic field set up by the current (self-inductance) or by the current in a neighbouring coil (mutual inductance). The inductance of a coil adds to its resistance to an alternating current, such resistance being called the reactance. The unit of inductance is the *henry* (q.v.).

Induction, in logic, an argument from what is known to what is unknown, or from the particular to the general; the basis of all modern reasoning in natural and applied science. The same name is given to the ceremony by which a clergyman of the Church of England is given possession of a benefice; it involves the symbolic taking possession of the keys of the church, and a promise on the incumbent's part to accept the 39 Articles.

Induction Coil, an electrical apparatus consisting of two coaxial coils. Through one (the primary) flows a continuous current which is interrupted several times per second by a "make-and-break" device, giving rise to an alternating current in the other coil (the secondary) of high voltage.



INDUCTION MOTOR

Indulgence, the remission, granted in return for the performance of some act of piety, of the temporal penalty due for a sin already committed; this, according to Roman Catholic theology, the Church is enabled to dispense out of the inexhaustible treasury of the merits of Christ.

Indulgence, Declaration of, an edict of James II. of Great Britain, issued without parliamentary authority in 1687, stating his intention of suspending the penal laws against Roman Catholics and other dissenters. Its unpopularity was a chief cause of his subsequent downfall and flight.

Indus, a great river of India, 1,300 m. long; rises in Tibet, on the N. of the Himalayas, flows NW. through Cashmere, then SW. through the Punjab and Sind to the sea. Its upper course is through great gorges and very rapid, but after the entrance of the Kabul River its way lies through arid plains, and it is navigable. After receiving the five rivers of the Punjab—the Jhelum, Chenab, Ravi, Beas and Sutlej—its volume decreases through evaporation and the sinking of some of the many streams into which it divides in the sand. On one of the branches of the delta stands the thriving port of Karachi.

Industrial Court, a permanent court set up as a result of the Whitlay Committee of 1918 in which disputes between workmen and employers could be examined and referred for arbitration or other solution upon the failure of mutual agreement.

Industrial Diseases and Accidents, defined by the Workmen's Compensation Acts as those arising out of or during the course of employment. Industrial diseases most often result from the nature of the material handled by the workmen, prominent examples being asbestosis contracted during employment at asbestos manufactures and lead poisoning at paint works.

Industrial accidents arise in mining from roof falls, explosions, etc.; on railways from collisions, derailments, coupling, loading and unloading, and in other callings from machine mishaps, slipping or unskilful use of tools, explosions, falls, etc.

Industrial Insurance, or financial provision by the poorer classes for future contingencies, began with working-class burial societies, in which small weekly contributions were collected and a sum was paid by the society towards the cost of funerals. The collection of contributions by officials distinguishes this form of insurance from ordinary insurance.

An Act of 1923 defines industrial insurance as covering cases where the sum assured is

not over £1,000 and the contributions must be paid at intervals of less than two months; companies who undertake such business must be registered with the Registrar-General and pay a substantial deposit, as well as furnishing their balance-sheets for audit. The Act was designed to protect the public from insecure companies and to remedy hardships formerly associated with lapsed policies.

Industrial Psychology, the study of the effects, mental and physical, produced by their occupation on workers in the various industries, directed to the elimination of causes which lessen industrial efficiency. It is concerned with such matters as the duration of working periods, the provision of rest periods, environment, monotony and fatigue, lighting, heating and ventilation. There is a National Institute of Industrial Psychology which specialises in the study of vocational fitness.

Industrial Revolution, the period of change in the late 18th and early 19th Centuries, beginning in this country with the change from an agricultural and village England to the town and machine age. It was principally marked by the rapid growth of the factory system and of new large towns, and the replacement of the hand-worker by the machinist. Such inventions as Arkwright's spinning-frame, Kay's weaving-loom, Watt's steam-engine and Stephenson's locomotive were great contributory factors, while modern transport was born on Macadam's roads, Brindley's canals and Telford's bridges.

Industrial School, or Reformatory, the reform of children convicted of theft or other crimes, or not under proper guardianship. Their name has now been changed to Approved Schools, and their character has been changed from that of a junior prison to an institution where the reform of the child criminal is achieved by intelligent and sympathetic treatment.

Inebriate, an habitual drunkard; may, under English law, if convicted of crime while under the influence of drink, be committed to a certified inebriate reformatory, while such a person may of his own will enter a licensed inebriates' "retreat" for voluntary treatment.

Inert Gases, a group of chemical elements comprising helium, neon, argon, krypton, xenon and radon. The last is radium emanation; the first four occur in small quantity in the atmosphere. All are characterised by their almost complete lack of chemical reactivity. Helium is used for filling lighter-than-air craft, and helium, neon and argon are used in electric filament and discharge lamps.

Inertia, that property of a body in a state of rest or of motion with constant velocity in a straight line, unless it is compelled to change that state by an external force; the idea of inertia is implicit in Newton's First Law of Motion.

Infallibility, freedom from all error in the past and from all possibility of error in the future, as claimed by the Church of Rome. This claim extends to all matters of faith and morals in the Church, which is held to be incapable of embracing any false doctrine from whatever quarter suggested, and guided by the Divine Spirit in actively opposing heresy, in teaching all necessary truth, and in deciding all relative matters of controversy. Infallibility is not claimed in connection with matters of fact, science or general opinion. The seat of infallibility has been much disputed, and the infallibility of the Pope was only decreed at the Second Vatican Council in 1963. It was always agreed that where the Pope and bishops

were unanimous they were infallible, and their unanimity might be expressed either in a general council or in a decree of a local council tacitly accepted by the Pope and the rest of the Church, or even in a decree of the Pope alone if the Bishops either expressly or tacitly affirmed it. But the Vatican Council decided "that when the Roman Pontiff speaks *ex cathedra*—that is, when he, using his office as pastor and doctor of all Christians, in virtue of his apostolic office, defines a doctrine of faith and morals to be held by the whole Church—he by the Divine assistance, promised to him by the blessed Peter, possesses that infallibility with which the Divine Redeemer was pleased to invest His Church in the definition of doctrine in faith or morals, and that therefore such definitions of the Roman Pontiff are irreformable in their own nature and not because of the consent of the Church."

Infant, in law, a person under 21 years of age (also called a minor). Contracts made by infants prejudicial to their own interests are void; beneficial contracts may be affirmed or avoided when the infant comes of age. Certain contracts, however, cannot be nullified and need no ratification—*e.g.*, contracts for public service, articles of apprenticeship, an executed contract of marriage, contracts for necessities, etc. An infant cannot make a will. Under the Guardianship of Infants Act (1925) infants may not be lawfully married without the consent of both parents if living, or of one surviving parent, or of a guardian. The Age of Marriage Act (1929) forbids marriage under 16 years of age. As regards criminal responsibility, an infant under 7 years of age is said to be *docti incapax*—*i.e.*, incapable of crime; between 7 and 14, *prima facie* incapable of crime, but proof of a mischievous discretion may be adduced; above 14 there is no immunity on the ground of mere youth.

Infante, the titles formerly given respectively to the royal princes and princesses of Spain and Portugal.

Infanticide, differentiated by English law from other kinds of murder or manslaughter, but since that date a woman who kills her newly-born child while mentally unbalanced may be charged with, or convicted of, infanticide only, and punished by fine or imprisonment for not more than two years.

Infant Mortality, the rate of deaths of life, usually reckoned per 1,000 births; generally as high as in advanced old age. After the first year the rate declines, being at its lowest in the years between 10 and 14. Improved hygiene and state-aided child welfare services have brought about a continual decline in the mortality rate since 1900. The rate of infant mortality in 1936 per 1,000 births was in England and Wales, 59 (birth-rate, 14.8 per 1,000); Scotland, 82 (birth-rate, 17.9); Northern Ireland, 77 (birth-rate, 20).

Infantry, the foot-soldiers of an army. The first infantry were archers, and the bow long remained their principal offensive weapon. Pikes and halberds were used later, but with the invention of gun-powder infantrymen carried firearms as well as swords, and the pike disappeared with the introduction of the bayonet. The arms of modern infantry include rifle (*q.v.*), bayonet, Lewis gun (*q.v.*), grenade (*q.v.*) and light mortar. The term Light Infantry was at one time applied to units who were trained for rapid movement, but such training is now universal.

Except for certain "crack" regiments, the infantry of the British Army is organised on a county basis, formerly known as numbered regiments of the foot (these numbers are still used in the Army list), until the system of

territorial or county distribution was adopted. They include Guards regiments and 148 line and rifle battalions. To these are attached territorial and special reserve (militia) units. On a war footing a battalion numbers 1,022 officers and men.

Infection, the communication of disease from one person to another, except when this occurs by actual contact, when it is called contagion. An infectious disease is transmitted by some substance produced in the body of a diseased person, which, when communicated, can produce itself. Such a substance is generally bacterial, but may be chemical or parasitic. Some diseases are infectious before they are clearly recognisable, as with measles. The more serious infectious diseases, such as smallpox, scarlet fever, and diphtheria, must be notified to the local Medical Officer of Health, on pain of a fine.

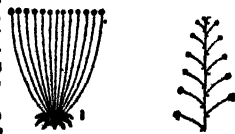
Inferiority Complex, in psycho-analysis an emotional idea of the self or ego, whose unconscious activity gives the sufferer an affective attitude of inferiority towards himself. It has its origin in a wounded narcissism or self-love, and may lead to a neurosis which causes the person to doubt his capacity.

Inflammation, a morbid state of any internal or external, characterised by heat, redness and pain, owing to some disturbance of function in the elements of the tissues involved, or to changes in the blood-vessels and blood, and exudation of pus, with permeation of white blood-corpuscles into the contiguous parts, or to altered nutrition of the tissue. It is pathologically an extremely complex process, and, in more popular language, is said to be caused by injuries, irritant bodies, burns or scalds, or microbes. There are also varieties of chronic inflammation associated with gout, rheumatism, etc.

Inflation (*and Deflation*). In monetary theory inflation signifies generally an expansion of currency, usually by the printing of paper money to a greater amount than could be "converted" into metallic currency in accordance with the requirements of the Gold Standard system of currency. During the war practically every European country suffered from inflation. Germany and Austria particularly suffered from a currency collapse. Deflation, or a corresponding restriction of paper currency, has been used as a check to the dangers of inflation.

Inflection, the name given to the changes to indicate their relations; not so common in English—being usually expressed among us by prepositions—as in Latin, Greek and other languages, but occurring in English in a few cases, as the final "s" in nouns to indicate the plural or the possessive case, and the "d" or "ed" in verbs to mark the past tense; inflection in nouns is called declension, and in verbs conjugation.

Inflorescence, the arrangement of flowers on a branch or stem; indefinite or axillary inflorescence is where the branch can grow indefinitely, producing new flowers on the axis; definite or terminal inflorescence is where the terminal flower stops the further development of the branch. Different kinds of inflorescence are the spike, raceme, corymb, umbel, panicle, thyrus and cyme.



INFLORESCENCE:
(1) umbel; (2) spike;
(3) raceme

Influenza, an epidemic disease, closely resembling, but quite distinct from, cold in the head. It is characterised by early and marked debility and depression. Though usually of short duration, attacks must not be disregarded; fatal results may ensue on carelessness. Convalescence is slow, and complications may ensue. The cause of the malady is obscure; sporadic cases are common, but during and since the World War it has increased considerably, and almost world-wide epidemics have occurred every two or three years, the most serious being that of 1918.

In Forma Pauperis, a name applied to the process by which a litigant may sue or defend himself without payment of court or legal fees in certain cases on production of proof that his total property, apart from his wearing apparel, is not worth more than £25. A plaintiff in a civil suit can only sue *in forma pauperis* after counsel has shown that he has reasonable grounds for so doing.

Informor. A common informer is one who brings to the knowledge of a magistrate, for the purpose of pecuniary gain, a violation of the law. Such information must generally be lodged within a year of the commission of the offence. A criminal accomplice who turns king's evidence is a common informer.

Infra-Red Rays, invisible heat rays of longer wavelength than the longest visible rays of the spectrum, the red; first observed by Herschel in the solar spectrum in 1800; glass is opaque to these rays. They are of service in long-distance photography, and their utilisation has increased the power of search-lights, etc., to penetrate fogs.

Inge, William Ralph, English theologian and writer. He had a brilliant career at Cambridge, and from 1911 to 1934 was Dean of St. Paul's, favouring the modernist side in the Church, and gaining among the public the nickname "Gloomy Dean" by reason of the pessimistic views expressed in his books and frequent periodical articles; among his works are *Christian Mysticism* and *Lay Thoughts of a Dean*. (1860-).

Ingleborough, mountain in the W. Riding of Yorkshire, England, in the Pennine Chain, 2,370 ft. high. It is surmounted by remains of a hill-fort, and to the S. is Ingleborough Cave, remarkable for its stalagmites and stalactites.

Ingoldsby, Thomas, the pseudonym of Rev. Richard Barham (q.v.), author of *Ingoldsby Legends* a collection of humorous tales in verse.

Ingot, a cast mass of metal from a crucible; especially a cast mass of gold or silver, more or less pure, for assaying; also a cast block of gold, silver or alloy of either, for coinage or for working into other forms. An ingot-mould is a flask in which metal is cast into blocks.

Inhibition, in law a writ to prevent further in a cause; or a sentence forbidding a clergyman to perform his ecclesiastical duties. In psychology the word is used for a subconscious urge to express the personality in some way which the conscious mind forbids.

Initiation, the act of introducing to or instructing in the rudiments, principles, rules or ceremonies of an office or association. It is an important rite in many primitive societies, among which it often includes such practices as circumcision, or other bodily mutilation, tattooing, etc.

Injection, a medical term denoting the introduction of a substance into the body through the skin by a syringe or other means. The substance is usually an aqueous solution. By means of the hypo-

dermic syringe (q.v.) morphia or other narcotics may be so introduced.

Injunction, in law, an equitable remedy whose purpose is to prevent a threatened wrong in regard to the rights of the party seeking the injunction, as, e.g., the erection of some building in contravention of the plaintiff's right to light. An interim or interlocutory, as distinct from a final, injunction, is usually only granted on the plaintiff undertaking to pay damages if he fails at the subsequent trial to substantiate his case.

Ink, a fluid used for writing on paper or the like material, or on any solid substance. The ancient Egyptians wrote with carbon ink on papyrus before the invention of papyrus. Carbon inks are still used in the E., but in Europe, though used for special purposes, they have long been generally superseded by iron-gall inks. The raw materials used for these are tannin, of which the most important source is oak galls, iron salts, gum arabic, colouring matters, acids and preservatives in the form of carbolic acid or phenol. See also Indian ink.

Inkerman, a small Tartar village E. of Sebastopol harbour; the scene of a battle between the Russians and allied forces in the Crimean war, resulting in the defeat of the former after a prolonged struggle on November 5, 1854.

Inland Revenue, Board of, the body responsible for the collection of taxes, death duties and stamp duties, first established in 1694 on the appointment of the Commissioner for Stamps. The office of the Commissioner of Taxes was merged in it in 1834.

Inlaying, the craft of ornamenting surfaces by faces by inserting in them pieces of material different from that of which they are composed. The material is usually wood, the variety inserted being sharply contrasted or toned with the surface in which it is inserted. Similar work in metals is known as damascening; in marble or other stone, as mosaic.

Inn, in its wider sense, includes a tavern or alehouse, but, strictly, an inn is merely a place which provides lodging accommodation for travellers. Inns existed in England as early as the 13th Century, for in 1284 a Statute was passed for closing them at Curfew. Many old inns were famous, particularly the Mermal Tavern, from its recollections of Ben Jonson; the Tabard in Southwark, also for its literary associations; the Old George, Salisbury; the Maid's Head, Norwich; and, among those of a later day, the Rainbow in Fleet Street, associated with Dr. Johnson and Dickens, and The Cheshire Cheese, the haunt of journalists.

An innkeeper cannot refuse accommodation and food, at any time of day or night, to a traveller who is ready to pay and is properly conducted, provided there is sufficient accommodation.

Inner Temple. See Inns of Court.

Innisfail (Innis Fodhla, Isle of Destiny), an ancient and poetical name for Ireland.

Imiskilling, small town in Co. Fermanagh, Northern Ireland. The Royal Inniskilling Fusiliers were raised in 1690 from forces which defended the town. The regiment has a proud campaigning record. It is now linked with the Royal Irish Fusiliers. Pop. c. 4,500.

Innocent, the name of 13 Popes: Innocent I., Pope from 401 to 417. Innocent II., Pope from 1130 to 1143. Innocent III., Pope from 1198 to 1216. Innocent IV., Pope from 1243 to 1254. Innocent V., Pope in 1268. Innocent VI., Pope from 1352 to 1362, resided at Avignon.

Innocent VII., Pope from 1404 to 1406.
Innocent VIII., Pope from 1484 to 1492.
Innocent IX., Pope in 1591. **Innocent X.**, Pope from 1644 to 1655, condemned Jansenism. **Innocent XI.**, Pope from 1676 to 1689.
Innocent XII., Pope from 1691 to 1700.
Innocent XIII., Pope from 1721 to 1724.

Innocent III., Pope from 1198 to 1216, born in Aragon; succeeded Celestine III.; extended the territorial power of the Church, and made nearly all Christendom subject to its sway; essayed the recovery of Palestine, and promoted a crusade against the Albigenses; excommunicated Otto IV., Emperor of Germany; put England under an interdict, and deposed King John; was zealous for the purity of the Church, and countenanced every movement that contributed to enhance its influence; a man of blameless life, who did much to reform the morals of the clergy. (c. 1160-1216).

Innocents. The Holy Feast of, a Western Church on Dec. 28 and in the Eastern on the 29th, to commemorate the slaughter by Herod of the children at Bethlehem; in the Middle Ages the occasion of a children's feast, presided over by a "boy bishop" elected for the occasion.

Innsbruck. on the Inn, at the head of the Brenner Pass in the Austrian Tyrol, of which it was formerly the capital; 100 m. S. of Munich; a tourist resort, and an ancient and beautiful town, rich in art treasures, with a university and manufactures of woollen cloth, glass ware, and stained glass. Pop. 61,000.

Inns of Court. the four voluntary societies—Lincoln's Inn, the Inner and the Middle Temple, and Gray's Inn—with whom rests the exclusive right to call candidates to the English Bar. They provide lectures and hold examinations in law, and have discretionary powers to refuse admission to the Bar or to expel and disqualify persons of unsuitable character from it. Each Inn possesses considerable property, a dining-hall, library and chapel, and is subject to the jurisdiction of a self-elective body of Benchers, who are usually judges or senior counsel. These societies originated in the 13th Century, when the practice of law passed out of the hands of the clergy.

Inoculation. the introduction of disease germs into the body of a human being or other animal,

by puncture of the skin or hypodermic union, in order, by giving the subject a small attack of the disease, to prevent his being subsequently liable to a severe one. Inoculation for smallpox, the virus being taken from actual smallpox pustules, was introduced into this country from Turkey in 1717, and extensively practised until superseded by Jenner's discovery of vaccination at the end of the century, and finally prohibited by law in 1840. Inoculation has been found successful in the prevention of other diseases, notably anthrax, hydrophobia, malaria, diphtheria and typhoid.

Inorganic Chemistry. that branch of science which deals with the laws of chemical combination, the atomic theory, the periodic system of classifying elements and the chemical qualities of elements and their compounds; also with Osmotic pressure, the Electrolytic Dissociation Theory, etc. It is largely an experimental science and excludes the treatment of the large class of carbon compounds, the study of which forms another branch of chemistry known as Organic Chemistry (q.v.).

Inquest. an inquiry called and presided over by a Coroner (q.v.), to investigate the death of a person who has died suddenly, by violence, under suspicious

circumstances, in prison, or at the hands of the hangman. A jury is not essential, but if there is one, it must be composed of at least 12, but not more than 23, members. The coroner can compel the attendance of medical and other witnesses, and can order exhumation, though this is usually the subject of an order of the Home Secretary. A coroner's verdict as to the cause of death is not conclusive, but may be the foundation of a criminal prosecution.

Inquisition. an ecclesiastical tribunal of the Roman Catholic Church in the Middle Ages and set up successively in Italy, Spain, Germany and the S. of France, for the trial and punishment of heretics. The Inquisition in Spain, which was from about 1490 under State control and practically independent of Rome, achieved the greatest notoriety from the number of its victims, and the tortures to which they were subjected, both when under examination and after conviction. The rigour of its action began to abate in the 17th Century, but it was not till 1835 that it was abolished in Spain. Napoleon suppressed it in France in 1808, and after an attempted revival from 1814 to 1820, its operations there came to an end. St. Dominic did much to strengthen the institution, and a member of his order, Torquemada, is notorious for his zeal as Grand Inquisitor of Spain at the end of the 15th Century.

Insanity. a mental condition manifested in the disordered functioning of the mind. It is generally either inherited, or due to some mental strain, such as worry, or some disturbing personal experience, and modern psychologists stress the effect of sexual discord. Many kinds of mental disorder are the result of physical damage to the brain, such as the growth of a tumour, prolonged poisoning or advanced syphilis, which may lead to complete loss of control.

The commonest variety is General Paralysis of the Insane, a form of gradual degeneration. Another common cause of insanity is the habitual use of alcohol and various drugs. In old age a wasting sometimes manifests itself as senile dementia. A mild form of insanity is melancholia, due generally to some emotional disturbance, and often producing borderline insanity.

Insecticide. any chemical mixture used in agriculture or horticulture for destroying noxious insects or pests, or for the destruction of vermin in dwellings. Nicotine sprays are general insecticides and almost harmless to plants. Sucking insects are destroyed by a paraffin spray, lime, sulphur washes, etc.; biting insects by arsenic compounds. Root pests are controlled by carbon disulphide; lime sulphur is a useful fungicide. Creosote and paraffin are used against wood-boring beetles in old buildings. Lysol or liver of sulphur solution are effective for household and personal vermin.

Insectivora. an order of mammals, named from their insect-eating habit, including hedgehogs, shrews and moles. They are of primitive type, generally prolific, and found throughout the northern hemisphere and the tropics.

Insectivorous Plants,

those which live on the juices of animals, usually insects, entrapped by their leaves or other parts: British species include the bladderwort (*Utricularia vulgaris*), and sundew (*Drosera rotundifolia*).

Insects. a class of animals called the Hexapoda, belonging to the



BLADDERWORT

group *Arthropoda* (q.v.). The various species of insects are estimated at a quarter of a million, but there are probably a great many more yet to be recognised. The insect class is itself divided into several Orders including: (1) Hymenoptera (ants, bees and wasps); (2) Lepidoptera (butterflies and moths); (3) Coleoptera (beetles); (4) Diptera (two-winged flies). The bodies of insects are composed of a series of rings or segments joined together, and bearing jointed legs. Insects have a distinct head, thorax and abdomen. The head has one pair of antennae, compound eyes and its mouth parts vary according to food. The thorax has three pairs of legs, and in the adult one or two pairs of wings. Insects are air-breathing, and have air-tubes or tracheae. Many of the higher insects pass through larval and pupal stages.

Inskip, Sir Thomas Walker Hobart, educated at Bristol and King's College, Cambridge; Barrister, Inner Temple, 1899. Head of the Naval Law Branch of the Admiralty, 1918; Unionist M.P. Central Bristol, 1918-1929; Fareham from 1931. Knighted 1924. Solicitor-General, 1922-1928 and 1931-1932; Attorney General, 1928-1929 and 1932-1936. Minister for Co-ordination of Defence since 1936. He was knighted in 1924. (1876-).

Insomnia, or sleeplessness, a condition which may afflict nervous people as a result of emotional or mental stress, the nerves being further disorganised by the insomnia. It is, however, more often due to digestive disturbances, flatulent dyspepsia being a common cause. It may be a concomitant of fever, or result from poisoning, or even from an excess of tobacco-smoking.

Inspiration, a Christian dogma by which it is held that God is the responsible author of the canonical books of the Scriptures, the actual writers being His conscious instruments. It is held in this form by Roman Catholics. The doctrine in this form was made obligatory by a decree of the Council of Florence (1441), but it had been implicit in Christian and also Jewish belief from the earliest times. Many theologians reject the hypothesis of "verbal inspiration," believing rather that the minds of the sacred writers were illumined by Divine influence, and that inspiration extends only to their general moral and theological teaching.

Instinct, the power by which, independently of instruction or experience, animals are urged to perform spontaneously whatever is necessary for their own preservation or that of the species. Instincts may be classified as: (1) those bestowed by nature; (2) those which are the accumulated results of experience; (3) those complex instincts which arise through the natural selection of variations of simple instincts.

Institute of France, was established by the Directory in 1795, to take the place of the four academies suppressed by the Convention two years previously. In 1816 Louis XVIII. gave back the old names to its four sections, viz. *L'Académie Française*, *L'Académie des Inscriptions et Belles-Lettres*, *L'Académie des Sciences* and *L'Académie des Beaux-Arts*. In 1832 was added *L'Académie des Sciences Morales et Politiques*. Each academy has its own separate organisation and work, and participates besides in the advantages of the common library, archives and funds. Election, which is in every case subject to government confirmation, is by ballot, and every member receives an annual salary of at least 1,500 francs. Government votes a sum of money annually to the Institute. Membership in the *Académie Française* is strictly limited to 40 Frenchmen, often popularly known as the "Immortals."

Insulator, a non-conductor of electricity (e.g., glass, mica, porcelain, etc.) used to prevent a leakage in an electrical circuit.



Insulin,

INSULATOR

a hormone extracted from the pancreas of sheep, cattle, pigs, etc., and used in the treatment of *diabetes mellitus*. See **Hormones**.

Insurance, a form of contract by which, in general principle, one party agrees, for a consideration, to pay to another party a sum of money, or make good a loss, upon the occurrence of a stipulated contingency. The common basis of the contract is indemnity. The oldest form, marine insurance, grew up amid the commerce that developed between Italian and other Mediterranean ports, and was practised by Lombard merchants in the 13th Century. Among the various departments of insurance are life assurance, fire insurance, marine insurance, accident or casualty insurance, motor insurance, engineering insurance and live-stock insurance. Fire insurance indemnifies against loss by fire or damage by water used by the fire-fighting services. A popular policy is the householder's comprehensive policy, which covers fire, explosion, lightning, storm, tempest, earthquake, burglary, housebreaking, theft, accidents to servants, aircraft damage, etc.

Life insurance is indemnity against loss caused by death, the sum assured being paid to the next-of-kin or deceased's nominee. An endowment policy provides for the payment of a sum of money at a specified date or at prior death. Marine insurance undertakes indemnification against the loss of ship, goods, freight, anticipated profits and any other insurable interest. The development of railways gave rise to accident and casualty insurance, whereby death or injury caused by accident, either to a vehicle or by a vehicle, is compensated. Motor insurance covers claims by the public, loss or damage to cars, accidents to the insured, medical and surgical expenses and expenses incurred in police-court proceedings. Insurance is compulsory for drivers of motor-driven vehicles. Certain newspapers insure regular subscribers against misfortunes. There are State schemes for insurance against ill-health and unemployment which affect about 15,000,000 workers.

Insurance, National, the compulsory system under which weekly payments by employers and employees bring the latter benefits in the event of sickness, disability or unemployment, and pensions on retirement from active work. Lloyd George introduced the system in 1911, and it became law the following year; it has been greatly extended in its scope since its foundation. See also **Health Insurance**; **Unemployment Insurance**.

Intaglio, a hollowed-out or incised engraving or design worked upon

a semi-precious stone so that when applied to a soft material an impression in relief is produced. This ancient art was much practised by ancient peoples, and reached its zenith among the Greeks.



Interdict, a papal censure in the Roman Catholic Church forbidding a particular person or the inhabitants of a particular place to participate in Sacraments, Church offices or ecclesiastical burial.

INTAGLIO

An interdict was placed on England by Pope Innocent III. in the reign of King John.

Interest, a payment made by a borrower to a creditor for the temporary use of his money. Simple interest is paid at a fixed rate on the sum borrowed; compound interest is paid on the capital plus the accumulations of interest previously unpaid. Interest at a high or unreasonable rate is known as usury; the Moneylenders' Act lays it down that interest at a rate above 4 per cent. per month, or 48 per cent. per annum, may be considered unreasonable. Ordinary interest rates vary from time to time according to the readiness of creditors to lend money, being highest when money is "tight," or not readily to be borrowed.

Interlaken, a small and beautiful town in Switzerland, "between the lakes" Thun and Brienz; it is near to some of the finest Swiss scenery, and is a famous health resort, visited annually by tourists.

Interlude, a dramatic or musical performance given between parts of an independent play. In music the interlude is a passage subordinate to the parts of the principal performance between which it is introduced.

Internal Combustion Engine,

an engine in which a mixture of the fuel with air is ignited within the cylinders themselves, and the thermal efficiency of such engines is higher than that of external combustion engines, where loss of heat inevitably occurs during the raising of the steam and its passage to the cylinders. The principal fuels used in internal combustion engines are petrol, as in the motor-car engine; coal-gas and similar gases, as in the gas engine; and heavy oil, as in the diesel engine. The essential elements of all these fuels are carbon and hydrogen, and the action that takes place when they are burned is the combination of their elements with atmospheric oxygen to form carbon dioxide and water, respectively, with liberation of considerable heat.

At the high temperatures so generated the water remains in the form of steam, and since carbon dioxide also is a gas and expands rapidly when heated, the volume of the products is very many times greater than the volume of the mixed fuel and air before combustion; the piston is thus driven forcibly along the cylinder and made to turn a crankshaft. In petrol engines the fuel is injected into the cylinders through a carburettor, which delivers it in the form of a very fine spray; an appropriate volume of air is automatically admitted at the same time, and the mixture is then fired by means of an electric spark from the sparking-plug.

International, the, an organisation of socialists, first founded in 1864 in London by Karl Marx and Friedrich Engels. After internal disputes it was dissolved in 1876, and in 1889 a Second International was founded, of less revolutionary tendencies. This was re-formed after the World War as the Labour and Socialist International, but meanwhile a Third or Communist International was founded at Moscow in 1919 in close association with the Russian Soviet Government. A Fourth or Trotskyist International has recently (1938) come into existence.

International Justice, Permanent Court of, a body set up by the Treaty of Versailles to give opinions and judgments on questions referred to it relating to disputes on international law and the interpretation of treaties. It is permanently seated at the Hague, and consists of 15 principal and 4 deputy judges. It has up to 1938 given decisions in over 40 of various kinds.

International Labour Office,

an offshoot of the League of Nations for dealing with international labour statistics and similar matters, having its headquarters at Geneva.

International Law,

the body of rules governing the relations of a State to all outside it, whether other States or private persons not its own subjects. The chief subjects it deals with include the general principles governing belligerents and neutrals in their relations with each other; the nature of contraband and the right of visit and search; the rules of blockade (q.v.); the amicable settlement of disputes, whether by arbitration (q.v.), pacific blockade or other means; the "laws" of war, or, in other words, the conventions which purport to regularise warfare, as, for instance, by assigning limits to bombardment of open places, the use of gas or other forms of chemical warfare, the treatment of prisoners of war, disposal of prize, etc.; the immunities of a foreign sovereign or his diplomatic agents; foreign jurisdiction (see *Capitulations*); the validity of treaties; the definition of the territorial and non-territorial property of a State, and the status of aliens. These rules constitute what is generally known as Public International Law. By Private International Law is meant merely the "conflict of laws" of different States and the rules for settling such conflicts or differences in the adjudication of any private suit. The only sanction for a breach of international law is international opinion.

Intestacy, the state of affairs which follows upon the death of a person who has left no valid will. In England the rules of intestate succession are now to be found in the Administration of Estates Act, 1925—rules which apply indifferently to both real and personal estate.

The heir-at-law to real estate has now disappeared, and the old principle of primogeniture (q.v.) belongs to the past. Also the widow's first charge, formerly £500, is now £1,000; and further, both widow and widower, as the case may be, succeed to all the "personal chattels." In the first instance the property goes to the personal representatives, who, after settling debts and paying funeral expenses and costs of administration, hold the residue on trust for the beneficiaries in a prescribed order of succession.

If there is no issue alive to take a vested interest, the relict—i.e., widow or widower—gets the income for life. If there is issue, the widow (or widower) has one-half and the other half passes to the issue, a deceased child's share going to his (or her) issue. If there be no widow (or widower) the whole passes to the issue. If there be no issue and no relict, the father or mother or both equally (if alive) succeed to the property; if there be no issue or parents of the deceased, then brothers and sisters and collaterals take the estate in a prescribed order of succession.

Intestine, the portion of the digestive apparatus or alimentary canal below the stomach. It has three coats: an outer called the peritoneum (q.v.), an inner or mucous membrane, and an intermediate muscular coat. There are two intestines: the large extending from the end of the ileum to the anus, and about 6 ft. long; divided into the caecum, with its vermiform appendix the colon and the rectum; and the small, beginning at the pylorus and ending in the large intestine. In man the small intestine is some 20 ft. in length, and comprises the duodenum, jejunum and ileum. The greater part of the digestive and absorptive processes takes place in the intestines, the small intestine being covered with small projections called villi which accomplish this object.

Intuition, knowledge acquired without any intermediary deductive, inductive or analogous reasoning, whereby the mind perceives an immediately evident truth.

Intussusception, a displacement of the bowel, in which a higher portion becomes folded or telescoped into a lower; is a frequent cause of obstruction, and a serious, though not always fatal, condition. The term is also applied to the process by which nutriment is absorbed and becomes part of the system.

Invar, an alloy of steel with 35 per cent. of nickel and a little manganese, used for making measuring rods and pendulum bars.

Invercargill, town of South I., New Zealand, capital of the Southland portion of Otago province, 17 m. N. of its port, Bluff Harbour. It is the centre of a farming district and has many industries. Pop. 26,000.

Inveresk, town in Midlothian, Scotland, near which the Battle of Pinkie was fought in 1547; it has paper mills. Pop. c. 21,000.

Invergordon, seaside resort and naval dockyard, with a coasting trade, in Ross-shire, Scotland, on Cromarty Firth; one of the chief British naval bases during the World War. Its castle, destroyed by fire, has been rebuilt. Pop. 1,400.

Inverness, county town of Inverness-shire, Scotland, and capital of the Northern Highlands, is situated on the Ness, near the Moray Firth, amid picturesque surroundings; important tourist and sporting centre. Pop. 22,500.

Inverness-shire, the largest county in Scotland, stretches from the Moray Firth to the Atlantic, and includes many islands, Skye, the Outer Hebrides (except Lewis), and others. It embraces a large part of the Highlands, is very mountainous, has many glens and lochs, but little fertile land. There are large deer forests, grouse moors and sheep runs. Ben Nevis, the highest mountain in the British Isles (4,406 ft.), is in the county. Area 4,156 sq. m. Pop. 82,082.

Invertebrates, a main division of the animal kingdom, the animal kingdom, covering all those animals having no spinal column, as compared with vertebrates. It includes protozoa, ctenophora, echinoderms, worms, arthropods and molluscs.

Inverurie, burgh of Aberdeenshire, Scotland, 16 m. NW. of Aberdeen. It has large railway repair shops, makes paper and mineral waters, and is a centre of the cattle trade. Pop. 4,500.

Investiture, the symbolical ceremony by which a feudal overlord granted land to a vassal. The investiture of bishops, abbots and others by laymen led in the Middle Ages to a prolonged controversy between the Pope and secular rulers. It was settled in the Empire by the Concordat of Worms (1122) and in England and France compromises were finally effected.

Iodine, a non-metallic chemical element belonging to the halogen ("salt-forming") group, the other members of which are fluorine, chlorine, bromine and the still doubtful astatine. Symbol I, atomic number 53, atomic weight 126.92. It does not occur free in nature, but is widely distributed in the form of its compounds, particularly the iodides of sodium, potassium and magnesium (sea-water) and sodium iodate (an impurity in Chile saltpetre or sodium nitrate, large deposits of which are found in South America).

The body of a normal full-grown human being contains approximately 20 milligrammes of iodine, about half of which is present as the compound *thyroxin* in the thyroid gland.

U.E.

While much of this iodine is supplied to the body in certain foodstuffs (butter, milk, spinach, etc.), it seems likely that much is also absorbed in the lungs from the spores of microscopic plants floating in the atmosphere. Iodine is essential to health, its absence leading to such diseases as cretinism and goitre and perhaps favouring development of rheumatism; hence the common practice of adding small quantities of iodine compounds to table salt.

Iodine is a lustrous black solid, generally in the form of crystalline flakes or plates. It is only slightly soluble in water, but dissolves readily in alcohol, benzene, ether, chloroform, etc., and also in an aqueous solution of potassium iodide. Tincture of iodine, widely used as an efficient antiseptic, is a solution of iodine, potassium iodide, alcohol and water.

Iodoform, or tri-iodomethane, is a very characteristic and persistent odour. It was formerly widely used as an antiseptic, but has an irritant action on sensitive skin and is usually replaced nowadays by more powerfully antiseptic but less irritant substances.

Ion, the name given to an atom or molecule electrons; most salts on solution in water are broken up into ions with opposite charges, a phenomenon utilised in the process of electrolysis and electroplating, and in the electric battery.

Iona, a barren little island 1½ m. W. of Mull, where St. Columba landed from Ireland A.D.

563, and built monastery which was for centuries the centre of ecclesiastical life and missionary enterprise among the Scots of Scotland and Ireland and the Angles of the N. of England. The abbey church, later the cathedral, dating from the 12th Century, has been restored and reopened for service. The island is 3½ m. long and 1½ broad. Pop. c. 250.



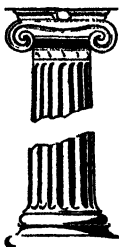
IONA CATHEDRAL

Ionia, ancient name of the western districts of Asia Minor between the Hermus and the Maeander, with adjacent islands; was colonised by Greeks about 1100 B.C., and its chief cities, including Miletus, Ephesus, Samos, Chios and later Smyrna, formed the Ionian League. The Ionians were noted for wealth, art and luxury. Coming under Persian yoke in 557 B.C. they deserted to Greece 479 B.C., and became again independent. From 387 B.C. they were again under Persia till Alexander the Great took them and merged their history in that of the surrounding peoples.

Ionian Islands, a chain of forty lying off the W. coast of Greece, the largest being Corfu, Santa Maura, Cephalonia and Zante. The climate is good, and there is much fertile soil in the valleys except in Cephalonia; corn, grapes and currants are grown; sulphur and coal are found in Corfu. Their history has been very chequered. After belonging at different times to Venice, France and Turkey, they were seized by Britain and constituted a dependency in 1815. Never satisfied with British rule, they were a source of constant friction which Gladstone's mission in 1858 was insufficient to allay, and were handed over to Greece in 1863. Total area 742 sq. m. Pop. 213,000.

Ionian Sea, the part of the Mediterranean between Greece and the S.E. coast of Italy, so named from the early settlements of Ionian Greeks on its western shores; it contains the Ionian Is. off the W. coast of Greece.

Ionic Order, an order of Grecian architecture, characterised by the volute of its capital in the form of a ram's horn, and with the cornice dentated, the shaft fluted, and the entablature plain or embellished.



IONIC COLUMN

Iowa, one of the United States of America, on the right bank of the Mississippi R., with Minnesota to the N. and Missouri to the S., and the Missouri R. on its western border; is well watered, very fertile, and, though liable to extremes of temperature, very healthy. Agriculture flourishes, the country being an undulating plain and most of the soil being arable. Cereals and root crops are raised, cattle bred. There are poultry and dairy farms. Coal, gypsum, stone and antimony are mined. Manufactures include mill products, canned meats and agricultural implements. General education in the State is advanced, State policy in this respect being liberal. Iowa was admitted to the Union, 1846; Des Moines is the capital; Iowa City is the seat of the State University and of some flour-mills and factories. Area 56,150 sq. m. Pop. 2,471,000.

Ipecacuanha, a drug prepared from the roots of a Brazilian plant (*Uragoga Ipecacuanha*) of the family Rubiaceae; it is used as an emetic and to aid perspiration. It was for a time not unpopular as a semi-medicinal beverage among the poorer classes of Great Britain, being sold by itinerant vendors in street markets.



IPECACUANHA

Iphigenia, the daughter of Agamemnon and Clytemnestra. Her father having killed a favourite deer belonging to Artemis in Aulis as he was setting out for Troy, the goddess was offended, and Calchas (*q.v.*), when consulted, told him she could only be appeased by the sacrifice of his daughter. This he proceeded to do, but as he was preparing to offer her up the goddess descended in a cloud, carried her off to Tauris, and made her a priestess in her temple. The story has been dramatised by Euripides, Racine and Goethe.

Ipswich, county town of Suffolk, on the coast, Orwell, 12 m. from the sea; of ancient foundation, and containing several old houses and buildings of interest, but a flourishing modern manufacturing town; was the birthplace of Cardinal Wolsey; manufactures agricultural implements, and exports besides these leather, oil, coke and agricultural produce. Pop. 88,000.

Iquique, important seaport in the N. of Chile, in Tarapaca province; exports nitrates, iodine and silver. Pop. 46,000.

Iran, official name for the country formerly known to Europeans as Persia, occupying the plateau 5,000 ft. high between the Persian Gulf on the S., the Caspian Sea and Turkestan on the N., Armenia on the W., and Afghanistan and Baluchistan on the E.; is three times as large as France. Lofly mountain ranges traverse it from NW. to SE., and gird its northern boundary; the highest peak is Mt. Demavend (18,500 ft.) in the Elburz, overlooking the Caspian. Most of the rivers peter out inland; only one, the Karun in the S., is navigable. The largest lake is Urumiyah, in the NW. The Eastern half of the country is largely desert; there is little rain, the climate being intensely hot in summer and cold in winter.

Wheat and barley are grown on the higher levels, and cotton, sugar and fruit on the lower, all with the help of irrigation. Agriculture is the main industry; cotton goods, carpets, shawls and porcelain are manufactured, and oil, fruits, wool, etc., exported. Roads and railways are now being rapidly and extensively constructed. The capital is Teheran, at the southern foot of the Elburz; other large towns are Tabriz, Shiraz, Meshed, Isfahan and Hamadan. The people are of Aryan stock, and Mohammedans by religion, though there are a number of Christians of several churches, Jews and Bahais.

The first Persian Empire was established by Cyrus in 537 B.C. Decay set in a century later, but a revival under the Parthian and Sassanid dynasties lasted from 138 B.C. until A.D. 639, when the country was conquered by the Mohammedan Arabs. From the 14th Century it was under Mongol, and from the 16th under Turkish, rule, a native dynasty later arising which maintained an absolute monarchy until 1906, when Shah Muzaffer-ud-Din granted a constitution. The years before the World War were marked by rivalry between Great Britain and Russia, both of whom established spheres of influence. During the World War Persia maintained a doubtful neutrality, but there was much activity of Russian and British troops against the Turks.

At the end of the war the British were dominant, but their influence was counter-balanced by a treaty (1920) between Persia and the U.S.S.R. The next few years were a period of successful developments, mainly owing to an American Financial Commission. In 1925 the Shah, Sultan Ahmed, was deposed by the National Assembly, and the Prime Minister, Riza Khan Pahlavi, who had established his authority throughout the country, was elected Shah. Persian foreign policy was divided between friendship with Great Britain and Russia, but in 1928 relations with the former were improved by a treaty abolishing capitulations. The same year Persia was made a member of the League of Nations. In 1931 a trade agreement with the U.S.S.R. was concluded, and renewed in 1935. On March 21st, 1935, the name of the country was changed to Iran. Area 630,000 sq. m. Pop. c. 16,000,000.

Iraq, or Mesopotamia, the area between the Tigris, Euphrates and Tigris. Bordered by Kurdistan, Syria and the Persian Gulf. Area 120,000 sq. m. The population is c. 2,858,000 (Sunni Mohammedans, 1,030,000; Shiite Mohammedans, 1,613,000; Christians 111,000; Jews, 73,000; others, 31,000). Freed from Turkish rule during the World War, the country was mandated by the League of Nations to Great Britain; King Feisal (*d.* 1933) was appointed to rule in 1921; the monarch is assisted by a Senate and a democratically elected Chamber of Deputies. Baghdad is the capital and chief city. The raising of wheat, barley and cereals is the main occupation of the people, hampered until irrigation schemes are developed, and cotton could be extensively grown, while the annual production of oil has increased to nearly 4,000,000 tons. A 12-in. pipe-line runs from the oilfield at Kirkuk to Haditha, and then branches to Haifa (Palestine) and to Tripoli (Syria). El Qurnah, at the junction of the Tigris and Euphrates is the traditional site of the Garden of Eden. In 1930 a new treaty was made between Iraq and Great Britain by which Iraq was recognised as an independent sovereign State; it came into force after the admission of Iraq into the League of Nations in 1932. In April 1936 a treaty of alliance was signed with Saudi Arabia.

Irawadi, or Irrawaddi, a river, navigable throughout its whole course, formed by the union of two streams from the mountains of Tibet; flows S. through Burma

700 miles, passing Mandalay and falling into the Bay of Bengal in a delta, on one branch of which stands Rangoon.

Ireland, an island rather more than half the size of and lying to the west of England and Wales, from which it is divided by the North Channel (13 m. wide), the Irish Sea (140 m.), and the St. George's Channel (50 m.). Politically it is divided into Northern Ireland, set up in 1920, and Eire (q.v.), known until 1937 as the Irish Free State (q.v.), a self-governing State set up in 1922 and associated for certain purposes with the British Commonwealth: the former consists of Belfast, Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone, with Belfast as its capital. Dublin is the capital of Eire, which comprises the remainder of the island. Geographically Ireland consists of a large undulating plain in the centre, containing extensive bogs, several large loughs—Neagh, Erne, Allen, Derg, drained by the rivers Shannon, Barrow, Liffey and Hoyle, and surrounded on almost all sides by maritime highlands, of which those on the SW., NW. and E. are the highest. The N. and W. coasts are rugged and much indented. The climate is milder, more equable, and somewhat more rainy than that of England; but the cereal and green crops are the same.

Flax is grown in the N. The tendency until recently was to revert to pasturage, but agriculture is now reviving, the land having become the property of the farmers. The chief manufacture is linen in Belfast and other Ulster towns. Irish exports consist of dairy produce, cattle and linen, and are chiefly to Great Britain. Primary education is largely supported by government grants; there are many excellent schools and colleges; the chief universities are Dublin and the National University of Ireland. In Ulster the Protestants slightly outnumber the Roman Catholics, in all other parts the Roman Catholics are in a vast majority.

Ireland was occupied by Iberian peoples in prehistoric times; these were conquered and absorbed by Celtic tribes; many kingdoms were set up, and strife and confusion prevailed. There was Christianity in the island before St. Patrick crossed from Strathclyde in the 5th Century. Invasions by Danes, 8th to 10th Centuries, and conquest by Normans under Henry II., 1162–1172, fomented the national disquiet. Under Tudor and Stuart rule the history of the country is a long story of faction and feud among the chiefs and nobles, of rebellions, expeditions, massacres and confiscations. Sympathy with the Stuarts brought on it the scourge of Cromwell (1649) and the invasion by William III.

Thereafter the penal laws excluded Roman Catholics from Parliament. The union of the Irish with the British Parliament took place in 1801. Catholic disabilities were removed 1829. An agitation for the repeal of the Union was begun in 1842 by Daniel O'Connell, and carried on by the Fenian movement of 1867 and the Home Rule movement led by Charles Parnell. A Home Rule Bill was lost in the Commons in 1886, and another in the Lords in 1893; Bills of 1912 and 1913 met a similar fate, but one was passed in 1914, though inoperative till after the World War, when owing to the attitude of the South it was not enforced. Civil war lasted till a treaty was signed establishing the Free State, Northern Ireland remaining part of the United Kingdom with Home Rule. Northern Ireland is governed by a governor, senate and House of Commons, and Eire by a president, a senate, and a lower chamber called the Dail (q.v.). The Church of Ireland (Protestant Episcopal) was disestablished in 1871.

Ireland, John, English musical composer, many songs, among them settings to A. E.

Housman's *Shropshire Lad*, sonatas, including *Mai-Dun* and a piano concerto. (1879–).

Irene, in Greek mythology, the Goddess of Peace, daughter of Zeus and Themis, corresponding to the Roman Pax.

Ireton, Henry, born at Altenborough, Notts.; graduated at Cambridge 1629, and studied law; on outbreak of Civil War he joined the Parliamentary party, and marrying Cromwell's daughter, Bridget, acquired great influence; took a leading part in the prosecution of the King, was one of his judges, and signed the warrant for his execution; kept by Cromwell in Ireland in 1650, he proved a stern deputy, and died of the plague before Limerick. (1611–1651).

Iridaceae, one of the large natural plants recognised by botanists. These plants are classified as belonging to the Crocoideae (including the *Crocus* genus), the Iridoideae (including the *Iris* genus) and the Ixiodeae (including the *Gladilous*) sub-orders. There are 57 genera in the order and some 800 species, found in tropical and temperate regions. They are for the most part herbs with underground tubers or rhizomes and with flag-like leaves.

Iridium, a metallic chemical element as osmium and platinum. Symbol Ir, atomic number 77, atomic weight 193.1. It is chiefly used in alloy with platinum to give the latter additional hardness.

Iris, in Greek mythology, goddess of the gods, rainbow, and as such the messenger of the gods, particularly of Zeus and Hera; she is represented as dressed in a long, wide tunic, over which hangs a light upper garment, and with golden wings on her shoulders.

Iris, a genus of flowering plants of the natural order Iridaceae, popularly known as flags. There are some 200 species in the order, all found in Northern temperate regions, including two British species, the *Iris Pseudacorus*, the yellow flag, and *Iris fetidissima*, the gladdon. They are perennials, with broad, grass-shaped leaves, and six-leaved flowers, fertilised by bees, which rub off the pollen on the stigmas as they enter for the honey on the ovaries.

Iris, the contractile, coloured aqueous humour of the eye between the cornea and the lens. PURPLE IRIS It is acted upon by light, which, when bright, is indicated by the contraction of the pupil. The colour of the iris in man may be blue, brown or grey.



Irish Boundary Dispute, a dispute between Northern Ireland and the Irish Free State which arose after the setting up of the Free State. The treaty provided for a commission of three to fix the frontier between the countries, and as N. Ireland refused to appoint a representative, a special Act was passed appointing one for her. The commission met in 1924, and toured Ireland, but before its report was prepared a compromise was reached whereby the frontier remained unchanged.

Irish Free State (*Saorstát Éireann*), until 1937 the name of the State now called Eire (q.v.), a self-governing British dominion; following the proclamation of a Republic in Jan., 1919, a treaty between Great Britain and Ireland was signed on Dec. 6, 1921, setting up the Irish Free State as a British dominion on the Canadian model. A Provisional Parliament was set up in Jan., 1922, and a constitution was proclaimed on Dec. 6 of that year. By

this Constitution the Legislature (Oireachtas) consisted of the King, a Chamber of Deputies (Dáil Éireann) and a Senate (Seanad Éireann).

The Senate, however, was abolished by a constitutional amendment which became law in May, 1936. By the original Constitution the representative of the Crown was the Governor-General (Donald Buckley was appointed in 1932); but by an Amendment passed on Dec. 12, 1936, this office was abolished. In April 1933 a law abolished the Oath of Allegiance to the Constitution, originally prescribed for all Deputies.

De Valera, from 1933 President of the Executive Council, pursued a policy aiming at independence of Great Britain and economic self-sufficiency. This caused a tariff war, following the Government's refusal to pay the United Kingdom the land annuities, being interest on the land stock created under various Land Purchase Acts. In 1935 a Bill was passed purporting (but probably without effect) to abolish the title of "British Subject" for citizens of the Irish Free State, and in 1937 a new constitution came into force, by which the name of the State was changed to Eire and the British connection was weakened, though, following the London Agreement of 1938, relations greatly improved.

Irish Sea, a sea between Ireland and with the Atlantic on the N. by the North Channel and on the S. by St. George's Channel. It contains the isles of Man, Anglesey and a few smaller islands. It has a mean depth of 210 ft., and its greatest measurements are 150 m. E. to W. and 110 m. N. to S.

Irish Terrier,

a rough-coated terrier, kept as a companion by man, first bred about 1870. The head is somewhat long and narrow, fore-legs straight, chest narrow, long, curved tail, commonly cut, coat brown to reddish-brown, weight from 16 to 24 lb.



IRISH TERRIER

Irish Wolfhound, a large dog in Ireland for hunting wolves before they were exterminated, a breed which is now extinct, but attempts to revive which have been made. The modern breed so called is a dog more massive than the deerhound, with long, pointed muzzle, long neck, back and tail, and standing 31 in. high.

Irkutsk, district in the U.S.S.R., in central Siberia, separated from China by the Sayan Mts.; it has Lake Baikal on the E., Yenisei and Yakutsk on the W. and N.; a rich pastoral country, watered by the navigable rivers Angara and Lena; agriculture and cattle rearing are prosperous industries; there are gold, iron and salt mines; pop. about 850,000. The capital, Irkutsk, has a university; it is the finest city in Siberia. Pop. 160,000.

Iron, a metallic chemical element belonging to the same group as cobalt and nickel; symbol Fe, atomic number 26, atomic weight 55.84. Iron was known to the ancient world, and probably the first samples of it to be examined were of meteoric origin; meteors often consist of iron with smaller quantities of nickel, and the Egyptian, Hebrew and Assyrian names for the metal all signify "the metal of heaven," thus indicating the celestial origin of the earliest known specimens. The working of iron ore appears to have been an Asiatic discovery, but was first practised upon a large scale in ancient Egypt.

Iron, Rusting of. In order to protect iron heated in steam: the latter operation results in the formation of a protective film of magnetic oxide of iron over the surface of the metal. Rustless steel is an alloy of steel with about 13 per cent. of chromium; it compares unfavourably with ordinary steel in its capacity for receiving a cutting edge.

Iron, Smelting of. In medieval England iron-smelting was carried out by means of charcoal, and was therefore located near forests—e.g., the Forest of Dean and the Weald—but with the introduction of coal the industry was transferred to the neighbourhood of the coalfields. The amount of native (meteoric) iron is negligible; most of the metal occurs as iron pyrites, and as oxides (magnetic oxide or magnetite; ferric oxide or hematite; hydrated ferric oxide, limonite and the similar bog iron ores) or carbonate (ferrous carbonate or spathic iron ores—sometimes mixed with clay and then called clay ironstone).

Owing to the difficulty of freeing the resulting metal completely from sulphur, the presence of which seriously detracts from the useful properties of steel, iron pyrites is not normally used as a source of iron, though it is of great importance as the starting material in the manufacture of sulphuric acid, and iron is then extracted from the spent pyrites. All the other minerals mentioned above, however, are employed as sources of iron, the richest ore being magnetite, which contains over 73 per cent. of the metal.

The ores are roasted, to remove moisture (and carbon dioxide, if a carbonate ore is being used), and then reduced by smelting with hard coke or anthracite in a blast furnace. This consists of a steel tower, generally about 70-80 ft. high, and lined with fire-resisting bricks, and is charged through a cup-and-cone hopper at the top. A blast of air, pre-heated to about 800° C., is blown up through the furnace from pipes (twyers or tuyères) at the bottom, and the coke or coal is oxidised to carbon monoxide. This reduces the iron oxide to iron, and is itself converted into carbon dioxide. The limestone at the same time is split up by the heat into quicklime and carbon dioxide, and the lime combines with silica, clay or other impurities in the ore to form a fusible slag; this and the molten iron flow to the bottom of the furnace, where they collect in a deep hearth. The molten slag is lighter than the iron, and therefore floats upon it; it is tapped off from time to time through the "slag-notch," and the fused iron is run out through another hole into sand-moulds.

Iron Age, the last of the three ages, mark the prehistoric development of most now civilised peoples. These occurred at different periods, and were of different duration in different areas. They are named from the material employed in making cutting instruments and weapons; the forms of instruments are freer than in the bronze period, and rectilinear gives place to free curvilinear decoration. This age is marked, too, by the introduction of writing and the beginning of literary and historic records.

Ironclads, were originally wooden vessels protected by iron plates. They were used at the siege of Gibraltar in 1782; the French had them in the Crimean War, and in 1858 built four iron-plated line-of-battle ships. In 1860 England built the *Warrior*, an iron steam battleship with 4½-inch plates; since then new types have succeeded each other very quickly. The modern ironclad is built of steel and armed with steel plates sometimes 18 in. thick and the term is now loosely applied to all armoured vessels, whether battleships or cruisers.

Iron Cross, a Prussian military and civil decoration instituted in 1813 by Frederick-William III., for service in the War of Liberation. It consists of a Maltese cross of iron edged with silver. The order was revived at the time of the Franco-Prussian War, 1870, and many were awarded in the World War, 1914-1918.

Iron Mask, Man with the, a prisoner who in the reign of Louis XIV. wore, when he was transferred from prison to prison, an iron mask to prevent any one discovering and revealing his identity. While alleged by some to have been of Royal descent (as in Dumas's romance), many investigators place him as one Matthioli, an Italian diplomatic agent who offended the French king Louis; but the question has never been definitely settled.



IRON CROSS

Ironsides, Sir William Edmund, British general; fought in the S. African War and on the Eastern front in the World War; commanded the Allied troops in Murransk in 1918; served as commander and quartermaster-general in India from 1928 to 1931 and 1933 to 1936; Commander in Chief of the Eastern Command from 1936. (1880-).

Ironsides, Cromwell's troopers, a thousand strong, raised by him in the Eastern counties of England, so called at first from the invincibility displayed by them at Marston Moor; were selected by Cromwell "as men," he said, "that had the fear of God before them, and made conscience of what they did."

Irony, is a subtle figure of speech in which, while one thing is said, some indication serves to show that quite the opposite is meant. Thus apparent praise becomes severe condemnation or ridicule.

Iroquois, one of the most intelligent branches of the North American Indians, comprised a confederation of five, afterwards six, tribes, among whom the leading place was taken by the Mohawks; their territory lay inland in what is now New York State and the basin of the St. Lawrence. Numbering some 25,000, they maintained their own against the hereditary foes by whom they were surrounded; they took kindly to English and Dutch settlers, but were hostile to the French, and in the wars of the 18th Century were allies of England against the French. Their descendants, in reservations in Canada and New York, are a peaceful people, have accepted European religion and culture, and have proved themselves skilful and industrious agriculturists.

Irrigation, the artificial application of water to the land for the purpose of increasing its fertility. This may be achieved by feeding from a river a reservoir constructed with gates and channels leading to areas of insufficient or irregular rainfall, or by constructing canals leading direct from rivers. Irrigation systems are largely developed in Egypt, India, the United States of America and Australia. The practice of irrigating land is one of great antiquity, and probably took its rise in the Nile region several thousands of years B.C.

Irving, Edward, ecclesiastic, born in Annan, Dumfriesshire; trained for the Scottish Church, became in 1819 assistant to Dr. Chalmers in Glasgow, and removed in 1832 to the Caledonian Church, London, where he attracted fashionable and intelligent audiences; but the views he developed brought him into conflict with the authorities of his Church, and he was deposed

from the ministry, after which he instituted, with Henry Drummond, the sect known as the Catholic Apostolic Church of Irvingites, remarkable for their highly developed ritual and ministry. The body still exists, but is rapidly dwindling. (1782-1834).

Irving, Sir Henry (John Henry Brodribb), English actor, born near Glastonbury; was at first a clerk in London, appeared on the Sunderland stage in 1856, spent three years in Edinburgh, and gradually worked his way at Glasgow and Manchester, till he was invited to London ten years afterwards. His performance of Hamlet at the Lyceum in 1874 established his reputation as a tragedian. He remained at the head of his profession, and both in this country and in America secured many triumphs as Macbeth, Shylock and other Shakespearean characters, and in rôles like those of Matthias in *The Bells*, Mephistopheles in *Faust*, etc. He contributed to the literature of acting, and received a knighthood in 1895. (1838-1905).



SIR HENRY IRVING

Irving, Washington, popular American essayist and historian, born of British parentage in New York; travelled in Europe, 1804-1806; returning to New York he was called to the Bar, but he devoted himself to a literary career. He first won fame by his *History of New York*, by *Didrich Knickerbocker*, 1809, a good-natured satire on the Dutch settlers. The years 1815-1832 he spent in Europe studying and writing. His *Sketch-Book*, 1819-1820, was very successful, as were *Bracebridge Hall*, *Tales of a Traveller*, and other volumes which followed it. Going to Spain in 1826 he began his researches in Spanish history which resulted in *The Life of Columbus* and *The Conquest of Granada*. Among his latest works were *Mahomet and his Successors* and *A Life of Washington*. (1783-1859).

Irvingites. See Irving, Edward.

Isaac, a Hebrew patriarch, son of Abraham, born to him when he was old; a mild man with no great force of character, and a contrast to Ishmael, his half-brother; lived to a great age.

Isaacs, Rt. Hon. Sir Isaac Alfred, Australian lawyer and statesman, was born and educated at Melbourne, and became a barrister in 1880 and Q.C. in 1899. He was Solicitor-General of Victoria in 1893 and Attorney-General in 1894; entered the Commonwealth Parliament in 1901, becoming Attorney-General in 1905. In 1906 he was made a Judge of the High Court, and in 1930 Chief Justice of Australia, and from 1931 to 1936 was Governor-General. Knighted, 1928. (1855-).

Isabella, queen of Castile; her marriage with Ferdinand of Aragon led to the union under one sceptre of the crowns of Aragon and Castile, which was followed 10 years after by their united occupancy of the throne of all Spain. She was an able woman, and associated with her husband in every affair of State (1461-1504).

Isaiah, one of the great Hebrew prophets, the son of one Amos; was a citizen of Jerusalem, evidently of some standing, who lived between 750 and 700 B.C.; legend has it that he met his death by being sawn asunder in the reign of King Manasseh. The Biblical book which bears his name is now generally recognised to be a composite work, Chapters i-xxxix dating from before the Exile, and possibly recording the prophecies of the real Isaiah, the remainder, from Chapter xl

onwards, being post-exilic; this part, now usually called "Second Isaiah," or Deutero-Isaiah, is itself probably not the work of a single author or period. An apocryphal book known as the *Ascension of Isaiah* relates the story of his alleged martyrdom and of visions connected with it.

Isandula, or *Isandlwana*, a hilly place (110 m. NW. of Durban, where a force of British troops, belonging to Lord Chelmsford's column, was encamped on January 22, 1879, and was set upon and almost annihilated by a body of Zulus.

Isère, a river in the SE. of France, which after a course of 180 m., falls into the Rhône near Valence. It gives its name to a department. Area 3,178 sq. m. Pop. 572,700. Chief town, Grenoble.

Isfahan (*Isfahan*), the ancient capital of Iran (Persia), 226 m. S. of Teheran, on the R. Zenderud, which is spanned by a noble bridge of 34 arches; it stands in a fertile plain abounding in groves and orchids, amid ruins of its former grandeur; it is an important commercial centre, and produces rich brocades and velvets, fire-arms, sword-blades and much ornamental ware. Pop. c. 100,000.

Ishmael, the son of Abraham and the handmaid Hagar, cast out of Abraham's household at 15. He became skilful with the bow, and founded a great nation, the Arabs. For the offering of Isaac on Moriah the Arabs substitute the offering of Ishmael on Arafât, near Mecca. Mohammed claimed descent from him. He gives name in modern life to a social outcast driven into antagonism to social arrangements.

Ishtar, or *Istar*. See *Astarte*.

Isinglass, a gelatinous substance prepared from the sounds or air-bladders of certain fresh-water fishes, the sturgeon in particular; it is imported from Russia, Brazil and Canada.

Isis, an Egyptian divinity, the wife and sister of Osiris and mother of Horus, the three together forming a triunity, which is characteristically Egyptian, and such as often repeats itself in Egyptian mythology, typifying the life of the sun, Osiris representing that luminary slain at night and sorrowed over by his sister Isis, reviving in the morning in his son Horus, and wedded anew to his sister Isis as his wife; the worship of Isis was extensively adopted by both Greeks and Romans.

Isis, name given to the upper reaches of the R. Thames above Oxford.

Islam, or *Islamism*, the religion of Mohammed (*q.v.*).

Islay, a large, mountainous island 13 m. W. of Kintyre, Scotland; much of it is cultivated; dairy produce, cattle and sheep are exported; there are lead, copper and manganese mines, marble quarries, salmon fisheries and distilleries. Pop. 6,000.

Isleworth, part of the borough of Heston and Isleworth, Middlesex, England, 12 m. SW. of London, on the Thames. Soap is made, and there are breweries and market and nursery gardens. Syon House, formerly a famous Bridgettine convent, and later a seat of the Duke of Northumberland, is here.

Islington, a borough of London, 2 m. N. of St. Paul's; includes Holloway, Highbury, Barnsbury and Canonbury. Pop. 308,000.

Ismaïlia, Canal; was the headquarters of the work during the construction of the Canal. Pop. c. 15,000.

Ismailis, a Shiite Mohammedan sect whose leader the Prophet was vested in a line of Imams, or leaders, tracing through Moham-

med's son-in-law Ali, to be perfected in the future in a "hidden Imam" or "Mahdi" (*q.v.*).

Ismail Pasha, Khedive of Egypt from 1863, who was obliged by the Powers to abdicate in 1879. (1830-1895).

Isobars, lines on a map joining up all those points where the barometric pressure is the same.

Isocrates, an Athenian rhetorician, at first a philosopher and speech-writer, later a teacher of oratory; he is said to have starved himself to death after the Battle of Chaeronea at the age of 98 because he could not bear to outlive the humiliation of Greece by Philip of Macedon and the destruction of its freedom. (436-338 B.C.).

Isomerism, the phenomenon of the existence of two or more chemical compounds whose molecules consist of the same number of similar atoms; the difference between such compounds or isomers being due to different arrangements of the atoms within the molecules. Thus the molecules of ordinary (ethyl) alcohol and dimethyl ether both consist of two atoms of carbon, six of hydrogen and one of oxygen though the arrangement of the atoms in the molecules of the two is different.

Isomorphism, similarity of form between the crystals of different chemical substances.

Isonzo, a river of Italy, rising at Monte Terzoi in the Julian Alps and flowing 78 m. to the Gulf of Trieste. Before the World War it was in Austrian territory. It was the scene of Italian victories under General Cadorna in 1915, and again in 1916; but at Caporetto in Oct.-Nov. 1917 the Italians sustained a crushing defeat, and General Diaz superseded Cadorna.

Isotherms, lines drawn on a map where the temperature is the same.

Isotopes, chemical elements which, although their atomic weights differ, have identical chemical properties; a state of things resulting from a variation in the number of neutrons present in the atomic nucleus. Naturally occurring forms of the elements are generally mixtures of isotopes; thus ordinary hydrogen consists of a mixture of three isotopes with atomic weights 1, 2, and 3 respectively.

Isotropic Substances, those which have the same properties in all directions, particularly with respect to elastic and optical properties. Substances which have different properties in different directions (*e.g.*, crystals) are known as *anisotropic*.

Israel, Kingdom of, the name given to the northern kingdom set up by the ten Israelite tribes which revolted from the kingdom of Judah after the death of Solomon.

Issus, a river in Cilicia, Asia Minor, where Alexander the Great defeated Darius, 333 B.C.

Istanbul, or *Constantinople*, former capital of the Turkish Empire, on the Bosphorus, situated on a peninsula washed by the Sea of Marmora on the

quarters of Galata and Pera, one of the finest commercial sites in the world. In 1923 Angora replaced it as the capital of Turkey.

Istanbul is renowned for its mosques, chief among them being St. Sophia, built as the Christian cathedral. Under the régime of



ST. SOPHIA

Kemal Atatürk the city has been considerably modernised. Nationalism is strong, but there is a large foreign population. The Golden Horn is almost exclusively populated with Europeans, and there are several thousand Jews mostly descended from those exiled from Spain by Ferdinand V. The large Greek population, still flourishing despite the expulsion of Greeks in 1922, is controlled by the Greek Patriarch. The Central European railway system reaches Istanbul from Paris, via Belgrade and Sofia. Pop. 742,000. See also Constantinople.

Isthmian Games, one of the four Pan-Hellenic festivals; they were periodically celebrated in honour of Poseidon at the isthmus of Corinth, in Greece, whence the name.

Istria, peninsula at the N.E. of the Adriatic Sea, formerly part of the Austrian Empire, since the World War incorporated in Italy as part of the province of Venezia Giulia; the population is mixed, Italian and Slav; chief towns, Trieste and Pola; yields olive-oil, figs and vines.

Italian Architecture. The style of architecture called Italian was first developed by Filippo Brunelleschi, and flourished during the 15th, 16th and 17th Centuries; it was an adaptation of classical circular-arch form to modern requirements. In Rome it conformed most to ancient types; in Venice it assumed its most graceful form. It was more suitable to domestic than to ecclesiastical work; but the dome is an impressive feature, and its noblest monument is St. Peter's at Rome.

Italian East Africa, name officially given by Italy in 1936, after the Italo-Ethiopian War, to the territories occupied by Italy in East Africa; they comprise the former colonies of Eritrea and Italian Somaliland, and are divided into five provinces, Eritrea, Amhara, Galla, Harar and Somalia, the capital, Addis Ababa, being a separate district not included in any province. The people are Abyssinians, Gallas, Somalis and other negroes; they are mainly Christians and Mohammedans, but there are some pagans. The total area is estimated at 600,000 sq. m., and the pop. at 7,600,000.

Italic, a printing type of Italian origin first founded about 1500 by Aldus Manutius, a printer of Venice. The type slopes from the right downwards, though the capitals remained upright until the slope was introduced by the French. Italics are mostly used to give emphasis or to mark some other distinction.

Italy, the central peninsula of the three which jut into the Mediterranean Sea on the S. of Europe, has the Adriatic and Tyrrhenian Seas on the E. and W. respectively, and is separated from France, Switzerland and Austria in the N. by various ranges of the Alps. Between the Alps and the Apennines lies the extensive fertile plain of Lombardy, watered by the R. Po, and containing several large lakes, such as Garda, Como and Maggiore.

The Apennines form a picturesque chain of mountains 5,000 ft. high down the centre of the country. The climate varies in different districts, but is mostly warm. Agriculture is extensive, but in many parts not highly developed in its methods, and the peasantry are poor. The most important crops are cereals, including rice and maize, grapes, olives and chestnuts, and in the S. oranges and lemons. Italian wines are inferior to French in quality.

Coal and iron are scarce; sulphur is produced in large quantities in Sicily. There are large quarries of marble and alabaster. The most important industries are silk, metal-working, glass and porcelain. There is an extensive foreign trade, chiefly with France

and Great Britain; the exports consist of silk, sulphur, marble, fruit and wine; the imports of coal, iron and textile goods. The religion is Roman Catholic; education is now compulsory.

The Gothic kingdom of Italy was founded on the ruins of the Roman Empire, A.D. 489. In succession the country was conquered by the forces of the Byzantine Empire, the Lombards and the Franks. From the 11th Century onwards its history has been one of constant internal strife and confusion. The presence of the papal power in Rome, the rise of such rich trading republics as the cities of Milan, Florence, Naples, Genoa and Venice, the pretensions of French kings and German emperors, and factions like those of the Guelphs and Ghibellines, produced endless complications and ruinous wars.

In the 16th Century the influence of the Austro-Spanish house of Charles V. became dominant; his son, Philip II., was King of Milan and Naples. In more recent times the small states of Italy were continually involved in the wars which devastated Europe, and passed in alliance or in subordination into the hands of Austria, France and Spain alternately.

The 19th Century saw the unification of the kingdom. After the abortive movement of Mazzini came Cavour and Garibaldi, who, after severe struggles against the Austrians in the N. and the despots of Southern Italy, proclaimed Victor Emmanuel King of Italy in 1861. By various steps the whole of the peninsula, with the islands of Sardinia and Sicily, was brought into the kingdom. The temporal power of the Pope ended in 1870, though restored in a modified form in 1929.

The Government is a constitutional monarchy, though after 1922 power was vested in the Fascist under Mussolini (q.v.), who has since ruled autocratically, though nominally the franchise is exercised by every citizen who can read and write. Conscription is in force for army and navy. These are both strong, the navy being one of the largest in Europe.

Fascist policy has been to create a centralised Nationalist State and to increase the country's economic power by reviving industry, which was reorganised into national syndicates (1926). Frontier difficulties, notably that of Fiume, were surmounted; the friction that existed between France and Italy in 1924 and 1925 gave way to a gradual rapprochement though this was overclouded in 1937-1938; and Italian efforts towards European stability were by 1930 strengthened by various trade agreements.

Italy also signed the Locarno Treaty, and her position in Europe, apparently stabilised by the Three-Power Conference at Stresa with Great Britain and France in 1935, was radically altered by an aggressive policy towards Abyssinia. Following a frontier dispute, Mussolini's declared intention was to annex the country; by May 1936 Italy was in nominal possession, and the King of Italy was proclaimed Emperor of Abyssinia.

The Abyssinian War had not so impoverished Italy that she was unable to maintain her position as a strong Mediterranean Power, although Italian aims were delimited in the Anglo-Italian Mediterranean Agreement (1937). Italy's adherence to the anti-Komintern Pact, however, and her support of General Franco in the Spanish Civil War, brought about a close link with Germany.

The area of Italy is 119,720 sq. m. The 94 provinces are grouped into 19 Departments. The population is 43,580,000.

Itch Mite (*Sarcoptes scabiei*), tiny species of Arachnida, the female being about one-fiftieth of an inch long, and the male smaller. It lives on the skin into which the female burrows to lay her eggs causing in man the infectious skin disease

called "scabies" or "itch." It is usually contracted by sleeping in an infected bed, and affects uncleanly people more than cleanly.

Ithaca, one of the smallest of the Ionian Is., known now under the name Thiakli; it was the home of Ulysses, and his domain as king when he set out for the Trojan War. Also a town in New York State, U.S.A., seat of Cornell University (q.v.). Pop. 21,000.

Ivan III., Russian Czar, surnamed The Terrible, sought to free Russia from the yoke of the Tartars who had held it tributary for two centuries; gained victories over the Tartars and the Poles, and was the first to receive at Moscow ambassadors from other Powers of Europe; reigned from 1462 to 1505.

Ivan IV., Russian Czar, surnamed the Terrible, grandson of the preceding, assumed the sovereignty at 14, had himself crowned in 1545; overthrew the Tartars at Kazan and Astrakhan, receiving homage thereafter from almost all the Tartar chiefs. On the death of his wife in 1563 he lost all self-restraint, and entered on several ferociously fought wars. In a fit of passion he killed his eldest son, whom he loved, remorse for which embittered his last days and hastened his end. (1530-1581).

Iviza, Is., is hilly and well wooded, with fertile valleys, important fisheries and lead mines.

Ivory, the hard substance of which the tusk of the elephant consists; that of the African elephant is whitest, and therefore most valued. The tusk continues to grow during the whole lifetime of the animal, and sometimes reaches a weight of 200 lb. Ivory has from the earliest times been esteemed as a material both for constructional and ornamental purposes.

Ivory Coast, French colony in Africa, to the N. of the Gulf of Guinea, between Liberia and the Gold Coast; occupied by France from 1882; produces cocoa, cotton, rubber and timber; capital, Abidjan. Area 184,200 sq. m. Pop. 3,850,000.

Ivry, a village in France, in the dept. of Eure, NE. of Dreux, famous for the victory of Henry of Navarre over the League in 1590.

Ivy (*Hedera Helix*), plant of the order Araliaceae, having smooth, shiny leaves, lobed on the climbing shoots but not on the inflorescence shoots, and bearing small green flowers which are followed by dark green berries. It is a root-climber. Ivy attains a great age. It is native of Europe, and of parts of Asia and Africa.



IVY
(flowering
shoot)

Ixion, in Greek mythology the King of the Lapithae, who being admitted to heaven attempted to do violence to Hera, and whom Zeus deluded to embrace a phantom image of her instead, whereby he became the father of the Centaurs. Zeus thereafter punished him by fastening him to an eternally revolving wheel in hell.

Izmir, city in Turkey, on the Aegean, a great trade depôt and Turkish naval base; formerly known as Smyrna, an important port since classical times; with its hinterland was awarded to Greece after the World War, but recaptured by the Turks in 1922, being then largely destroyed by fire; an earthquake did great damage in 1928. Pop. 171,000 (vilayet 597,000).

J

Jabiru, a genus of storks found in Central Australia and Africa. They are handsome birds. The Black-necked Jabiru stands up to 5 ft. high and has white plumage with black head and neck.

Jaborandi, a drug prepared from the leaves of a Brazilian shrub, *Pilocarpus pennatifolius*, of the natural order Rutaceae; used in the treatment of Bright's disease.

Jacamar, the name of a family of birds (the Galbulidae) nesting in the banks of streams in Central and South America and resembling Bee-eaters in appearance, but Puff-birds in habits. The plumage is usually brilliant and metallic, and the bill sharp, straight and slender except in the Great Jacamar (*Jacamerops grandis*), which has a curved bill. There are about 20 species in the family.

Jacana, the name of a family of birds (the Pnidae), allied to the Plovers, but not unlike Rails in appearance. They have long toes and claws and widely-spreading feet, enabling them to walk on the leaves of water plants (water-lilies, etc.). They have a spur on the wings, which in some species is long and sharp. They are found in Australia (*Jacana gallinacea*),

South America (*Jacana jacana*), Africa (*Microparra capensis*, the smallest species), and in India and the East (the Pheasant-tailed Jacana, *Hydrophasianus chirurgus*, the largest species).

Jacaranda, a genus of trees of the order Bignoniaceae, native to the northern parts of South America, whose fragrant wood, commercially known as rosewood, is used for cabinet-making and veneering.

J'accuse (I accuse), title of an open letter by Zola (q.v.) to the French President, in 1898, on the Dreyfus Affair (q.v.); also title of a book published in 1915 in Switzerland by Richard Grelling, accusing Germany of responsibility for the World War.

Jack, a familiar form of John, the most widespread of Christian names, said to be derived from the French Jacques, or from Jankin, a distinctive form of John or Johnkin. Johnkin gives us Jock and Jockey; from its very common use it has acquired that slightly contemptuous signification observable in such compounds as "every man Jack," "Jack-of-all-trades," "Jackanapes"; and the name as applied to the knave in playing-cards, and to the small white ball used as a mark in the game of bowls is an example of its transferred sense.

Jackal, the name of certain species of wild dog, much resembling the wolf and fox, having bushy tail, and back of yellowish-grey toning lighter under belly. It is carnivorous, 2 or 3 ft. in length and will interbreed with the common dog. It hunts in packs and has a dismal cry. Jackals inhabit Southern Asia, Africa and Eastern Europe.



JACKAL

Jackdaw (*Corvus monedula*), a species of small crow, found in all parts of the Old World. It is of black plumage, with a bluish reflection, particularly on the wings. It commonly builds in turrets, and will imitate well the sounds of turds, and is sometimes tamed as a domestic pet.

Jackson, (1) a prosperous manufacturing city in Michigan, U.S.A., on the Grand R., 76 m. W. of Detroit; has various mills and iron-works and bituminous coal-mines on its outskirts. Pop. 55,000. (2) Capital of Mississippi State, U.S.A., 42 m. E. of Vicksburg; trades in machinery and cottonseed oil. Pop. 48,000.

Jackson, Andrew, seventh President of the United States, born in Waxhaw, N. Carolina; in 1788 became public prosecutor at Nashville; took a prominent part in establishing the State of Tennessee. During the war with Britain (1812-1814) he crowned a series of successes by his great victory over Sir E. Pakenham at New Orleans. For a time he was Governor of the State of Florida, but, resigning, he entered the U.S. Senate in 1823. Five years later he became President, and in 1832 was again elected. His Presidency is associated with the readjustment of the tariff on a purely protective basis, the sweeping away of the United States Bank, the wiping out of the national debt in 1835, and the enforcement of claims against the French for damage done during the Napoleonic wars. He made a more frequent use of the President's veto than any of his predecessors. (1767-1845).

Jackson, Sir Barry Vincent, theatrical manager, born in Birmingham; founder (1913) and director of the Birmingham Repertory Theatre, which has produced over 400 plays, old and new; knighted 1925; has written children's plays, and translated Gheon's *St. Bernard*. (1879-).

Jackson, John ("Gentlemen Jackson"), pugilist, was the son of a London builder; had only three fights; beat Fewterel, near Croydon, 1788, in presence of Prince of Wales; defeated by Ingleson at Ingatstone, 1789, through breaking bones in a fall; beat Mendoza at Hornchurch 1795; Champion of England, till retirement in 1803. (1769-1845).

Jackson, Thomas Jonathan, known as Jackson, Stonewall Jackson, an American general, born in Virginia; distinguished himself in the Mexican War; retired from the army in 1853, and became a professor in Mathematics and Military Science in Virginia; was appointed brigadier-general in the Confederate army at the outbreak of the Civil War, and earned the *nom de guerre* of "Stonewall" by his firmness at the Battle of Bull Run, July 21, 1861; was by mistake fired at and mortally wounded by his own men on May 6, 1863. (1824-1863).

Jacksonville, (1) the chief seat of commerce in Florida State, is situated on St. John's R., some 20 m. from its mouth; is a busy railway centre, and has an active river trade in lumber, cotton, fruits, etc., and is a health resort. Pop. 146,000. (2) Capital of Morgan County,

Illinois, is pleasantly situated on a fertile plain, 34 m. SW. of Springfield; is noted as an educational centre, and for its many charity asylums; its manufactures embrace woollens and paper. Pop. 18,000.

Jacob, a Hebrew patriarch, younger son of Isaac and Rebecca; he had twelve sons, the fathers of the twelve tribes of Israel; the story of his life is told in the book of Genesis.

Jacobean, a term applied generally to the reigns of the first four Stuarts (1603-1688), though it should in strictness apply only to that of James I. Jacobean furniture is generally in heavy oak, skillfully carved. Panelling is characteristic of the interior of the typical Jacobean house.

Jacobins, a political club, originally founded in Paris during the French Revolution; so called from its place of meeting in the Rue St. Honoré, previously a Jacobin convent; it exercised a great influence over the course of the revolution, and had affiliated societies all over the country working along with it; its members were men of extreme revolutionary views, who procured the death of the King, exterminated the Girondists, roused the lowest classes against the middle, and were the ruling spirits during the Reign of Terror; Robespierre was their chief, and his fall sealed their doom.

Jacobites, the name given to the adherents of the Stuart dynasty in Great Britain after their expulsion from the throne in 1688, and derived from that of James II., the last Stuart king. They made two great attempts to restore the exiled dynasty, in 1715 and 1745, but both were unsuccessful, and the movement gradually died away.

Jacobs, Helen Hull, American champion lawn-tennis player, born in Arizona, U.S.A.; world singles champion, 1936; captain of winning American Wightman Cup team, 1936 and 1937. (1909-).

Jacobs, William Wymark, author, born in London; held post in Savings-bank department of the Post Office, but retired in 1899 to devote himself to authorship. After publishing a volume of short stories entitled *Many Carriages*, he made his name as a humorist, following up his success with *Sea Urchins*, *The Skipper's Wooing*, *A Master of Craft*, and other volumes of sea life. One or two of his stories have been dramatised. (1863-).

Jacobus, a gold coin of the reign of James I., worth 25 shillings.

Jacquard Loom, a loom with an apparatus for weaving figures in textiles, such as silks, muslins and carpets, invented by a Frenchman, born in Lyons, named Joseph Marie Jacquard. (1752-1834).

Jacquerie, the name given to an insurrection of French peasants against the nobles in the Ile de France (the Paris district), which broke out on May 21, 1358, during the absence of King John as a prisoner in England. It was caused by the oppressive exactions of the nobles, and was accompanied by much savagery and violence, but the nobles combined against the revolt, and it was extinguished on June 9 following.

Jactitation, an action at law to set aside, as a false pretension or claim on the part of one person that he or she is married to another, made with malicious intention. An action may be brought by the party aggrieved, and silence enjoined on the offender.

Jade, a mineral of the pyroxene group, containing sodium, of a pale green, yellowish or white colour. It is found in New Zealand, Siberia and especially in China,

where it is worked up into various objects of art and ornament, often of extreme beauty of workmanship, which are known as jades.

Jael, the Jewish matron who according to the Biblical book of Judges, slew Sisera the Canaanitish captain, smiting a nail into his temples as he lay asleep in her tent.

Jaen, a picturesque cathedral city, capital of a province of the same name in Andalusia, Spain, on a tributary of the Guadalquivir, 50 m. NW. of Granada. Pop. 43,000. The province (Area 5,200 sq. m. Pop. 710,500) lies along the valley of the Guadalquivir, and was once a Moorish kingdom.

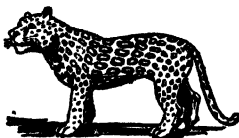
Jaffa, seaport in Palestine, 30 m. NW. of Jerusalem, with an export trade in olive-oil, oranges, soap and wool; the Joppa of the Bible. The town is being rapidly developed, under the British Mandatory régime, by Jewish settlers, and has been almost entirely rebuilt in recent years.

Jagersfontein, town of Orange Free State, 67 m. SW. of Bloemfontein. Here are important diamond-mines. Pop. 4,000.

Jagger, Charles Sargeant, British sculptor, born near Sheffield. His best-known work is the Royal Artillery Memorial at Hyde Park Corner, London. (1885-1935).

Jaggery, a variety of sugar, coarse and brown, obtained in the East Indies by evaporation of the sap (called toddy) of various palms, especially of the Gomuti Palma (*Arenga saccharifera*), of the Palmyra Palm (*Borassus flabellifer*), and of the Coconut Palm (*Cocos nucifera*).

Jaguar (*Felis onca*), a ferocious quadruped of Southern America belonging to the cat or *Felidae* family. It is 5 to 7 ft. in length, generally tawny, with leopard-like spots arranged in larger and more defined groups, and is found in America only. It can climb trees and swim streams, and will attack horses, cattle and man.



JAGUAR

Jahangir, Mogul Emperor of India from 1605, in succession to his father Akbar; a self-indulgent ruler whose reign was marked by insurrections. (1569-1627).

Jail Fever, the popular name of a severe form of typhus, formerly frequent in prisons owing to their insanitary conditions, and sometimes spreading to judges, court officials, etc.

Jainism, a religion of India, instituted about the 6th Century B.C. by an ascetic named Mahavira, contemporary with Buddha. Its followers are called Jainas, or Jains, and still number about 1,250,000; like the Buddhists, they are divided into an ascetic class and a lay, but monasticism is not developed to the same degree among them. There are two principal sects, "the white-gowns" and "the air-clad"—i.e., naked—though it is only at meals, which they eat in common, that the latter strip naked. They abstain from animal food, drink only filtered water, breathe only through a veil, and go sweeping the ground before them for fear of swallowing or crushing any live thing. Some of their temples are among the most beautiful examples of Indian architecture.

Jalalabad, town of Afghanistan, by the Khyber Pass, near the Kabul R., near the town of Herat. During the Afghan War it was defended by the British for 5 months. Pop. 4,000.

Jalap, in medicine, a purgative prepared from the root of a Mexican climbing plant, *Ezogonium* (or *Ipomoea*) *purga*, of the family Convolvulaceae. The name is derived from the town of Jalapa, near which the plant is found.



Jalapa, capital of the Mexican State of Vera Cruz, is prettily situated at the base of the Cordilleras, 60 m. NW. of Vera Cruz city. Pop. 40,000.

Jalisco, a maritime State in Mexico, facing the Pacific; consists chiefly of elevated plateau; enjoys a fine climate; has mining industries, some agriculture, and a trade in cotton and woolen goods, tobacco, etc.; capital, Guadalajara. Area 31,000 sq. m. Pop. 1,255,000.

Jamaica ("Land of Springs"), a British crown colony, the largest and most important of the British West India Is.; is one of the Greater Antilles group, and lies some 90 m. S. of the eastern end of Cuba. Its greatest length E. and W. 144 m.; is traversed by the Blue Mts. (7,400 ft.), whose slopes are clad with luxuriant forests of mahogany, cedar, satin-wood, palm and other trees. Of the numerous rivers, only one, the Black R., is navigable, and that for only flat-bottomed boats and canoes. There are many harbours (Kingston the finest), while good roads intersect the island. The climate is oppressively warm and somewhat unhealthy on the coast, but delightful in the interior highlands. The chief trade products are sugar, bananas, citrus fruits, ginger, logwood and coffee. It was discovered in 1494 by Columbus, and since 1655 has been a possession of England. Area 4,450 sq. m. Pop. 1,138,500, the majority negroes, with only a few thousand whites. The large supply of cheap black and coloured labour, coupled with the low world-price of sugar, has militated against high wages and a reasonable standard of living and there were serious riots in 1938. These, following on riots in Trinidad, led to the appointment in July, 1938, of a strong Royal Commission, under Lord Moyne, to inquire into conditions in the West Indies generally.

Jamboree, originally a drinking bout or merry-making, is the name applied by the Boy Scouts' Association to their national or world rallies. In the game of euchre it denotes a single hand containing the five highest cards.

James, the name of three disciples of Jesus Christ; James the elder, son of Zebedee, who by order of the high-priest was put to death by Herod Agrippa; James, the younger, son of Alphaeus; and James, the brother of the Lord, stoned to death.

James I. of England (VI. of Scotland), son of Mary Queen of Scots, and Darnley, was proclaimed King of Scotland when only 13 months old, in 1567; entrusted to the Earl of Mar, and educated by George Buchanan. Moray, Lennox, Mar and Morton were successively regents, till James assumed the government in 1581, executing Morton and choosing Arran and Lennox for his advisers. Plots and counter-plots, the Raid of Ruthven (1582), the siege of Stirling by some of the nobles with 10,000 troops, mostly from England, the surrender of the King and the fall of Arran in 1585, the insurrection of the Catholic nobles, 1491-1494, and the Gowrie Conspiracy in 1600, betrayed the restlessness of the kingdom and the weakness of the King. James married Anne of Denmark, 1589; on the death of Elizabeth in 1603, he succeeded to the throne of England as James I.; was at first popular, but soon forfeited all confidence by his

favouritism. He governed through such subordinates as Carr, Earl of Somerset, and the infamous Buckingham, whose indiscretion brought about a war with Spain in 1624; James died immediately afterwards. He has been described by Sully as "the wisest fool in Christendom." He held absurdly high views of the royal prerogative, sold patents of nobility, and was careless of the misdeeds of his ministers. (1568-1625).

James II. of England (VII. of Scotland), son of Charles I., reigned

1685 to 1688.

During the Commonwealth he was a soldier in France and Spain; at the Restoration returned to England as Duke of York, and became Lord High Admiral. Avowing himself a Catholic in 1671, the Test Act of 1673 enforced his resignation, and thenceforward repeated attempts were made to exclude him from the succession. On becoming king he promised to maintain the Church and to respect the liberties of the people, but his government was arbitrary and tyrannical. He paraded his Catholicism, persecuted the Covenanters, subordinated English interests to French, permitted the "Bloody Assize," suspended the Test Act, violated the rights of the Universities, gave Church Offices to Roman Catholics, and by these and many other acts of despotism made his deposition necessary. Leading statesmen invited William of Orange to assume the throne, and James fled to France. An invasion of Ireland in 1689 ended in his defeat at Boyne Water. He retired again to France, and lived at St. Germain till his death. (1633-1701).



JAMES II.

James I., King of Scotland from 1424 to 1437, son of Robert III., born in Dunfermline. In 1406, while on a voyage to France, he was captured by the English and detained by Henry IV. for 18 years, during which time, however, he was carefully trained in letters and in all knightly exercises. Returning to Scotland in 1424 with his bride, Jane Beaufort, niece of the English king, he took up the reins of government with a firm hand. He avenged himself on the nobles by whose connivance he had been kept so long out of his throne, reduced the turbulent Highlanders to order, and introduced a number of beneficial reforms (e.g., a wider parliamentary franchise, a fixed standard for the coinage, a supreme court of civil jurisdiction, a renovated system of weights and measures), and widened Scotland's commercial relations with the Continent. He was a man of scholarly tastes, a patron of learning, and exhibited poetic gifts in his well-known poem, *The King's Quhair*. His vigorous efforts to lower the powers of the nobility procured him their inveterate hatred, and in 1437 he was murdered in the Dominican monastery at Perth by a band of conspirators. (1394-1437).

James II., King of Scotland from 1437 to 1460, son of preceding. During his minority the country was torn by rival factions amongst the nobility, the chief point of contest being the wardship of the young king. An attempt on the part of the conspirators who had murdered James I. to place their leader, the Earl of Athole, on the throne, was frustrated. In 1449 James assumed the duties of his kingship, and in the same year married Mary, the daughter of the Duke of Gueldres. An English war then being

waged on the Borders was brought to a close, and the young King entered vigorously upon administrative reforms. In these efforts he was hampered by the opposition of the nobility, and his fiery temper led him to participate in the murder of the chief obstructionist, the Earl of Douglas. Protection given to the exiled Douglasses by the Yorkists led James to support the claims of Henry VI. in England. He was killed by the bursting of a cannon at the siege of Roxburgh Castle. (1430-1460).

James III., King of Scotland from 1460 to 1488, son of James II.; was during his minority under the care of his mother and Bishop Kennedy of St. Andrews, the Earl of Angus being lieutenant-general of the kingdom. After their deaths troubles arose among the nobility; the King married Princess Margaret of Denmark in 1469, and gave himself up to a life of quiet ease, surrounded by men of art and culture, while his brothers Albany and Mar, by their military tastes and achievements, won the affections of the nobles. James, becoming jealous, imprisoned them. Albany, who had intrigued with Edward IV., fled to France, Mar died in Craigmillar Castle. While the King and his army were marching to meet expected English action in 1482 the nobles instigated by Archibald, "Bell-the-Cat," seized and hanged the royal favourites at Lauder, and committed the king to Edinburgh Castle. A short reconciliation was effected, but was soon broken, and civil war ensued. The defeat of the royalist forces at Sauchieburn took place in 1488. The King escaped from the field, but was thrown from his horse, and, taking refuge in a house at Beaton's Mill, was there slain. (1451-1488).

James IV., King of Scotland from 1488 to 1513, participated in the rebellion which overthrew his father, James III., and succeeded him. During his youth his supporters carried on the government in their own interests, and despoiled the nobles who had been loyal to the late King; but when he came of age he chose good advisers, among them Sir Andrew Wood. His reign was marked by resistance to the claims of the Pope, by the firm and wise administration of law, the fostering of agriculture, of shipbuilding and other industries. In 1503 James married Margaret, daughter of Henry VII. After that king's death relations between the two countries became strained. At the solicitation of the French queen, against the advice of his own Queen and nobles, he invaded England in 1513, the invasion ending in disaster at Flodden, he and the flower of his army perishing. (1473-1513).

James V., King of Scotland from 1513 to 1542, son of James IV.; an infant when he came to the throne. His mother was regent till her marriage with young Angus, when the nobles called James IV.'s cousin, Albany, from France to assume the regency. French and English factions sprang up; Henry VIII. intrigued in the affairs of the country; anarchy and civil war ensued, and Albany retired to France in 1524. In that year the Queen-mother, aided by Henry, took the young King from Sir David Lyndsay, to whom he had been entrusted, and assumed the government again in his name. The Douglas family usurped his person and the government in 1525; but James asserted himself three years later, and began to reign in person, displaying judgment and resolution, banishing the Douglasses and keeping order in the Highlands and on the Borders. He married (1) Princess Margalene of France in 1537, and (2) Mary of Guise in 1538. Henry, aggrieved by James's failure to meet him in conference on Church matters, and otherwise annoyed, sent 30,000 men into Scotland in 1543. The Scottish forces were

routed at Solway Moss; the King, vexed and shamed, sank into a fever and died at Falkland. In this reign the Reformation began to make progress in Scotland, and would have advanced much farther but for James's support of the clergy. (1512-1542).

James (James Francis Edward Stuart), the "Old Pretender." See Stuart.

James, George Payne Rainsford, historical novelist, born in London; wrote over a hundred novels, beginning with *Richelieu* in 1829, which brought him popularity, profit and honour; was appointed historiographer-royal to William IV.; was burlesqued by Thackeray. (1801-1860).

James, Henry, American novelist, born in New York; studied law at Harvard, but was eventually drawn into literature, and after a spell of magazine work established his reputation as a novelist in 1875 with *Roderick Hudson*. Most of his life was spent in Italy and England, writing novels, short stories and criticism. The style of his novels is involved, their plots almost non-existent; their strength lies in their remarkable psychological analysis. Best-known work, *The American and The Turn of the Screw*. (1843-1916).

James, William, American psychologist, brother of Henry James; professor of Philosophy at Harvard; was the founder of the philosophical system known as Pragmatism, and published many books on psychological subjects, including *The Varieties of Religious Experience*. (1842-1910).

James, Epistle of, a catholic epistle of the New Testament, presumed to have been written by James, the brother of the Lord, addressed to Jewish Christians who, in accepting Christianity, had not renounced Judaism. It is concerned with Christian morality, agreeably to the standard of ethics given in the Sermon on the Mount. Its insistence on works as well as faith was much disliked by Luther, who called it "an epistle of straw."

James, St., James, the son of Zebedee, the patron saint of Spain, known as Santiago; his attribute the sword by which he was decapitated.

James Bay, a large inlet in the SE. Canada. It is shallow and brackish, and measures 350 m. by 120 m. Its eastern shore is in Quebec province, its Western in Ontario. Moosonee, at the mouth of the Moose R. in the E., is a trading-station of the Hudson's Bay Company.

James of Hereford, Henry, Baron, judge; born at Hereford, educated at Cheltenham College; liberal M.P. for Taunton, 1869-1885, and for Bury, 1885-1895; from 1886 became leader of the Liberal Unionists. Solicitor-General, 1873; Attorney-General, 1873 and 1880-1885; carried Corrupt Practices Act, 1883; spoke 12 days for *The Times* before Parnell Commission, 1889; chancellor of Duchy of Lancaster and Peer, 1895; joined Judicial Committee of Privy Council, 1896. (1828-1911).

Jameson, Sir Lauder Starr, leader of the Johannesburg, born in Edinburgh; studied medicine; established himself at Kimberley in 1878, and under the patronage of Rhodes became administrator for the S. Africa Company at Port Salisbury in 1891; from Mafeking, in Dec. 1895, started, with a body of 500 troops, upon his incursion into the Transvaal to assist the Uitlanders of Johannesburg; at Krugersdorp the raiders were repelled by a superior force of Boers, and compelled to surrender; having been handed over to the British authorities, Jameson was tried in London where he was hanged, and condemned to 15 months imprisonment, but was

soon liberated; later became member of the Cape Legislative Assembly and Premier. (1853-1917).

***James River**, in Virginia, U.S.A., formed by the junction of the Jackson and the Cowpasture; it flows in a south-easterly direction, falling into the Atlantic at the S. end of Chesapeake Bay. It has a course of 450 m., and is navigable as far as City Point.

Jamestown, in Virginia, at mouth of James R.; the first permanent English settlement in America, founded in 1607 by the colonies sent out by the London Virginia Company under Captain Newport.

Jammu, city in NW. India, 80 m. N. of the Maharaja of Jammu and Kashmir. Pop. c. 30,000.

Jamnagar, or **Nawanagar**, town of capital of the native State of Nawanagar. It is a flourishing town on the Gulf of Cutch, with cloth factories and pearl fisheries. Pop. 42,500.

Janiculum, a hill in Rome on the right bank of the Tiber, in ancient times the site of a fortress on which a flag was displayed, the removal of which indicated that the city was in danger of enemy attack.

Janizaries, a Turkish military force perfectly in 1336; composed originally of Christian youths taken prisoners in war or kidnapped, and trained as Mohammedans; from being at first 10,000, and fostered by the privileges granted them, increased to 300,000 or 400,000 strong, till they became unruly and a danger to the State, when, after various unsuccessful attempts to crush them, they were in 1826 dissolved by Sultan Mahmoud II.

Jan Mayen Land, a volcanic uninhabited island, 35 m. in length, situated in the Arctic Ocean between Iceland and Spitsbergen; discovered in 1607 by Hudson. It was annexed by Norway in 1929, and has a weather forecasting station.

Jannsen, Cornelis, Dutch portrait-painter, born in London, where he did most of his work; left London 1643 and died at Amsterdam; worked at the court of Charles I. and painted a portrait of him. (c. 1595-1664).

Jansen, Cornelius, a Dutch theologian and Bishop of Ypres, born in Louvain; wrote a book entitled *Augustinus* in exposition of St. Augustine's doctrine of grace, which was published after his death, and which gave rise to a great controversy between his followers, in France especially, and the Jesuits. (1585-1638).

Jansenists, a former party in the Roman Catholic Church, supporters of Jansen's views, who, in opposition to the Jesuits, maintained the Augustinian principle of the irresistible nature of divine grace. The most celebrated members of the party were the Port-Royalists (*q.v.*) of France, in particular Arnauld and Pascal, and they were opposed not only by the Jesuits, but also by both Louis XIV. and the Pope. Driven from France on the death of Louis, they took refuge in the Netherlands; in 1719 they were declared heretics by Pope Clement XI. A Jansenist Church still exists, numbering some 10,000 members.

Januarius, a Christian martyr under Diocletian, whose head is preserved in Naples with a phial containing his blood, which, on certain occasions is said to liquefy when brought into contact with the head. Festival, September 19.

January, the first month of the year, so called as sacred to Janus (*q.v.*).

Janus, a very ancient Italian deity who presided over the beginning of the several divisions of time, as well as the beginning of all enterprises, in connection with which he was worshipped. He had two heads or faces, one of which looked behind into the past and the other before into the future. The door of his temple in Rome was opened only in war, and kept shut in time of peace.



ROMAN COIN (AN AS) WITH REPRESENTATION OF JANUS

Japan, an island empire of the N. Pacific, lying along the E. coast of Asia, and separated from Korea and Asiatic Russia by the Sea of Japan, consists of Honshu, Shikoku, Yezo and 4,000 small islands. Though not of volcanic origin, the islands are the most mountainous in the world, have many volcanoes and sulphur springs, and are subject to earthquakes sometimes very destructive, as that at Tokyo and Yokohama in 1923, when 150,000 persons were killed. They are very picturesque, and have peaks from 8,000 to 12,000 ft. high. The rivers are too swift for navigation; the coast, not much indented, has yet some good harbours. The valleys are well wooded, but the soil is not very fertile.

Temperature and climate are varied; nowhere is the heat intense, but in some parts the winter is very cold. There is much rain, but on the whole the country is healthy.

The chief industry is agriculture; farming is very intensive; rice, cereals, pulse, tea, cotton and tobacco are raised, and many fruits. Gold, silver, all the useful metals, coal, granite and some decorative stones are found, but good building-stones is scarce. The manufacture of porcelain, lacquer-work and silk is extensive, and in some artistic work the Japanese are unrivalled. The chief ports are Yokohama, on the E. of Honshu, which has grown up since 1854, when the country was opened to trade, Kobe, Nagasaki and Osaka. The chief exports are tea, silk, cotton goods and rice; imports cotton, woolen and iron goods and chemicals.

The Japanese, who are a mixed race of Mongol, Ainu and Malay blood, are a kindly, courteous, law-abiding folk, with highly developed artistic tastes; education is compulsory and well provided for; religions are Shintoism and Buddhism, but Christianity is gaining ground. The Government is in the hands of the Mikado, who rules with the aid of a Cabinet and Parliament; the whole modern civilisation of the country is on Western lines, though until 1853 foreigners were excluded. A civil war in 1867-1868 effected the change from the old feudalism, and the success of Japan in the wars against China in 1894, and against Russia in 1904, proved that the new civilisation was no mere veneer.

During the World War Japan joined the Allies, Japanese troops capturing Tsingtao on Nov. 1, 1914. By the Treaty of Versailles Japan was appointed mandatory of the Caroline and Marshall Is. In 1931 a dispute arose with China over Manchuria; after abortive efforts by the League of Nations to settle the problem, Japan resigned from the League and overran Manchuria, which in 1932 she reorganised as the Japanese-protected State of Manchukuo. Since then hostilities with China, though war has not been declared, have been almost continuous, and a large part of China has been overrun by Japanese armies, though Chinese resistance, at first feeble, has grown more determined.

The economic growth of Japan in recent

years has been remarkable. In common with the rest of the Great Powers, Japan has lately devoted much attention to re-armament; and in 1930 a treaty regulating naval strength was signed between Great Britain, the U.S.A. and Japan, but on its expiry in 1936 Japan refused renewal, demanding parity of naval strength with the other two Powers. Her air force is also being rapidly strengthened, and has been largely used for destructive bombing raids on Canton and other Chinese cities.

Japan, Sea of, stretches between Korea and Asiatic Russia and the Japanese Is.; though its tides are very slight, it is dangerous for navigation by reason of its many reefs, sandbanks and currents.

Japanning, the application of varnish in imitation of Japanese lacquer work, whence the name.

Japheth, one of the three sons of Noah, of the European peoples, as Shem of the Semitic and Ham of the Hamitic or African races.

Japanica (*Cydonia japonica*), a well-known shrub of the Rosaceae family, native of China and Japan, introduced into England by Lord James Petre early in the 18th Century, with single and double white, orange or red flowers. It is cultivated as an ornamental wall plant.



JAPONICA

Jacques-Dalcroze,

Emile, composer of Swiss extraction born at Vienna, author of works for solo, choral and orchestral production, of two comic operas and of pieces for rhythmical interpretation; originator of the method of musical and physical education known as eurhythmics, which he taught at Dresden and Geneva; principal of the Institut Jacques-Dalcroze at Geneva and visiting principal of The London School of Dalcroze Eurhythmics (1865-).

Jargon, a crude mixture of languages such as is sometimes used for intercourse between natives of a country and foreign settlers. The word is also used to denote the phraseology peculiar to a trade or profession, as "legal jargon," the special terminology of the law. See *Slang*.

Jarnac, a town in France, on the scene of a victory which the Catholics, commanded by the Duc d'Anjou, afterwards Henry III., obtained in 1569 over the Huguenots commanded by Condé. Pop. 4,000.

Jarrah, an Australian tree, the *Eucalyptus marginata* or mahogany gum. Its wood is close grained, red and hard, and is particularly useful for road-paving and shipbuilding.

Jarrow, in Durham, on the Tyne, 7 m. below Newcastle; is a coal-shipping port, with shipbuilding and iron manufactures; formerly famous as the site of the monastery of Bede (q.v.); seriously affected by the industrial depression of 1931. Pop. 32,000.

Jasher, Book of, a Hebrew book twice quoted in the old Testament, no longer extant; believed to have been a collection of national ballads.

Jasione, a genus of plants of the natural order Campanulaceae, of which there are five species found in the Europe and Mediterranean districts, one of them, *Jasione montana* (Sheep's bit or scabious), being native to Britain. It is a hedge plant bearing blue flowers of fine shades, and is found in less cultivated districts.

Jasmine (*Jasminum*), a genus of plants of the natural order Oleaceae, comprising some 170 tropical and other species are erect or twining shrubs bearing scented flowers followed by a two-lobed fruit, some species being cultivated by gardeners for borders, or as wall-climbers, *Jasminum officinale*, being the Common Jasmine. The Cape Jasmine, *Gardenia florida*, is a species of Rubiaceae, the Carolina Jasmine, *Gelsemium sempervirens*, a species of Loganiaceae.



COMMON
JASMINE

Jason, a mythological Greek hero, son of Aeson, King of Iolcos; brought up by the centaur Chiron; undertook the leadership of the Argonautic expedition, assisted by Medea; took her to wife, but cast her off for Creusa, whom Medea to avenge herself killed, with her father and her two sons by Jason, she herself escaping to Athens in a chariot drawn by winged dragons. Jason took refuge from her fury in the sanctuary of Poseidon near Corinth, where the timber of the ship Argo deposited there, breaking up, fell upon him and crushed him to death.

Jasper, an opaque quartz found in all colours, and spotted, striped and clouded; is valued in ornamental lapidary work because of the polish it takes.

Jassy (Iasi), city in Rumania, 89 m. N.E. of Bucharest; former capital of Moldavia; is the seat of an Orthodox archbishop, a Catholic bishop and a university, and has a large community of Jews; trades largely in corn, spirits and wine. Pop. 101,000.

Jataka, a Pali collection of stories of the Buddha, recounting 550 previous "births" of Asop's fables and Western folk-love legends.

Jats, an Indian people numerous in millions, and are engaged in agriculture. There is much debate as to their origin and their racial relationship.

Jaundice, a discoloration of the skin, generally due to the absorption and circulation, along with the blood, of the colouring matter of the bile. It is sometimes nervous in origin, sometimes a symptom of inflammation of the liver, or may be due to obstruction in the larger bile ducts. In some cases it may, as indicating liver disintegration, be extremely serious.

Jaures, Auguste Marie Joseph Jean, French socialist leader, born at Castries; Professor of Philosophy at Albi, 1881; lecturer at Toulouse University, 1883; Deputy (radical) for Tarn, 1885-1889; (socialist) for Albi, 1893-1898, 1902-1914; conducted *La Petite République*; founded, 1904, *L'Humanité*. A fierce opponent of militarism, he was assassinated in Paris, on the outbreak of the World War, (1859-1914).

Java, a large island (area, with Madura, 50,750 sq. m.) of the Indian Archipelago, between Sumatra on the W. and Bali, on the E. with the Indian Ocean on the S. and the Java Sea separating it from Borneo on the N.; traversed by a mountain chain with a rich alluvial plain on the N. There are many volcanoes; the climate is hot, and on the coast unhealthy; the mountains are densely wooded, and the teak forests are valuable; the plain is fertile. Coffee, tea, sugar, rubber and tobacco are grown and exported; all kinds of manufactured goods, wine, spirits and provisions are imported. The natives are Malays, more civilised than on neighbouring islands. There are nearly

600,000 Chinese, many Europeans and Arabs; the island belongs to the Netherlands. The chief towns are Batavia and Samarang, both on the N. Pop. 42,000,000.

Java Man. See *Pithecanthropus*.

Java Sea, the wide strait between the islands of Borneo and Java, a shallow stretch of water with many small islands.

Javelin, a weapon of ancient warfare, handled, resembling a spear, but short-handled; in athletics a steel-pointed, thin shaft of wood, in length about 8 ft. Throwing the javelin has been an event in athletics for the past thirty years; the record being 255 ft. (1 lb. 12 oz.) by Jarvinen, of Finland, in 1936.

Jaw, the bones which form the framework of the mouth. In man the upper jaw is termed the superior maxilla; the lower jaw, the inferior maxilla or mandible. The latter, the largest bone of the face, consists of a horizontal portion and two upright portions, called the ramus. Both jaws bear teeth. The closing and opening of the jaws is effected by four pairs of muscles, two attached to the outer, and two to the inner side of the rami of the lower jaw.

Jay, the common name of the birds of the sub-family Garrulinae of the Crow (Corvidae) family.

The species *Garrulus glandarius* is the common English jay, native to these islands and Europe. It is rather over a foot in length, with a crest of black and white feathers, a black tail, and white and black bars on the wings. It



JAY

amun in woods, and mimics the cries of other birds.

Jay, John, American statesman, born in New York; took a part in the struggle for independence second only to Washington's; represented his country subsequently in Madrid and London; was first Chief Justice of the United States, and Governor of New York, 1795-1801. (1745-1829).

Jazz, syncretized dance music; that is to say, music which moves irregularly from bar to bar. It was introduced from America about 1918, and is derived from native music of Africa.

Jeanne d'Arc. See *Joan of Arc*.

Jeans, Sir James Hopwood, British scientific, professor of Applied Mathematics at Princeton (U.S.A.), 1905-1909; lecturer at Cambridge, 1910-1912; Secretary of the Royal Society, 1919-1929; professor of Astronomy in the Royal Institution, 1924; author of many learned and popular works on cosmogony and astronomy, including *The Mysterious Universe* (1930) and *The New Background of Science* (1933). (1877-).

Jebb, Sir Richard Claverhouse, Greek scholar, born in Dundee; elected in 1889 Regius Professor of Greek in Cambridge; represented Cambridge in Parliament; edited *Sophocles*, *The Allic Orators*, *Introduction to Homer*, etc. (1841-1905).

Jebus, home of a Canaanitish tribe, the Jebusites, mentioned frequently in the Old Testament; sometimes regarded as an earlier name for Jerusalem, which was in Jebusite possession until its citadel was captured by David. With other Canaanites, the Jebusites were reduced by Solomon to slavery.

Jedburgh, county town of Roxburghshire, Scotland, on the Jed, 30 m. SW. of Berwick, and 10 m. SW. of

Kelso; an ancient town of many historic memories; made a royal burgh by David I.; contains the ruins of an abbey, and has woollen manufactures. Pop. 3,000.

Jeddah, a town on the Red Sea, 65 m. W. of Mecca, and chief port of the Hejaz; used by pilgrims to Mecca, with which it is connected by motor route. Pop. c. 40,000.

Jefferson, Thomas, American statesman, born in Shadwell, Virginia; took a prominent part in the Revolution, and claimed to have drawn up the Declaration of Independence. He secured the decimal coinage for the States in 1783; was plenipotentiary in France in 1784, and subsequently minister there. Under his presidency (1801-1807) occurred the Louisiana purchase and the prohibition of the slave-trade. After his retirement he devoted himself to furthering education till his death at Monticello, Va. (1743-1826).

Jeffrey, Francis, Lord, critic and lawyer, born in Edinburgh; called to the Bar in 1794; devoted himself principally to literary criticism, and was first editor of the *Edinburgh Review* (q.v.), from 1802 to 1829, contributing to its pages articles of great brilliance; he was distinguished at the Bar in several famous trials; became Lord Advocate of Scotland in 1830, M.P. for Edinburgh in 1832, and in 1834 one of the judges in the Court of Session. (1773-1850).

Jeffreys, George, first Baron, born in Wales; became Chief Justice of England in 1683 and Lord Chancellor, 1685; was one of the advisers of the tyrannical proceedings of James II.'s reign, and notorious for his harsh judgments as a judge; tried to escape on the arrival of William; was committed to the Tower, where he died. (1648-1689).

Jehoshaphat, King of Judah, 900-875 B.C.; son of Asa; allied successfully with wicked Kings of Israel; narrowly escaped being slain in mistake for Ahab (q.v.) by Syrians at Ramoth-Gilead in 17th year of his reign.

Jehovah (Jahweh or Yahweh), Hebrew name of the supreme God. In the Bible said to have been revealed by God Himself to Moses. As it was considered by the Jews too sacred to be spoken, its real pronunciation has been lost. The correct form is JHVH.

Jehovist, name given to the supposed writer of those portions of the Pentateuch in which God is spoken of by the name Jehovah.

Jehu, King of Israel, 884-856 B.C., son of Jehoshaphat; a captain of the host under Ahab's son, Jehoram; anointed by Elisha, went to attack Jehoram; detected by a watchman through his furious driving. Killed Jehoram; caused death of Jezebel.

Jejunum, the upper part of the small intestine, about two-fifths of the whole, stretching between the duodenum above and the ileum below; its length is about 8 ft.

Jellicoe, John Rushworth, first Earl, British admiral; entered the navy at 13, saw service in the Egyptian War of 1882 and at Peking in the Boxer Rising, when he was wounded. From 1902 to 1910 he was at the Admiralty, and in 1910 became commander of the Atlantic Fleet. In Aug. 1914 he became commander of the Grand Fleet, a position he held till after the Battle of Jutland in 1916, when he handed over command to Beatty and became First Sea Lord, in which capacity he handled the U-boat menace. He was made a Viscount in 1910, and in 1920 went to New Zealand as Governor-General. Received an Earldom in 1925, and from 1928 to 1932 was President of the British Legion. (1859-1935).

Jelly, an elastic solid obtained by adding it to "set" in a container. Gelatinous jellies made from fruits, or by allowing meat juices to congeal, are much used as food, especially for invalids.

Jelly-fish, general popular name of animals, especially the widespread family of the *Modusae*, bell-shaped organisms with large central mouth and tentacles which move by pumping water in and out of the bodily cavity by muscular contraction.



Jemadar, a native of the Indian army, of rank equal to that of lieutenant in the British.

Jemappes, a manufacturing town, 3 m. W. of Mons, Belgium, where the French under Dumouriez defeated the Austrians in 1792. Pop. 15,000.

Jena, in Thuringia, Germany, on the Saale, 14 m. SE. of Weimar, an old town with memories of Luther, Goethe, and Schiller; has a university associated with Fichte, Schelling, Hegel and the Schlegels, who were teachers there; on the same day, Oct. 14, 1806, two victories were won near the town by French troops over the Prussians, the collective name for both being "the Battle of Jena." Pop. 57,000.

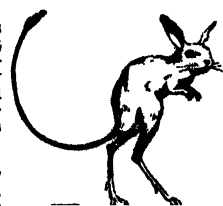
Jenkins' Ear, War of, between England and Spain in 1739, attributed to the conduct of the officer of a Spanish guardship towards the captain of an English trading ship of the name of Jenkins. The Spaniards boarded his ship, could find nothing contraband on board, but treated him cruelly, cutting off his left ear, which he brought home in vadding—an incident which inflamed public opinion in England against Spain.

Jenner, Edward, an English physician, born in Berkeley, and practised there; was the discoverer of inoculation with cowpox as a preventive of smallpox, or vaccination, a discovery which immortalised his name. (1749-1823).

Jenner, Sir William, an eminent physician, born in Chatham; held several professorships in University College; was physician to Queen Victoria and to Edward VII. when Prince of Wales; discovered the symptoms which differentiate typhus from typhoid fever. (1815-1898).

Jephthah, Judge of Israel, famed for his rash vow in the event of victory to offer in sacrifice the first object that came out of his house on his return, which happened to be his daughter and only child whom he presumably sacrificed. The story is told in the Biblical Book of Judges.

Jerboa, a family of small, mouse-like rodents (*Dipodidae*) with several genera, including the American jumping mouse. It has usually very short fore- and long hind-legs, and a lengthy tail, and is found mainly in the Eastern Mediterranean countries.



Jeremiah, a Hebrew prophet, born in Anathoth, a city 3 m. N. of Jerusalem, where, after his removal thither, he spent the greater part of his life—viz. from 629 to 588 B.C.—his

ARMENIAN JERBOA.

prophecy was a protest against the iniquity and folly of his countrymen, and urged them to seek the help of Egypt against Assyria. More than one plot was laid against his life, but he lived to see the issue of his prediction in the captivity of the people; he appears to have died in Egypt. He was the author of *Lamentations*, and it is thought, of sundry of the Psalms. His name has become a byword for declamatory denunciation, though his work hardly deserves its reputation for unalloyed misery.

Jerez de la Frontera, or **Xerez**, city, of Spain, 10 m. NE. of Cadiz, with vineyards in the neighbourhood; the wine Sherry takes its name from the town; near by in 711 was fought the Battle of Guadalete which marked the Moorish conquest of Spain. Pop. 67,000.

Jericho, ancient city of Palestine in the SW. of the plain of the same name that extends W. of the Jordan and NW. of the Dead Sea. It was the first city taken by the Israelites when they entered the Holy Land, the walls falling down before them after being compassed for seven days by the priests blowing on rams' horns and followed by the people. Recent excavations by Dr. John Garstang lend some support to the Biblical narrative, evidence having been found both of the collapse of the walls and of the burning of the city. In the World War Jericho was captured by Allenby after severe fighting in 1918.

Jericho, *Rose of, or Resurrection Plant*, a small annual herbaceous Levantine plant (*Anastatica hierochuntina*) of the order Cruciferae, which contracts into a ball in dry weather, unfolding and resuming greenness and growth on being placed in water.

Jeroboam, the name of two kings of Nebat; on Rehoboam's coming into Solomon's kingdom, his unpopularity caused transfer (970 B.C.) of the Northern part, "Israel," to Jeroboam. (2) The Son of Joash; reigned c. 823-782 B.C., and recovered territory that had been taken by Syrians.

Jerome, *Klapka*, dramatist and journalist, author of *Idle Thoughts of an Idle Fellow*, *Three Men in a Boat*, *Diary of a Pilgrimage*, etc., as also of plays; editor of the *Idler* and of a weekly magazine journal, *To-day*. (1859-1927).

Jerome, *St.* (in Latin, Hieronymus), a Father of the Church, born in N. Illyria, of rich parents; became a Christian when adult; was ordained a priest, and retired to Bethlehem as a recluse with some women followers. His fame rests on a translation of the Scriptures into Latin, known as the Vulgate, which he executed at intervals from 385 to 404 A.D. and which is still the version in official use in the Roman Catholic Church, being by it considered as of equal authority with the original. He also wrote many expository and controversial treatises and letters. Feast, Sept. 30. (331-420).

Jerome of Prague, *Bohemian* church reformer, born in Prague; studied there and at Oxford, where he came under Wycliffe's influence, Paris, Heidelberg and Cologne; a man of great learning, energy and oratorical power; joined John Huss in his agitation against the abuses of the Church; became involved in the movement against Huss and, though he recanted, afterwards withdrew his recantation, and was burned at Constance. (c. 1365-1416).

Jerrold, *Douglas William*, dramatist and wit, born in London, son of a theatrical manager; began life as a printer; author of *Black-eyed Susan* and other plays; contributed *Mrs. Caudle's Curious Lectures* among other pieces to *Punch*, and edited magazines. (1803-1867).

Jersey, the largest of the Channel Is., lies 15 m. off the French coast, 100 m. S. of Portland Bill, is oblong in shape, with great bays in the coast, and slopes from the N. to the SW. The soil is devoted chiefly to pasture and potato culture; the exports are early potatoes for the London market and the famous Jersey cattle, the purity of whose breed is carefully preserved. The island is self-governing, has a somewhat primitive land tenure, and has been under the English crown since 1066. The capital is St. Helier. Area 45 sq. m. Pop. 50,450.

Jersey City, the most populous city in New Jersey, U.S.A., is separated from New York, of which it is practically a part, by the Hudson River; is a busy railway centre; has very varied manufactures, including sugar, flour, machinery and chemicals, extensive shipping interests, and great trade in iron, coal and agricultural produce. Pop. 317,000.

Jerusalem, the capital of Palestine, a holy city of Jews, Christians and Mohammedans alike. It belonged originally to the Jebusites, but was captured by David and made his capital. A strong place, built on four hills, 2,000 ft. above the Mediterranean, enclosed within walls and protected nearly all round by deep valleys and rising ground beyond. It has been so often besieged, overthrown and rebuilt that the present city stands on rubbish-heaps, the ruins of ancient structures. It was captured by British troops under Allenby in Dec. 1917.

Among the many places of note are the Church of the Holy Sepulchre, the Tomb of David, the Crusaders' Church, the Mount of Olives and the Walling Wall. Seven gates pierce the old walls, within which are still to be found the ancient narrow streets and bazaars of the old city. Outside the walls Jerusalem has grown enormously since it has been under British mandate, and modern commercial buildings and dwelling-houses of all kinds have sprung up, including several garden cities. A modern water supply has been provided. Pop. 110,000 (two-thirds of whom dwell outside the walls of the city).

Jerusalem Artichoke, *See*

Jervaulx, hamlet of Yorkshire, England, in North Riding, site of the ruins of a fine Cistercian Abbey, the last abbot of which was hanged for his connection with the Pilgrimage of Grace.

Jesse, son of Obed, the son of Boaz and King of Israel; was a sheep farmer at Bethlehem. In his house, David, his seventh or eighth son, was anointed King by Samuel.

Jessop, *Gilbert Laird*, English cricketer, born at Cheltenham, son of a doctor; educated at Beccles and Christ's College, Cambridge; captained the university team, 1899; played for Gloucestershire, 1894-1914; in test-matches against Australia in England, 1899, 1902, 1905, 1909; in Australia, 1901, 1902; five times scored over 200 in an innings. (1874-)

Jest-book, a book containing jests collected at different historical periods. The jokes frequently reflect the views of the times. Famous collections are *Tarleton's Jests* (1525) and *Miller's Jest Book* (1739).

Jester, a professional story-teller and entertainer, frequently kept by princes and great men as a court or domestic officer in the Middle Ages. He was usually marked by a striped or "motley" garb, or a cap adorned with small bells.

Jesuits, or *Society of Jesus*, the religious Order founded by Ignatius Loyola (q.v.) in 1534, and approved by bull of

Paul III. In 1540, for the conversion of heretics and the propagation of the Roman Catholic faith; spread very rapidly, and was instrumental in regaining much of Europe from Protestantism to the Catholic Church; from the beginning has been specially active as foreign missionaries and in educational work; was suppressed for a time in the 18th Century, their alleged interference in politics having made them unpopular in many European Courts, but soon restored, is now active in all parts of the world, and probably the most numerous of Catholic religious orders; maintains several schools and colleges in Great Britain and Ireland.

Jesuit's Bark, or *Peruvian Bark*, the bark of various trees of the genus *Cinchona*, natural order Rubiaceae, introduced into Europe from Peru by the Jesuits as a cure for fever. From it are extracted quinine first isolated from it by Pelletier and Caventou in 1820, cinchonidine and other alkaloid drugs.

Jesus Christ, the founder of the Christian religion and, according to its teachings, the Son of God, born in human form of the Virgin Mary at Bethlehem in Palestine, in the early days of the Roman Empire; spent the first thirty years of His life in retirement, appearing at the age of 30 as a prophet with miraculous powers. After He had taught for three years, gathering round Him a small band of disciples, of whom the twelve most prominent members were known as Apostles, the Jewish priests, finding that His doctrines and claims were undermining their authority, secured His arrest, and with the consent of the Roman Governor, Pilate, He was crucified. His death, in Christian theology, effecting an atonement for human sin, and reconciling mankind with God. After three days, according to His followers, He rose from the dead and ascended visibly into Heaven, leaving with His Apostles authority to establish the Christian Church. The story of His life and His teachings are recorded in the New Testament. (n.c. 4-20 A.D.).

Jet, a hard, black, bituminous lignite, capable of an excellent polish and easily carved, and much used for ornaments in Victorian times, though it has now lost most of its popularity; is found in France, Spain and Saxony, but the best supplies come from Whitby, Yorkshire.

Jethou, one of the Channel Is., subject to Guernsey; an unfertile, granite island, a mile in circumference, separated from Herm by a narrow channel.

Jetsam, goods cast overboard into the sea to lighten a vessel in distress, and which, unlike "floatsam," will sink when jettisoned.

Jeunesse Dorée (lit. gilded youth), name given to a body of young dandies, who, after the fall of Robespierre, strove to bring about a counter-revolution in France.

Jew, *The Wandering*, a Jew bearing the name of Ahasuerus, whom, according to an old legend, Christ condemned to wander over the earth till he should return again to judgment, because he drove Him brutally away as, weary with the cross He carried, He sat down to rest on a stone before his door; probably a symbolic story intended to account for the dispersion of the Jewish people over the whole earth.

Jewellery. The craft of the jeweller is one of the oldest of arts, tracing back to the early days, when primitive man sought to adorn his womenfolk with the relics of the chase, bones and claws of birds being ingeniously combined with shells and pebbles to form necklets, bracelets and nose and ear ornaments. From such uncultured methods and crude materials the art of the latter-day craftsman has evolved. The jewel-

lery of the ancient East—Egypt, Mesopotamia, Greece, Etruria, as well as of India and China—has never been surpassed, even by the finest efforts of Renaissance craftsmanship. In modern times the art has suffered largely from industrialism. Whilst the technique of the craft has been perfected and the value of the materials used has often been fabulous, the artistic standard has appreciably deteriorated. Many motifs of modern jewellery have been adopted by copying the finest productions of ancient artists. The production of "imitation jewellery" from materials of little intrinsic value has considerably reduced the demand for the finer productions.

Jewry, a portion of a city set apart for Jews; also known as a Ghetto. The street called Old Jewry in the City of London, marks the site of London's ancient Jewish quarter. See also *Ghetto*.

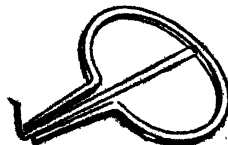
Jews, The people of Semitic origin, who trace their descent to Abraham. Their history starts with the migration of the family of Jacob to Egypt, where they stayed for 200 years, until they were led out by Moses, and after by Joshua, into Palestine. About 1200 B.C. Saul became their first king, in 1066 B.C., and in 975 B.C. the country was split into Judah and Israel. The latter was conquered by Shalmaneser of Assyria and the people taken into captivity in Media in 720 B.C. and in 583 B.C. Nebuchadnezzar captured Jerusalem and took the tribes of Judah and Benjamin captive to Babylon. From the time of their captivity in Media the Israelites were lost, and their fate has given rise to speculations.

After 70 years' captivity in Babylon the tribes of Judah and Benjamin returned to Palestine, where they were in turn subject to Alexander the Great, Egypt, Syria and Rome, and in A.D. 135, after unsuccessful attempts to regain liberty, the country was laid waste and the inhabitants dispersed through Europe and the East, and during subsequent centuries have made their way into almost every country of the world. They are most numerous in Russia, Poland and the United States; there are some 300,000 in the British Isles, and a world total of perhaps 18 millions. They have engaged mainly in finance and commerce, and never having been completely assimilated in the countries they have inhabited, have often been severely persecuted, especially in Europe in the Middle Ages.

The persecution has revived in modern Germany under the Nazi régime, which denies Jews German nationality and forbids their cultural or matrimonial admixture with the Aryan people. In 1917 the British Government agreed to assist them to establish a "National Home" in Palestine, and since then many thousands have migrated thither. The German absorption of Austria in 1938 has intensified their hard lot and, in July 1938, an International Conference met at St. Evian to discuss means of ameliorating their condition (as well as that of other refugees). In August 1938 anti-Semitic legislation was decreed in Italy also. They still maintain a pure monotheistic creed, and the more orthodox among them keep the Mosaic law in all its strictness, so far as that is possible out of Palestine.

Jew's -

harp, properly Jew's harp, a small musical instrument consisting of a lyre-shaped metal frame and a flexible steel tongue. It is pressed against the player's teeth, and the



JEW'S-HARP

tongue struck with the finger. The pitch is controlled by the shape of the mouth.

Jeyapore, or **Jajpur**, a native State in Rajputana, India; under British protection since 1818, and was loyal at the Mutiny; the soil is rocky and sandy, but there is much irrigation; copper, iron and cobalt are found; enamelled gold ware and salt are manufactured; area, 15,600 sq. m.; pop. 2,630,000. At the capital, Jeyapore (pop. 141,000), there is a State college and a school of art; its business is chiefly banking and exchange.

Jezebel, the wicked wife of Ahab, King of Israel, gives name to a bold, flaunting woman of loose morals. She was thrown from a window at the command of Jehu and trampled to death under the feet of his horses.

Jezreel, ancient city of Palestine, 11 m. from Nazareth; was the capital of King Ahab. On the site is the modern village of Zer'in.

Jhansi, district and city of the United Provinces, British India, the district lying between Gwalior and Bundelkhand. The city, a railway junction, 60 m. SE. of Gwalior, was the scene of a massacre in the Mutiny. Area 3,610 sq. m. Pop. (city) 76,700.

Jhelum. See *Hydaspes*.

Jib, a triangular sail placed foremost on the forward stay of a ship. It extends from the jib-boom, or spar projecting from the bowsprit, to the fore topmasthead. A spar added to the jib-boom is named the flying jib-boom, to which is attached the flying-jib.

Jibuti (*Djibouti*), port and capital of French Somaliland, on the Gulf of Aden, the terminus of a railway to Addis Ababa in Abyssinia, of which it was formerly the chief trade outlet. Pop. 15,000 (1,200 Europeans).

Jig, an irregular and lively dance in triple rhythm, which was popular in the British Isles in the 17th Century, and is still so in Ireland. The name is also given (usually as *gigue*) to the concluding member of a suite.

Jihad, name given by Mohammedans to a general religious war against Christians, infidels or other unbelievers.

Jina (*the* "victorious" one, as contrasted with Buddha, the merely "awakened" one), in the religion of the Jainas (called Jainism, q.v.), a sage who has achieved omniscience, and who came to re-establish the law in its purity when it had become corrupted among men; 24 Jinas are supposed to have appeared at intervals after long periods of time.

Jingo, a name said to have originated in a given, popular music-hall refrain, and given to a political party favourable to an aggressive, menacing policy in foreign affairs; first applied in 1877 to that political section in Great Britain which provoked the Turco-Russian War.

Jinn, in the Arabian mythology one of a class of genii born of fire, some of them good spirits and some of them evil, with the power of assuming visible forms, hideous or bewitching, corresponding to their character.

Joab, Israelite general, nephew of David; put to death by order of Solomon 1014 B.C.

Joachim, Joseph, a violinist, born near Pilsburg; famous as a youthful prodigy; was encouraged by Mendelssohn; visited London and frequently played at concerts; became head of the Academy of Music at Berlin in 1869. (1831-1907).

Joan, Pope, a woman who, in the guise of a man, is said for two years five months and four days to have acted as Pope of Rome (as John VII.) between Leo IV. and Benedict III. about 853-855, her sex being discovered

by the premature birth of a child during some public procession. She is said to have been of English parentage, and to have borne the name of Gilborte. The fable is first found in the *Chronicle* of Marianus Scotus.

Joan of Arc, St., or Maid of Orleans, a French heroine, born in

Domrémy, of poor parents, subject to fits of religious ecstasy, in one of which she seemed to hear voices calling to her from heaven to devote herself to the deliverance of France, then being laid desolate by an English invasion, occupied at the time in besieging Orleans. She sought access to Charles VII., then Dauphin, and offered to raise the siege referred to, and thereafter conduct him to Reims to be crowned; whereupon permission being granted, she marched from Blois at the head of 10,000 men, drove the English soldiers from their entrenchments and thereafter



JOAN OF ARC conducted Charles to Reims to be crowned. She afterwards assisted AT REIMS in raising the siege of Compiègne, was taken prisoner by the Burgundians, handed over to the English, and after an imprisonment of four months tried for sorcery, and condemned to be burned alive. She met her fate in the market-place of Rouen with fortitude. Her sentence was revoked in 1456, and she was canonised in 1920. (1412-1431).

Job, Book of, a poetic drama in the Old Testament, of unknown authorship (formerly ascribed to Moses), telling the story of the temptation of Job by Satan through a series of misfortunes in order that he might curse the Almighty. He resists the suggestions of the Evil One, and is at last restored to prosperity after his faith and righteousness have been tested and proved. Most of the book is taken up by discussions between Job and certain friends who visited him, dealing with the power and justice of God.

Jobber, or *Stock Jobber*, a member of the Stock Exchange who, as distinct from a broker, buys and sells securities only from or to other members, and does not deal directly with the public, his "turn" or profit consisting in the difference between the prices at which he buys and sells.

Jocasta, wife of Laius, King of Thebes, and mother of Oedipus; she afterwards married the latter, not knowing that he was her son, and on discovery of the crime put an end to herself; the story was a favourite subject of Greek tragedy.

Jocelin of Brakelonde, a 12th-century St. Edmundsbury monk, who left behind him a *Chronicle* of the Abbey from 1173 to 1202, which, published in 1840 by the Camden Society, gave occasion to the Book or Part entitled *The Ancient Monk in Carlyle's Past and Present*. (d. 1211).

Jockey Club, the governing body of flat-racing in England, with headquarters at Newmarket, and wide powers.

Jodhpur, largest State of Rajputana, India, under British protection since 1818; tin, lead and iron are found; salt is made at Sambhar Lake. The State revolted at the Mutiny. Area 35,000 sq. m. Pop. 2,126,000. Jodhpur, the capital, 350 m. SW. of Delhi, is connected by rail with Jeyapore and Bombay. Pop. 95,000. The State has given its name to a variety of riding-breeches with long calves, which have of late become popular among British equestrians.

Joel, a Hebrew prophet, author of a book of the Old Testament that bears his name, of uncertain date, but probably written before the exile. It is the second of the "Minor Prophets."

Joffre, Joseph, French general. Joining the army in 1870, he was in charge of a battery during the siege of Paris that year. The outbreak of the World War found him commander-in-chief of the French army, and he held the position till 1917, co-operating first with French and after 1916 with Haig. In 1917 he resigned his command and was succeeded by Nivelle. (1852-1931).

Johannesburg, the largest town in the Union of South Africa, in the Transvaal Province, 30 m. S. of Pretoria, and 800 m. N.E. of Cape Town; it grew quickly at the end of the 19th Century, and is at present again developing rapidly owing to its position as centre of the South African gold trade. It has many fine public buildings, and is the seat of the Witwatersrand University. Pop. (white) 258,000.

John, "The Blind," from 1310 King of Bohemia; his victory at Mühldorf in 1322 secured the crown of the Holy Roman Empire for Louis of Bavaria; he was killed at the Battle of Crécy, while fighting with the French. (1296-1346).

John, King of England from 1199 to 1216, a tyrannical and unpopular ruler; the son of Henry II. Before he came to the throne was sent to govern Ireland, and later attempted to usurp the throne in the absence of his brother Richard I.; succeeded the latter in 1199. His nephew, Arthur, claimed the French dominions, and was supported by the French King, Philip. In 1200 he married Isabel of Angoulême, a child-heiress. This provoked the French barons; in the war that ensued Arthur was captured, and subsequently murdered either by John himself or by his orders; Philip invaded Normandy, and in 1204 most of the possessions in France were lost to the English crown. Then followed John's quarrel with Pope Innocent III. over the election of Stephen Langton as Archbishop of Canterbury; in 1208 the kingdom was placed under an interdict, and next year the King was excommunicated. John on his side confiscated Church property, and exiled the bishops; but a bull deposing him and absolving his vassals from allegiance, forced him to submit, and he resigned his crown to the Pope's envoy in 1213. The rest of the reign was a struggle between the King, relying on his suzerain the Pope, and the people, barons and clergy; the King was forced to sign Magna Carta at Runnymede in 1215, but the Pope annulled it, whereupon the barons appealed for help to the Dauphin, and were prosecuting the war when John died at Newark. (1166-1216).

John II., The Good, King of France his father Philip VI.; at the Battle of Poitiers he was captured and carried to England. Four years later he was allowed to return on leaving his son as hostage. On the latter's escape, John returned to London, and died in captivity. (1319-1364).

John, the name of 23 Popes. **J. I.**, Pope from 523 to 526, was canonised. **J. II.**, Pope from 532 to 535. **J. III.**, Pope from 560 to 578. **J. IV.**, Pope from 610 to 642. **J. V.**, Pope from 686 to 687. **J. VI.**, Pope from 701 to 705. **J. VII.**, Pope from 705 to 707. **J. VIII.**, Pope from 773 to 782. **J. IX.**, Pope from 883 to 900. **J. X.**, Pope from 911 to 928. **J. XI.**, Pope from 931 to 936. **J. XII.**, Pope from 956 to 961—was only 18 when elected, led a licentious life. **J. XIII.**, Pope 965 to 972. **J. XIV.**, Pope from 984 to 985. **J. XV.**, Pope in 985. **J. XVI.**, Pope from 985 to 996. **J. XVII.**, Pope in 1003. **J. XVIII.**, Pope from 1003 to 1009. **J. XIX.**, Pope from 1024 to 1033. **J. XX.**, anti-Pope from 1043 to 1046, sometimes omitted in numbering the series. **J. XXI.**, Pope from 1276 to 1277. **J. XXII.**, Pope from 1316 to 1334—a learned, steadfast, and courageous

man. **J. XXIII.**, Pope in 1410, deposed in 1415. The last three are sometimes referred to as John XX, XXI and XXII respectively.

John, Augustus Edwin, British artist. He studied at the Slade School, started exhibiting with the New English Art Club in 1899, and specialised largely in portraiture. Although unconventional in his work, he became an A.R.A. in 1921 and an R.A. in 1928, but resigned in 1938 because of the Academy's rejection of a picture by another artist. (1878-).

John, Prestor, a legendary king and priest of a medieval kingdom in the interior of Asia or East Africa; converted to Christianity by the Nestorian missionaries; supposed to have been defeated and killed in 1202 by Genghis Khan, who had been tributary to him, but had revolted.

John, Sir William Goscombe, Welsh sculptor; born at Cardiff. His statues include Edward VII., Liverpool and Capetown; David Lloyd George, Caernarvon; Viscount Wolsley, Horse Guards Parade, London; memorial to Sir Arthur Sullivan, Victoria Embankment, London, and many War Memorials. R.A., 1909; knighted, 1911. (1860-).

John, Epistles, of three short sections of the New Testament, presumed to have been written by the author of the Gospel, from the correspondence between them both as regards thought and expression, though many critics consider that the Second and Third are by another author; they are directed against the heresies which appeared in the early Church.

John, Gospel according to, the fourth Gospel, of which tradition alleges St. John the "Beloved Disciple" was the author. It differs widely from the other three Gospels in emphasising the divine character of Christ, and records many events of his ministry which the others pass over. Most critics now consider that it was intended less as an historical record of fact than as an idealised meditation on the life of Jesus. Its authenticity has been much debated, and the general modern opinion is that it was composed during the 2nd Century by a certain elder of Ephesus, named John, but not identical with the Apostle.

John, Knights of St., a religious order of knights, founded in 1048, for the defence of pilgrims to Jerusalem; established a church and a cloister there, with a hospital for poor and sick pilgrims, and were hence called the Hospital Brothers of St. John of Jerusalem. On the fall of Jerusalem they retired to Cyprus, conquered Rhodes, and called themselves Knights of Rhodes. Driven thence they settled in Malta and took the name of Knights of Malta. In England the order was revived in 1834 as a civil body devoted to ambulance work. See also *Hospitaliers*.

John, St., The Apostle, the son of Zebedee and Salome, the sister of the Virgin Mary; originally a fisherman on the Galilean Lake; after being a disciple of John the Baptist became one of the earliest disciples of Christ; much beloved and trusted by his Master; lived after His death for a time in Jerusalem, and then according to tradition went to Ephesus as bishop, where he died at a great age. Many critics now deny that he was the writer of the Gospel that goes by his name. He is represented in Christian art as either writing his Gospel, or as bearing a chalice out of which a serpent issues, or as in a cauldron of boiling oil.

John Bull, popular symbolic name for the typical Englishman; can be traced back to Arbuthnot's *History of John Bull* (1712). The name has been adopted at different times by several periodicals, and is at present used by a well-known English weekly of extensive circulation.

John Dory. See Dory.

John of Austria, Don, Spanish soldier, illegitimate son of Emperor Charles V. by Barbara Blomberg of Itensburg where he was born; admiral in Hispano-Venetian campaigns against Turks, whom he defeated at Lepanto, 1571; Governor of Netherlands, 1576. Defeated Dutch at Gemblioux, January 1578. (1545-1578).

John of Gaunt, Duke of Lancaster, third son of Edward III.; created Duke in 1362; attempted to secure the crown of Castile; supported the Wycliffites against the clergy; married Blanche of Lancaster, and later Constance, daughter of Pedro of Castile; was father of Henry IV., King of England. (1340-1399).

John o' Groat's House, on the Caithness coast, 1½ m. W. of Duncairn Head, marks the northern limit of the Scottish mainland. The house was said to have been erected eight-sided, with a door at each side and an octagonal table within, to compromise on the question of precedence among eight branches of the descendants of a certain Dutchman, John o' Groot.

John's Eve, St., a festival celebrated with bonfires on Midsummer Eve; universally observed, and with similar rites throughout Europe, in the Middle Ages, its celebration being associated with many superstitious practices.

Johnson, Amy, English woman aviator; began life in a solicitor's office; took up flying in September 1928, and in May 1930 made a famous solo flight from England to Australia in 20 days; later made flights to Japan (1931) and South Africa (1932 and 1936); in 1932 married J. A. Mollison, the famous airman; marriage dissolved 1938. (1905-).

Johnson, Andrew, seventeenth American President, born in Raleigh, N. Carolina; was entirely self-educated, and became a tailor; settled in Tennessee, and sat in Congress from 1843 till 1853; was for four years Governor of Tennessee, and sat in the Senate from 1857 to 1863; though in favour of slavery, he discountenanced secession and supported Lincoln, whom he succeeded as President in 1865, and whose policy he continued, but lost the confidence of Congress; his removal of Secretary Stanton led to his impeachment for violation of the Tenure of Office Act; was tried before the Senate, but acquitted, and completed his term. (1808-1875).

Johnson, Jack, American negro boxer, born at Galveston, U.S.A.; first became known in 1907 by beating Fitzsimmons in two rounds at Philadelphia; became world's champion in 1908, by defeating Tommy Burns, and in 1910 won a celebrated battle at Reno over J. J. Jeffries. In 1915 he lost the championship to Jess Willard. (1878-).

Johnson, Samuel, English man of letters and lexicographer, born in Lichfield, the son of a bookseller; educated at Lichfield and Pembroke College, Oxford; started a boarding-school, which did not prosper, and removed to London. There he contributed to the *Gentleman's Magazine*, and reported Parliamentary debates. In 1740 he published the *Vanity of Human Wishes*, and about the same time commenced his *Diction-*



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ary, published 1755. Meanwhile he edited the *Rambler*, writing most of the contents himself. In 1758 he started the *Idler*. In 1762 the King granted him a pension of £300; five years after he instituted the Literary Club. In 1770 he began his *Lives of the English Poets*, and in 1773 he made his famous tour in the Highlands with Boswell. The story of his life as written by Boswell (*q.v.*) is the most famous of English biographies. (1709-1784).

Johnston, Sir Harry Hamilton, British administrator, explorer and author; born in London; on scientific expeditions to various parts of Africa between 1882 and 1889; last-named expedition led to the founding of the British Central Africa Protectorate, of which he was administrator for six years; from 1899 to 1901 he acted as Special Commissioner and Consul-General for the Uganda Protectorate, and discovered the okapi in the Semliki Forest, in 1901; his writings include *The Opening-Up of Africa* and some novels. (1858-1927).

Johnston, Thomas, Scottish journalist and labour politician, born at Kirkintilloch; educated at Glasgow University; founded the Socialist organ *Forward*; later became a leader of the Independent Labour Party, and in 1929 was elected M.P. for West Stirlingshire; Under-Secretary for Scotland, 1929; Lord Privy Seal, 1931. (1882-).

Johnstone, town in Renfrewshire, Scotland, on the Black Cat, 3½ m. W. of Paisley; has cotton, paper and iron industries. Pop. 12,900.

John the Baptist, New Testament forerunner of Christ, according to the Gospel of St. Luke the son of Zachary and Elizabeth; preached repentance in the Jordan country and baptised Christ; was imprisoned by Herod, and later beheaded at the request of Salome. Feasts, June 24 and Aug. 29.

Johore, State in the S. of the Malay Peninsula, one of the Federated Malay States, under British protection; produces rubber. Pop. 630,000 mainly Malays and Chinese. Area 7,500 sq. m. The capital of the State is Johore Bahru, a free port. Pop. 15,800.

Joinery, the branch of woodwork concerned with the fittings of a building, and using planed wood as its principal medium, whereas carpentry has to do with the structural work, and uses mainly unplanned timber. The woods mainly used in joinery are oak, mahogany, teak and pine, cut into lengths called, according to their varying widths, strips, battens, deals or planks. The craft takes its name from the "joining" of sections of wood, which is one of the main operations with which it is concerned.

Joint, (1) in carpentry and joinery a method of connecting two pieces of wood. Various kinds of joints are in common use, including the square joint, formed by gluing two planed edges of wood into contact, the mitre, butt, tongued, dovetail, mortise and tenon, key, bevel, etc., most of which are found in several forms. Some of these joints may be strengthened by metal bolts.

(2) in anatomy, the bony or cartilaginous connection between two parts of an animal skeleton; often extended to cover a single section (such as the thigh), which is connected by a joint to another part of the body. Joints may be either immovable, as in the skull, formed by the actual junction of two bones or the connection of two membranes by a section of fibrous tissue, or movable, with greater or less freedom. The latter may be "half-joints" or amphiarthroses, where the connection is by a flexible ligament, or "perfect" joints, where the convex surface of one cap of

cartilage fits into the concave surface of another, connected by a synovial membrane. Either the synovial membrane or the bone itself may become a seat of disease; sprains are caused by mishaps to the ligaments which connect the bones.

Jointure, in law, an estate made over to a wife in satisfaction of her dower; or any provision made for a woman upon marriage in the event of her husband predeceasing her. The name originates from the practice of making the spouses "joint tenants," so that all property goes to the survivor.

Joinville, **Jean, Sire de**, French chronicler, Seneschal of Champagne, born in Châlons-sur-Marne; followed Louis IX. in the Crusade of 1281, but refused to join in that of 1270. He lived through six reigns, and his gossip and digressive *Vie de St. Louis*, a chronicle of the Crusades, is one of the most remarkable books of the Middle Ages. (1224-1317).

Joliette, a town of Quebec, Canada, on R. L'Assomption, 40 m. N. of Montreal. It is served by the C.P.R. and C.N.R. and produces paper and limestone. Pop. 11,000.

Jolly Boat, a small ship's boat used generally hoisted at the stern of the vessel.

Jonah, a Hebrew prophet of the northern kingdom. The book in the Bible named after him, though telling the story of his life, does not claim to be his own work. It dates from after the exile.

Jonathan, the name of several Biblical characters, especially (1) the son of Saul, and friend of David, killed in battle against the Philistines at Gilboa. (2) the son of Mattathias, the Maccaboe, one of the leaders in the Jewish revolt against the Syrian Bacchides.

Jones, **Ernest**, Chartist leader and poet, born in Berlin, of English parentage, educated at Göttingen; came to England in 1838; called to the Bar; in 1845 threw himself into the Chartist movement, and devoted the rest of his life to the amelioration and elevation of the working classes, suffering 'two years' (1848-1850) solitary imprisonment for a speech made at Kensington; he wrote various pamphlets and papers in the Chartist cause, and several poems. (1819-1869).

Jones, **Henry Arthur**, dramatist, born at Grandborough, Bucks., author of *The Silver King*, *The Middleman*, *Judah*, *The Dancing Girl* and many other plays. (1851-1929).

Jones, **Inigo**, English architect, born in London, son of a cloth-worker; studied in Italy, and, returning to England, obtained the patronage of James I. The Royal Chapel at Whitehall (formerly the banquet hall) is reckoned his masterpiece. Heriot's Hospital, Edinburgh, and Greenwich Hospital, are from his designs. His style follows Palladio of Venice. (1573-1652).

Jones, **Paul**, a naval adventurer, whose real name was John Paul, born in Kirkcudbright, Scotland, son of a gardener; took to the sea, engaged in the slave-trade, settled in Virginia, and offered his services to the colonists in the War of Independence as a sea-captain with a ship of 18 guns; in 1778 made a descent on the shores of his native country. He also fought in the French service, capturing two British war-vessels off Flamborough Head. He died in Paris, where the National Assembly granted him a "ceremonial funeral." In 1905 his remains were carried over to the United States under escort of a U.S.A. naval squadron. (1747-1792).

Jongleurs, medieval minstrels of Provence and Northern France, who sang and often composed songs and tales, but whose jesting and buffoonery distinguished them from troubadours and trouvères.

Jonquil (*Narcissus jonquilla*), an ornamental plant of the Amaryllidaceae order, bearing small light-yellow fragrant flowers for the sake of which they are extensively cultivated in England.



JONQUIL

Jonson, **Ben**, English dramatist, born at Westminster, posthumous son of a clergyman of Scottish descent; first a bricklayer, afterwards a soldier in the Netherlands, whence he returned about 1592, and became connected with the stage. He was one of the most learned men of his age, and for forty years the foremost, except Shakespeare, in the dramatic and literary world. Killing his challenger in a duel nearly cost him his life in 1598; he was branded on the left thumb, imprisoned and his goods confiscated. In prison he turned Catholic but twelve years later reverted to Protestantism. The opening of the century saw the famous Mermad Club at its zenith. For nine years after Shakespeare's death he produced no dramas. In 1619 he received the laureateship, and a small pension from the King; founded with Herrick, Suckling, Carew and others the Apollo Club at the Devil Tavern. He died in poverty, but was buried in Westminster Abbey, his tombstone bearing the words "O rare Ben Jonson" (meaning it has been suggested "Pray for Ben Jonson," orare being Latin for "Pray"). He wrote at least sixteen plays, among them *Every Man in his Humour* (1598), in which Shakespeare acted, *The Poetaster* (1601), the tragedy of *Sejanus* (1603), *The Silent Woman* (1609), a farcical comedy, and his most elaborate and masterly work, *The Alchemist* (1610). He wrote also thirty-five masques in the production of which Inigo Jones provided the mechanism; but his best work was his lyrics, among them "Drink to me only with thine eyes." (1573-1637).

Jonsong, a pass in the Himalayas, at an altitude of about 21,300 ft. in the ridge which connects Kanchenjanga with Nepal.

Joppa. See Jaffa.

Jordan, a river of Palestine, which rises on the western side of Mt. Hermon, and flows S. below Caesarea-Philippi within banks, after which it expands into lagoons that collect at length into a mass in Lake Merom (Huleh), 2 m. below which it plunges into a gorge and rushes on for 9 m. in a torrent, till it collects again in the Sea of Galilee, to lose itself finally in the Dead Sea after winding along a distance of 65 m.; at its rise it is 1,080 ft. above, and at the Dead Sea 1,300 ft. below, the sea-level.

Jordan, **Mrs. Dorothea**, English actress, her real name Miss Bland, born in Waterford; appeared at Drury Lane in *The Country Girl* in 1785; her popularity in comic rôles was immense; was from 1790 to 1811 the mistress of the Duke of Clarence, who, when William IV., ennobled her eldest son; she died in humble circumstances at St. Cloud, near Paris. (1762-1816).

Joseph, the name of four Biblical personages: (1) **Joseph**, the son of Jacob and Rachel, the story of whose life is told in Genesis. (2) **Joseph**, St., the carpenter, the husband of the Virgin Mary and the reputed father of Jesus. (3) **Joseph of Arimathea**, a member of the Jewish Sanhedrin, who begged the body of Jesus to bury it in his own tomb. (4) **Joseph**, surnamed **Barabbas**, one of the disciples of Jesus, unsuccessfully nominated to fill the place vacated by Judas, and defeated by Barabbas.

Joséphine, the Empress of the French, born in Martinique; came to France at the age of 15; was in 1779 married to Viscount Beauharnais, who was one of the victims of the Revolution, and to whom she bore a daughter, Hortense, the mother of Napoleon III.; married in 1796 to Napoleon Bonaparte, to whom she proved a devoted wife as well as a wise counsellor. She became Empress in 1804, but, failing to bear him any children, was divorced in 1809, though she still corresponded with Napoleon and retained the title of Empress to the last, living at Malmaison, where she died. (1763-1814).

Josephus, Flavius, Jewish historian, born in Jerusalem, of royal and priestly lineage; gained favour at Rome; was present with Titus at the siege of Jerusalem, and by his intercession saved the lives of several of the citizens. He accompanied Titus back to Rome, and received the freedom of the city; there wrote the *History of the Jewish War* and *Jewish Antiquities*. He was of the Pharisaic party, but his religious views were rationalistic. (37-c. 100).

Joshua, a Jewish military leader, of the tribe of Ephraim, the minister and successor of Moses, under whose leadership the Jews obtained a footing in the Land of Canaan.

Joshua, The Book of, a book of the Bible, closely connected with the Pentateuch, which it continues, constituting along with it the Hexateuch, or six-fold book. It covers a period of 25 years, and relates the story of Joshua's leadership of the Jewish people, their entrance into the Promised Land, and its allotment among them.

Josiah, King of Judah from 639 to 609 B.C.; was zealous for the restoration of the Jewish worship according to the ritual of Moses, as set forth in the "Book of the Law" discovered in the temple during his reign by the high priest Hilkiah; slain by the invading Assyrians.

Joss, a Chinese idol; a joss-house is a Chinese temple; a joss-stick is a thin stick of fragrant tinder mixed with clay, used in China as incense and burnt before the statue of an ancestor or holy personage.

Jötunheim, in Norse mythology, the giants, as Asenholm is that of the Norse deities.

Jötuns, a race of giants in the Norse mythology, representing the dark hostile Powers of Nature, such as Frost, Fire, Sea-tempest. They dwell in Jötunheim, in perpetual feud with the gods.

Jouffroy d'Abbans, Claude, Marquis de, is claimed by the French as the first inventor of the steamboat. He made a paddle-steamer ply on the Rhône in 1783, but misfortunes due to the Revolution hindered his progress, till he was forestalled by Fulton on the Seine in 1803. (1751-1832).

Jougs, punishment, consisting of an iron collar hung by a chain round a culprit's neck, who was thus exposed in a sort of pillory; in use from the 16th to the 18th Centuries.

Joule, a unit of work and energy equal to 10 million ergs; it is equivalent to the energy supplied in one second by an electrical circuit of one watt.

Joule, James Prescott, English physicist, born in Salford; was a pupil of Dalton, devoted his time to physical and chemical research; made discoveries in connection with the production of heat by voltaic



JOUGS

electricity, demonstrated the equivalence of heat and energy, and established on experimental grounds the doctrine of the conservation of energy. (1818-1889).

Journalism, the profession of writing papers and periodicals; in ancient Rome and in China before the 15th Century daily newspapers were produced, but the modern newspaper had its origin in the "news-letter" of the 17th Century. Highly priced and subject to a stamp tax for many years, the newspaper attained some approach to its modern form about the middle of the 1890's, the illustrated newspaper arising early in the 20th Century.

Journalists, National Union of, the professional interests of Journalists in Great Britain, founded in 1907. In 1937 it had over 6,600 members, including the majority of salaried staff journalists of daily and weekly papers.

Jovian, Flavius Claudius, Roman Emperor, peror, captain of the household troops of the Emperor Julian, whom he accompanied in his disastrous campaign against the Persians; elected Emperor in 343, after Julian's death, Jovian was forced to cede to the Persians five provinces beyond the Tigris. (c. 330-364).

Jowett, Benjamin, English classical scholar, born in Camberwell; fellow and tutor of Balliol College, Oxford, till his election to the mastership in 1870. He wrote an article "On the Interpretation of Scripture" in *Essays and Reviews*, and a commentary on certain epistles of St. Paul, but is best remembered for his translations of Plato's *Dialogues*, the *History of Thucydides*, and the *Politics* of Aristotle. (1817-1893).

Jowitt, Sir William Allen, English lawyer and politician, son of a clergyman; educated at Marlborough and New College, Oxford; in 1922 elected Liberal M.P. for the Hartlepool; and in 1924 for Preston; joined the Labour Party in 1929; Attorney-General, 1929-1931, when he returned to practise at the Bar. (1855-).

Joyce, James, Irish novelist, born in Dublin; educated at Clongowes and the Royal University. He wrote verses, a play and a volume of short stories, *The Dubliners*, before he became widely known as the author of an extraordinary novel, *Ulysses*, which for over twenty years was banned in England. (1882-).

Juan Fernandez, a group of mountainous volcanic islands off the Chilean coast, 400 m. W. of Valparaiso; the lonely residence of Alexander Selkirk (1704-1709), the prototype of Defoe's *Robinson Crusoe*; used as a penal settlement from 1819 to 1835, and is inhabited by a few seal hunters; there is a wireless station.

Juba, river in Italian E. Africa, and formerly the boundary between Italian Somaliland and Kenya. See *Jubaland*.

Jubaland, E. Africa; by the Treaty of Versailles assigned to Great Britain; situated between Kenya and Italian Somaliland. It was ceded to Italy in June 1924, and is now a province of Italian Somaliland.

Jubbulpore (Jabalpore), a town, district and one of the four divisions of the Central Provinces, India; the town is an important commercial and railway centre, situated 228 m. SW. of Allahabad; cotton, cement and carpets are among its chief manufactures. Area (district) nearly 19,000 sq. m. Pop. (district) 2,300,000; (town) 135,000.

Jubilee, originally a festival among the Jews every fiftieth year; the word is now applied to the 25th (silver

jubilee), 50th (golden jubilee) or 60th (diamond jubilee) anniversary of such an event as the accession to the throne, or coronation, of a monarch, or other important political commemoration.

Jubilee, Year of, a year during which, among the Hebrews, it was required that all land which had passed out of the original owner's hands during the 50 years preceding should be restored, all who during that time had been forced to sell their liberty should be released, and all debts contracted in that period should be remitted.

Judæa, the southern portion of Palestine, extending in one direction between Samaria and the desert of Arabia, and in the other between the Mediterranean and the Dead Sea.

Judah, Kingdom of, the kingdom in the S. of Palestine formed by the two tribes of Judah and Benjamin that remained true to the house of David after the revolt of the other ten under Jeroboam.

Judaism, the religion of the Jewish people, based upon the Old Testament, particularly the laws of Moses as set forth in the Pentateuch. Its distinctive features are strict monotheism, the Sabbath rest, circumcision, an elaborate dietary and sanitary code, and the keeping of certain festivals, especially the Passover and the Day of Atonement. As practised in Palestine before the fall of Jerusalem in A.D. 70, it also included sacrifice, offered by an organised priesthood supported by tithes. In modern times the strict following of the Mosaic laws is much relaxed among many "reform" and "liberal" Jews, especially in Western Europe and the United States. Worship is carried on in synagogues. The Talmud, a commentary on the law, is an authority second only to the Bible.

Judaizers, a party, called also Ebionites, in the primitive Church who taught that Christians were bound to observe the Jewish law so far as it was not in contradiction to Christian teaching. They died out after the fall of Jerusalem.

Judas, surnamed Iscariot, one of the twelve Apostles of Christ, who betrayed his Master to His enemies for 30 pieces of silver; after the Crucifixion he committed suicide by hanging. See also *Accidama*.

Judas Maccabæus, a son of Mattathias (q.v.) who succeeded his father in the leadership of the Jews against the Syrians in the war of the Maccabees, and who gave name to the movement; with the elect of his countrymen of kindred spirit he encountered and overthrew the Syrians in successive engagements, till before a great muster of the foe his little army was overwhelmed and himself slain in 160 B.C. See *Maccabees*.

Judas Tree (*Cercis siliquastrum*), a small, deciduous, leguminous tree bearing large purple flowers, which grows in Mediterranean countries, and is cultivated in England as an ornamental plant, its popular name being due to the tradition that Judas Iscariot hanged himself on such a tree. The flowers are papilionaceous and purple and appear before the leaves. Kindred species occur in America and China.

Jude, Epistle of, an epistle in the New Testament, of which Judas, the brother of James, was probably the author; written to some unknown community in the primitive Church affected by heresy. It was only received as canonical by the Church after considerable hesitation.



JUDAS TREE

Judge, an officer empowered by the State to hear and determine civil and/or criminal causes, and generally to administer justice in accordance with the established laws. In English legal theory it is for the judge to declare, and not make, the law; but in giving decisions precedents are created and a body of substantive law is built up, the "judge-made" law, evolved by the judges in deciding upon "competing analogies."

In England to-day the term "judge" is restricted to judges of the Courts of Appeal, High Court judges and County Court judges; judges of Borough Courts are called "recorders"; of Metropolitan Police Courts "stipendiary magistrates"; and of Petty Sessions "justices of the peace." The Lord High Chancellor, the head of the English Judicial system, appoints the puisne judges, of whom there are 6 in the Chancery Division (of which Division the Lord High Chancellor is titular president), 17 in the King's Bench Division, excluding the Lord Chief Justice (who, besides being president of the King's Bench Division is also a member of the body of Lords of Appeal in Ordinary) and 5 in the Probate, Divorce and Admiralty Division.

The judges of the highest Court of Appeal, the House of Lords, regarded as a tribunal, are the Lord High Chancellor, Ex-Lord High Chancellors, 7 Lords of Appeal in Ordinary, the Lord Chief Justice, the Master of the Rolls and the President of the Probate, Divorce and Admiralty Division. There are 5 Lords Justices (q.v.), who form the penultimate Court of Appeal. All puisne judges are knighted on appointment, but are addressed as "My Lord" or styled "Mr. Justice —."

The Lord Chief Justice is merely the titular head of the King's Bench Division, but, since the institution in 1908 of the Court of Criminal Appeal, he presides over that Court. The Lord Mayor and Aldermen are titular judges of the Central Criminal Court (Old Bailey), but its regular judges are the Recorder of London, the Common Serjeant, and the 2 judges of the City of London Court. The County Court judges number 57.

Judge Advocate-General, legal official charged with the duty of advising the Crown on matters relating to the proceedings and sentences of military courts, and who in person or by deputy attends all general court-martial. Similar duties are performed in matters relating to naval courts by a Judge Advocate of the Fleet.

Judges, Book of, a book of the Old Testament, recording the story of the Hebrew people and their wars with their neighbours between the death of Joshua and the birth of the prophet Samuel, a period of some 300 years. The stories centre on the exploits of twelve national leaders or "jud" and include those of Samson, Jepht, Gideon, and Deborah and Barak. The book is closely bound up with that of Joshua, of which it is a continuation. With the Books of Ruth, Samuel and Kings it probably originally formed one work.

Judgment (in law), the decision of a court of law in any cause heard therein. Final judgment disposes of the case, subject to any right of appeal; interlocutory or interim judgment, such as the grant of an injunction in the Chancery Division, disposes only of a particular issue, leaving the merits to be adjudicated at some other time or, as in the grant of a mandamus, in another and inferior court. A judgment binds only the parties to the particular case. A judgment summons is one which follows non-compliance with a default summons by a debtor who, in the Court's opinion, can but will not pay his debt; it asks the Court to make an order for payment subject, on further default, to committal to prison.

Judgment, Last, in C) the divine decision by which eternal reward in heaven or eternal punishment in hell will be allotted to mankind. It is usual to distinguish the particular Judgment of each individual separately after death from the General Judgment, at the end of the world, whereat the human race will be judged as a whole and the sentences awarded and the various particular judgments ratified.

Judicial Committee of the Privy Council,

the ultimate British Court of Appeal, founded in 1833; appeals lie to it from Dominion, Colonial and Ecclesiastical Courts, and in prize cases. The Court consists of the Lord President, such members of the Privy Council as hold or have held high judicial office, the Lords Justices of Appeal, and any two other privy councillors who may be appointed under the sign manual. Three members must be present at the hearing of a case, and no member may attend unless summoned.

Judicial Separation, a remedy in matrimonial disagreements created by the Matrimonial Causes Act, 1857; may be claimed by either spouse on the ground of adultery, cruelty, desertion without cause for not less than two years, or non-observance of a decree of restitution of conjugal rights. It differs from divorce in not enabling the parties concerned to marry again. Permanent alimony may be granted by the Court to a wife affected by such a decree.

Judith, a beautiful Jewish widow who, according to the book of the Apocrypha named after her, entered the camp of the Assyrian army under Holofernes, that lay investing Bethulia, her native place, won the confidence of the chief, persuaded him to drink while alone with him in his tent till he was intoxicated, and cut off his head. The story is an allegory, with no basis in historical fact; the book dates from the 1st Century B.C.

Juggernaut, Jagannath, or Puri, a town on the S. coast of Orissa, India, with a temple dedicated to Vishnu, containing an idol of him called Jagannath (or the Lord of the World), which attracts thousands of pilgrims to worship at its shrine. At certain festivals the idol is dragged forth in a ponderous car, under the wheels of which pilgrims are said in former times to have sometimes thrown themselves while in a state of religious frenzy.

Jugular Veins, large veins in the neck conveying blood from the head, face and neck to the heart; the four chief are the external, internal, anterior and posterior jugulars. The severing of any of them, particularly the internal, by cutting the throat, is likely to result in death.

Jugurtha, King of Numidia, in Africa; succeeded by violent measures to the throne, and maintained his ground in defiance of the Romans, who took up arms against him and at last led him captive to Rome to die of hunger in a dungeon. Sallust's *Jugurtha* is a school classic. (d. 104 B.C.)

Ju-jitsu, a form of wrestling, originating in Japan, and in recent years popular in the West. Its aim is to render the opponent incapable of further resistance by allowing him to expend his energy uselessly, and to overcome him by so holding or striking him in some vulnerable part of his body, the display of physical strength being less important than anatomical knowledge.

Ju-Ju, in W. Africa the name given to an idol or other object used for fetich worship; in a broader sense is applied to magic witchcraft generally; the practice has been often accompanied by human sacrifice.

and is said to have spread to the negro republics of Haiti in the W. Indies.

Jujube Tree, the name of several Eastern shrubs of the genus *Ziziphus* of the natural order Rhamnaceae, bearing small edible fruits. The chief species sometimes so called are the *Ziziphus vulgaris*, the Common or French jujube bearing red and yellow fruits, the *Z. Lotus* yielding what is supposed to have been the Lotus fruits of antiquity and the *Z. Spina-Christi*, from which Christ's Crown of Thorns is said to have been made. Also a sweetmeat resembling the jujube fruit in flavour.

Juliana, Louise Emma Marie Wilhelmina, Crown Princess of the Netherlands, only child of Queen Wilhelmina; married Prince Bernhard of Lippe-Biesterfeld, Jan. 7, 1937; her daughter, Princess Beatrix Wilhelmina Armgard was born Jan. 21, 1938. (1909-)

Julian Calendar, a rearrangement of the calendar introduced by Julius Cæsar in 46 B.C., providing for a year of 365 days, with every fourth year a leap year of 366 days, and the months arranged and named as they are to-day. The Gregorian calendar, now in use, is a modification of the Julian, introduced by Pope Gregory XIII. in 1582 and adopted in Great Britain in 1752.

Julian the Apostate, Roman Emperor for 18 months, from 361 to 363; was born at Constantinople, his father being a half-brother of Constantine the Great, on whose death most of Julian's family were murdered. Embittered by this event, Julian secretly renounced Christianity. As joint Emperor with his cousin from 355 he showed himself a capable soldier and a wise administrator. On becoming sole Emperor he proclaimed his apostasy, and sought to restore paganism, but without persecuting the Church. Though painted in blackest colours by the Christian Fathers, he was a just ruler. He was killed in an expedition against Persia. (331-363).

Julius, the name of three Popes; J. I., St. Pope from 337 to 352. J. II., Pope from 1503 to 1513. J. III., Pope from 1550 to 1555, of whom only J. II. deserves notice. J. II., an Italian by birth, was more of a soldier than a priest, and, during his pontificate, was almost wholly occupied with wars against the Venetians for the recovery of Romagna, and against the French to drive them out of Italy, excommunicating Louis XII. and putting his kingdom under an interdict in 1542. He sanctioned the marriage of Henry VIII. with Catharine of Aragon, commenced to rebuild St. Peter's at Rome, and was the patron of Michelangelo and Raphael.

Julius Cæsar. See Cæsar Gaius Julius.

Jullundur (Jalandhar), a town of the Punjab, India, 50 m. S.E. of Amritsar, with silk and cotton industries. Pop. 89,000.

July, the seventh month of the year, so called in honour of Julius Cæsar, who reformed the calendar and was born in this month. It was the month of the outbreak of the second French Revolution in Paris in 1830, hence called the July Revolution.

Jumna, an Indian river, rises in the Punjab, and flows through the NW. Provinces, having Delhi and Agra on its banks; joins the Ganges at Allahabad, the junction of the rivers being a holy place of the Hindus. Its course is 80 m. long, and it falls nearly 11,000 ft. Its waters are used for irrigation by means of canals, being of little use for navigation.

Jumping, as a form of athletics is practised in three principal varieties, the running long jump, the running high jump and the pole jump, while a fourth, less often seen at sports meetings, is the hop,

step and jump. The modern methods of high jumping is to carry the body over the bar in a horizontal roll. World records are: High Jump, 6 ft. 10 in. (Walker, U.S.A.); Long Jump, 27 ft. 2½ in. (Owens, U.S.A.) and Pole Jump, 14 ft. 11 in. (Sefton and Meadows, U.S.A.).

Jumping Hare, or **Springhaas** (*Pedetes capter*), a

rodent quadruped of South Africa, somewhat resembling the jerboa; so called from its springing manner of progression, similar to that of the jumping mouse and jumping shrew.



JUMPING HARE

Jumping Mouse,

or **Jumping Rat.**

An American rodent of the jerboa or Dipodidae, family, resembling a mouse, but with long hind limbs that enable it to take running leaps.

June, the sixth month of the year, so named from the Roman *gens* or clan Junius, or perhaps from Juno.

Juneau, the capital of Alaska, situated on the Gastineau Channel. It is the centre of the fishing, fur and mining industries of the country and has machine shops and paper mills. Pop. 4,000.

Jung, Karl, Swiss psychologist; was associated with Freud (q.v.) in the development of the system for the analysis of mental processes known as psycho-analysis, but a difference of opinion led to open rupture, and Jung returned to Zurich, where he founded a school of psycho-therapy. His works include *Psychological Types*, *Contributions to Analytical Psychology*, *The Secret of the Golden Flower* (with Richard Wilhelm). (1875-).

Jungfrau (Maiden), a peak of the Bernese Alps, 13,670 ft. in height; was first ascended by the brothers Meyer in 1811.

Jungle, originally any forest land or waste land, is now used in India of country overgrown with long grass and tangled vegetation, especially particular tracts occupied by wild beasts. The term is also used for similar areas in other countries. In Stock Exchange slang "The Jungle" means W. African Share Market.

Jungle-fowl, a genus of gallinaceous birds native of India and

the East. There are four species, including the Red Jungle-fowl (*Gallus gallus*), from which the common domestic fowl is believed to have originated. There are many varieties, including one in Japan with wing-coverts growing as long as 12 ft. and another in N. India, a type to which the common domestic fowl reverts when let run wild in Malaya.



RED JUNGLE-FOWL

Juniper (*Juniperus*), a genus of evergreen shrubs of the natural order Coniferae, but especially the common juniper (*Juniperus communis*) of Europe (including Britain) and America. It bears needle leaves and dark blue berries of acrid taste, used in flavouring gin. *Juniperus virginiana* yields the cedarwood for penell-

making. Other species also yield useful woods.

Junius, Letters of, seventy satirical letters under that signature in the *Public Advertiser* 1769 to 1772, and were with others reprinted in book form; the prototype of the modern leading article. Their authorship has never been discovered.

Junk, a Chinese boat with a square prow, a high stern, and a pole for mast.

Junker,

a name formerly given in Germany to the younger members of the aristocracy, or of the landed gentry, as representing a reactionary party in politics.



Junket,

in origin a cream CHINESE TRADING JUNK cheese, made in a rush basket and served on a rush mat; but now used of a dish consisting of curds sweetened and flavoured, and served with scalded milk on top. In America a picnic or open-air meal is so called.

Juno, Juniper, and the queen of heaven, corresponding to the Hera (q.v.) of the Greeks; the impersonation of womanhood, and the special protectress of the rights of women, especially married women. She bore the names of *Virginialis* and *Matrona*, and was the patroness of household and State economy.

Junot, Andoche, Duc d'Abantes, French general; was Napoleon's aide-de-camp in his first campaign in Italy; took part in the expedition to Egypt; distinguished himself in the invasion of Portugal, but soon experienced reverse after reverse; in a fit of madness he threw himself one day out of a window and was killed. (1771-1813).

Junta, Spanish name for a committee or political purposes or for making laws. It differs from a regular legislative assembly in that it is generally a *de facto* body called together or self-appointed during times of political upheaval, as e.g., the junta in Spain under General Franco in 1936. In English history the word (in the form "junta") has usually a contemptuous significance, and has been applied to the Whig faction in the reign of William III., of which Russell, Lord Keeper Somers and Charles Montague were the leading members.

Jupiter, the chief of the gods of the Roman pantheon, equivalent to the Greek Zeus (q.v.).

Jupiter, the largest of the planets, revolving between Mars and Saturn, at a mean distance of 483 million m., in a period of 4,332 days; it rotates on its axis in 9 hrs. 55 mins.; accompanied by eleven moons, four of them, discovered by Galileo, much brighter than the rest; Jupiter is 1,300 times larger than the earth and 320 times as heavy; its density is only one-fourth that of the earth.

Jura, an Aargylshire island N.E. of Islay, mountainous, the twin peaks called the Paps of Jura being 2,400 and 2,700 ft. high. The eastern slopes yield some crops, but most of the island is deer-forest and cattle-grazing land. Area 160 sq. m. Pop. 570.

Jura, dept. of Eastern France, on the frontier of Switzerland, where stock-raising is carried on, salt produced, and clocks and watches and cheese made; there are large forests. Capital Lons-le-Saunier. Area 1,950 sq. m. Pop. 239,000. The name is taken from the Jura Mts., a range about 200

m. long, in Franco and Switzerland, their highest peak being the Crêt de la Neige (5,650 ft.); they are thickly forested and heavily fissured, and give their name to the Jurassic system of rocks.

Jurassic, name given to the mesozoic rocks lying between the Triassic and the Cretaceous. In England they consist of a broad band stretching from Lincolnshire to the Dorset coast, including the Oolite and Lias. The fossils of this period include corals, crinoids and ammonites, which are used as zone fossils, as well as giant reptiles or dinosaurs. The period is named after beds of that age in the Jura Mts.

Jurat, one of a body of magistrates in the Channel Is., chosen for life, who, together with the Bailiff, form the Royal Court of Justice; the office goes back to 1537.

Jurisprudence, the study of the principles or notions underlying any legal system or systems. English jurists restrict jurisprudence to a study of the meaning of such basic concepts as the "state," "law," "sovereign independence" and the like, and to an analysis of such general notions as property, possession, contractual relationship, intestacy, crime and actionable wrongs or torts. "Comparative jurisprudence" involves the reduction of all the above-mentioned common notions to some general form and comparing this with other particular legal systems. "Forensic medicine" or "Medical Jurisprudence" is the study of medicine in relation to the criminal law.

Jury, a body of citizens set to try a question of fact, or to assess damages. In England a jury numbers 12, and its verdict must be unanimous; a coroner's jury, however, may consist of any number from 12 to 23, of whom at least 12 must agree; in Scotland the verdict is by majority, and the jury numbers 12 in civil and 15 in criminal cases. The system in England dates back to the reign of King Alfred. The grand jury, recently abolished, examined criminal charges at assizes to decide whether sufficient evidence existed to justify bringing a case to trial.

Jus Gentium, in Roman law, the principles, supposed to be based on and in agreement with natural justice, which was administered in the city and later throughout the Empire by the Prætors. It became the foundation of much of what is now called International Law, though originally it was concerned with matters in dispute between private persons as well as with the relations between States.

Justice, Royal Courts of, English Courts formerly housed in Westminster Hall, comprising until 1873 those of the King's Bench, Common Pleas and Exchequer—these being the Superior Courts of Common Law, as differentiated from the High Court of Chancery, with the Vice-Chancellor's Courts, which were the courts of Equity; there were also a High Court of Admiralty, a Prize Court, Probate Court and Divorce Court.

By the Judicature Act of 1873 the jurisdiction of the Superior Courts of Common Law and Equity, Admiralty, Probate, Divorce and of the Assize Courts was transferred to the Supreme or High Court of Justice, situated in the Strand, which Court consists of the two Courts of Appeal, the Court of Criminal Appeal (instituted in 1908); the King's Bench Division; the Chancery Division; the Probate, Divorce and Admiralty Division and the Railway and Canal Commission Court. Common law and equity were fused by this Act, so that the King's Bench and Chancery Divisions can each exercise both common law and equity jurisdiction, though all purely equity cases go to the Chancery Division.

Justices, Lords, are five in number and form, together with the Lord High Chancellor, the Lord Chief Justice, the Master of the Rolls and the president of the Probate, Divorce and Admiralty Division, as *ex-officio* members, the penultimate Court of Appeal in the United Kingdom. They are not peers. In practice, of the *ex-officio* members only the Master of the Rolls functions as a regular member of the Court. There are generally two Courts of three members each. Judges of the High Court may be called in to assist in the Court where necessary. The Lords Justices hear appeals from the High Court, but no appeal lies to them in criminal cases. The procedure on appeal is by motion for a new trial or to set aside a verdict or judgment. Mostly there is a right of appeal without leave, though the Court below may refuse a stay of execution. From this Court an appeal lies to the House of Lords.

Justices of the Peace, county or borough magistrates appointed by the Lord Chancellor on the recommendation of the Lords Lieutenant of Counties. The title is derived from the old Conservators of the Peace of the 14th Century, whose criminal jurisdiction in less grave cases has devolved on their modern representatives. In former times they also had various administrative functions, such as the maintenance of highways, but these have long been transferred to the County Councils. There is now no property qualification and no honorarium. Women are eligible for appointment. All judges (*q.v.*), recorders, metropolitan police magistrates, mayors and chairmen of district councils are justices of the peace by virtue of their office. Two or more justices constitute a petty sessional court, whose jurisdiction embraces admitting accused persons to bail, committing persons for trial, and the disposal of minor offences in pursuance of their powers of summary jurisdiction. Justices of the Peace may also grant separation orders, grant licences for the sale of intoxicating liquors and issue maintenance orders.

Justiciar, in English history, the chief political and judicial officer under the Norman and Plantagenet monarchs; he acted as regent in the King's absence, William Fitz-Osborn acting in that capacity for William I.; the office was enhanced in importance by Ranulf Flambard under William I. and the justiciar became supreme in justice and finance. The office ceased to exist in the reign of Edward I., and its powers passed to the Lord High Chancellor.

Justiciary Court, the highest court of criminal cases in Scotland.

Justification, (1) in the law of libel a plea by the defendant that the defamatory words complained of were true in substance and in fact. To substantiate such a plea, the whole libel must be proved true, but a slight inaccuracy in one of its details will not prevent the defendant from succeeding, provided the inaccuracy in no way alters the complexion of the affair. Similarly in criminal cases, if the whole of the plea of justification is not proved, the Crown will be entitled to a verdict. (2) In theology, the act by which the soul is reconciled to God; it is equivalent to the remission of sins, and also (according to the canons of the Council of Trent) connects the sanctification and renewal of the inner man.

Justinian I., Roman Emperor and jurist, born in Illyria; became co-emperor with Justin I. in 527; married Theodora, and for 38 years enjoyed a reign, the most brilliant of the late Empire, but not without dangers from foes outside and factions within. His fame rests on the codification and reform of the laws which he

(or Tribonian, the Quæstor, under his direction) carried out. He improved the status of slaves, revised the laws of divorce and of intestate succession, and in his *Digest*, *Institutes* and other sections of the *Corpus Juris Civilis*, first gave definiteness to Roman law and laid the basis of the civil law of most modern nations. (482-565).

Justinian Pandects, a code of Roman laws compiled under the direction of the Emperor Justinian, with a digest of the commentaries of the jurists thereupon.

Jute, a fibre obtained from the Asiatic plants *Corchorus capsularis* and *Corchorus olitorius*, annuals of the natural order Tiliaceæ, growing 10 ft. high, with few branches. It is obtained from the inner bark of the plants, the stems being cut and retted in water before the fibre is beaten out. It is used in making cordage, canvas, tarpaulin and is the foundation of Brussels and Wilton carpets. The plant is cultivated in Bengal and Assam.

Jutes, a Teutonic people generally held to be the forefathers of the modern inhabitants of Jutland, though ethnologists are at variance on the point. Whatever their precise origin, Jutes, together with the Angles



JUTE
(*Corchorus capsularis*)

and Saxons, invaded England in the 5th Century and settled on the E. coast, chiefly in Kent.

Jutland, peninsula at the mouth of the Baltic Sea, which comprises the continental portion of the kingdom of Denmark. Area 11,400 sq. m. Pop. 1,675,000. Off here in May 1916 was fought the biggest naval battle of the World War, in which 140 British vessels under Jellicoe and Beatty met 110 German under Von Scheer. The engagement was not decisive, Britain losing 14 and Germany 11 ships. The German fleet, however, returned to its base, and did not again challenge the British fleet in a general naval engagement.

Juvenal, Latin poet and satirist, born in Aquinum. His satires, 16 in number, are written in indignant scorn of the vices of the Romans under the Empire, and from his descriptions the historian finds a picture of the manners and morals of the time. (42-120).

Juvenile Offenders, children under the age of 16 found guilty of crimes. Since 1908 they have been dealt with separately from older criminals; they are remanded in separate places and tried in special juvenile courts from which the public are excluded. (Children under 14 cannot be sent to prison; but they can be placed on probation, sent to approved schools or awarded corporal punishment, and they or their parents can be fined on conviction).

K

Kaaba. See *Caaba*.

Kabul, on the Kabul R., at the foot of Takht-i-Shah Hills, 650 m. NW. of Delhi, is the capital of Afghanistan, an ancient, largely mud-built city, but progressing; trades in fruit and carpets; there is a University (founded 1932) and a military training academy; the town was taken by the British in 1839 and 1842, and again by General Roberts in 1879. Pop. c. 80,000.

Kadijah, a rich widow, the wife of the prophet Mohammed, who had been her steward and factotum, and whom he married when she was forty and himself only twenty-five. She was the first person to express her belief in his prophetic mission.

Kaffirs, including Kaffirs proper and Zulus, a division of the Bantu

negroes, are a pastoral and latterly agricultural people of fine physique, found over the greatest part of S. Africa; Kaffir Wars broke out in 1834, 1846, 1850 and 1877; the name, which means infidel, was originally applied by the Mohammedans to all pagans.

Kafraria, a district of S. Africa which was annexed to the then Cape Colony after the wars with the Kaffirs (1846-1853), thus advancing the border of the Colony to the Kei R.

Kagoshima, a port on Kiusiu I., Japan, and capital of Satsuma province. Makes pottery, silk wares and cotton goods. Pop. 182,000.



KAFFIR

Kai-Feng-Fu, or *Kaifeng*, the capital of Central China, on the Liwang-ho. It had until recently an ancient Jewish community. It is a centre of trade in corn, rice, tea, indigo and cattle. Pop. 150,000.

Kainite, a mineral consisting of potassium sulphate, magnesium chloride and water of crystallisation, which occurs at Stassfurt (N. Germany), and is used as an artificial manure.

Kaisar-i-Hind (i.e., Caesar of India), a title applied to Queen Victoria and subsequent British monarchs as Emperors of India.

Kaisariyeh, a city of Palestine at the foot of Mt. Argæus, 27 m. from Nazareth. Its former name was Caesarea. St. Paul was imprisoned here. Pop. about 40,000.

Kaiser, the name, derived from the Latin *Cæsar*, given to the emperors of the Old Holy Roman Empire, and of the rulers of the German and Austro-Hungarian Empires before the World War.

Kaiserslautern, town in Bavaria, manufacturing sewing machines, bicycles, beer, shoes, etc. Pop. 62,600.

Kaiser Wilhelm's Land, former name of what is now N.E. New Guinea, which before the World War was a German colony; it is now mandated to Australia.

Kaka, a Maori name for a New Zealand parrot, the *Nestor meridionalis*, of the genus *Nestor*; it is olive-brown, variegated with grey on the crown and dark red on the abdomen and rump. The name is imitative, like cockatoo.

Kakapo (*Stringops Labroptilus*), a New Zealand parrot which has green feathers mixed with dark brown and yellow and a disk of feathers round its eyes giving rise to its popular name, Owl-Parrot. It is incapable of flight, and lives mostly on the ground, its fully-developed wings being used solely for the purpose of balance. It is a vegetarian feeder and is getting rarer.

Kalahari Desert, in S. Africa, stretches far northward from the Orange R., between SW. Africa and the Transvaal; an elevated plateau, not really desert, but covered with scrub and affording coarse pasturage for cattle.

Kalamazoo, a railway centre and flourishing town in the SW. of Michigan, 144 m. NE. of Chicago; manufactures machinery, paper and flour. Pop. 55,000.

Kalat, State in Baluchistan, British India, 73,280 sq. m.; a confederacy ruled by the Khan of Kalat. Pop. 342,000. The capital, bearing the same name, is an important military post on a hilltop 7,000 ft. high. Pop. 12,000.

Kaleidoscope, an optical instrument, invented by Sir David Brewster in 1817, consisting of a cylinder with two mirrors set lengthwise inside, two plates of glass with bits of coloured glass loose between them at one end and an eye-hole at the other, varying patterns being displayed on rotation.

Kalevala, a collection of Finnish folk-songs, current among the peasantry there from early times.

Kalgoorlie, a town of W. Australia, 375 m. E. of Perth. It is the centre of the gold-mining area E. of Coolgardie. Pop. 10,700.

Kalisz, chief town in the province of Lodz, Poland, situated on the Prosna. It has distilleries, and manufactures embroidery, lace and metalwork. Pop. 68,000.

Kalmar, seaport, in SE. of Sweden, on the Baltic, an island in Kalmar Sound; carries on a large timber trade, and manufactures tobacco and matches. Pop. 21,000. Also a province of Sweden, taking its name from the town. Area 4,456 sq. m. Pop. 231,000.

Kalmuks, a Mongolian race widespread in Central Asia; they are Buddhists, nomadic, and have herds of horses and cattle.

Kalpa, Indian word for an age, especially for the immense period of time which in Hindu belief separates one destruction of the world from the next.

Kaluga, the capital of an industrial name, Russia, on the Oka R., 96 m. SW. of Moscow. It has many manufacturing industries, tanneries and sugar refineries. Pop. 60,600.

Kama, the Hindu god of love, one of the oldest gods of the Hindu pantheon, resembling the Greek Eros and the Latin Cupid.

Kamchatka, part of the Far Eastern Region of the U.S.S.R., a long narrow peninsula on the E. coast of Siberia, stretching southwards between the Behring Sea and the Sea of Okhotsk, with a precipitous coast and a volcanic range of mountains down the centre, has a cold wet climate, grass and tree vegetation, and many hot springs; the people live by fishing, hunting and trading in furs; farming is now being introduced under State supervision. Area 69,700 sq. m. Pop. c. 40,000.

Kamet, peak of the Himalayas, in the United Provinces, India, 25,447 ft. in height; it was twice scaled by F. S. Smythe in 1931, and is the highest mountain so far ascended by man.

Kampen, Dutch town on the Yssel, 3 m. from the Zuider Zee, and 5½ m. W. of Zwolle; has shipbuilding and fishing industries. Pop. 20,000.

Kanaka, a native of the South Sea Is. word for "man". Strictly the Polynesian name for Polynesian races, it is commonly used to describe all South Sea Islanders, Polynesian, Melanesian, etc.

Kanara, a rainy district on the W. coast of India, between Goa and Malabar, mostly malarial forest country with the Ghat Mts. and many rivers; N. Kanara is in Bombay Presidency, S. Kanara, capital Mangalore, is in Madras. From this area the Kanarese, one of the principal races of S. India, take their name.

Kanchenjunga, mountain in Nepal, of the Himalayas (28,146 ft.); unsuccessful attempts to scale it were made by expeditions in 1929-1930 and in 1931.

Kandahar, second city of Afghanistan, near the Argandah R., 250 m. SW. of Kabul; a well-watered, regularly built town in the middle of orchards and vineyards; a centre of the textile industries; it was held by the British through the war of 1839-1842, and again in 1880-1881. Pop. c. 60,000.

Kandy, a town on a mountain lake NE. of Colombo, former capital of the island; has the ruins of the palace of the old native kings, and a temple with the famous tooth of Buddha. Pop. 37,000.

Kangaroo, herbivorous marsupial mammal found in Australia

and some Pacific islands. There are over 30 species, but the best known is the *Macropus giganteus* or Great Kangaroo. The male is 6 to 7 ft. high and the female 4 to 5 ft. It has short, weak fore-limbs, used chiefly for grasping, and not in movement; powerful hind-limbs, and very muscular thighs and tail; lower legs and tail very long; colour, yellowish-brown, darker above and paler below. The animal progresses by flying leaps, covering from 10 to 20 ft., and even more, in one leap. The stomach is pouched, and in the pouch the female carries its young. It is gregarious, inoffensive and timid, but when brought to bay it makes formidable use of its hind feet.



GREAT KANGAROO

Kangaroo Island, an island, about 1,700 sq. m. in area, off the south coast of S. Australia, of which it forms part. The first colonists landed here, but were almost immediately transferred to the mainland in 1836.

K'ang Tê, Emperor of Manchukuo; in 1909, at the age of three; retired to private life in 1912, on the proclamation of the Chinese republic, as Pu Yi, a name to which he subsequently prefixed the additional one of Henry; in 1932 was installed at Hsinking as administrator of Manchuria after the Japanese invasion; enthroned as hereditary emperor in 1934. (1906-)

Kano, a province of N. Nigeria, having an area of some 18,000 sq. m., inhabited mainly by the Hausa race. The chief town (pop. 77,000) has the same name.

Kansas, a central State of the American Union; lies in the basin of the Kansas and Arkansas Rs. It is a rolling prairie, with a fine climate subject to occasional extremes; raises crops of grain and sugar, and affords excellent grazing ground.

Pork and beef packing are the chief industries; oil and natural gas are produced. The State University is at Lawrence, and there is an agricultural college at Manhattan. The capital is Topeka, the largest other towns being Kansas City and Wichita. Area 82,158 sq. m. Pop. 122,500.

Kansas City, two contiguous towns on the S. bank of the Missouri R., 280 m. W. of St. Louis, are so called. The larger and more easterly one is the second city of Missouri, an important railway centre, and distributes the agricultural products of a large region; has pork-packing industries and iron manufactures. Pop. 400,000. The smaller, westerly city, is in Kansas, the largest town in that State; has two universities. Pop. 122,300.

Kansu, a province of NW. China. It is high, mountainous and not very rich. The climate is cold. Productions include tobacco, oil, gold, salt, wheat, barley, indigo and sheep. It has an area of 146,000 sq. m. and a population of 6,700,000. The capital is Lanchow. The province is bounded N. by Inner Mongolia, E. by Shen-Si, W. by Tibet and Sin-Kiang.

Kant, Immanuel, German philosopher, born in Königsberg, the son of a saddler, of Scottish descent; entered the university in 1740; wrote an essay, his first literary effort, on *Motive Force* in 1747; became a private lecturer in 1755; became professor of Logic and Metaphysics in 1770, when he was 46, and continued till his retirement, in 1797, from the frailties of age. His great work, the *Critique of Pure Reason*, was published in 1781, followed by the *Critique of Practical Reason* in 1788 and the *Critique of Judgment* in 1790. His works inaugurated a new era in philosophic speculation, and by the adoption of a critical method dealt a death-blow to speculative dogmatism on the one hand and scepticism on the other. Kant by his critical method did for philosophy what Copernicus did for astronomy. He centralised the intelligence in the reason or soul, as the latter did the planetary system in the sun. (1724-1804).

Kaolin, a pure form of clay (China-clay) used in the manufacture of porcelain; a hydrate aluminium silicate, white in colour, found in China, the United States and Cornwall.

Kapok, a silky vegetable fibre used for stuffing pillows, lifebelts and similar objects, is derived from the seed of the Javanese *Eriodendron anfractuosum*. It is cultivated in many British tropical dependencies, notably Ceylon and Tanganyika, but so far little attempt has been made to collect and prepare it for the market.

Kapp, Wolfgang, German politician who in 1920 attempted, in the so-called "Kapp putsch," to seize power in Berlin from the Republican Government with military aid; resisted by a general strike, he fled to Sweden, and on return to Germany the following year was arrested for high treason; he died while awaiting trial. (1868-1922).

Karachi, a seaport and the capital of Sind, British India, 500 m. from Bombay. It is essentially commercial, and is the terminus of the North-Western Railway, and an important air port on the Imperial Eastern route. The extensive docks and wharves are on the island of Kiamari, to which Karachi is joined by the mole. The chief manufactures are carpets and metal-ware. Pop. 264,000.

Karakoram, a range of the Himalayas, extending from the Hindu-Kush eastward into Tibet, and a pass in the centre of it 18,000 ft. high. Also the name of the old capital of the Mongol Empire, under Genghis Khan and his successors, near modern Urga.

Kara-Kum, (1) a desert of about 110,000 sq. m. in Russian Central Asia. The greater part of it is in the Turkoman Republic; the remainder in the Kazak Republic. (2) A desert in Turkestan, known also as the Khiva desert.

Kara Sea, a portion of the Arctic Sea, on the NE. corner of Russia, between Novaya Zemlya and the Yalmal; receives the Rs. Obi and Yenisei, and is navigable from July to September.

Karelia, an autonomous Republic of the U.S.S.R., SE. of Finland, and lying between Lake Ladoga and the White Sea. The people are Finnish by race. Pop. 280,000. Capital, Petrozavodsk.

Karikal, a French possession in India, on S. of Madras; rears and exports rice in large quantities. Pop. 16,700 (with surrounding district 62,500).

Karlsbad. See Carlsbad.

Karlskrona, port of Sweden, and its chief naval station, built on four small islands in the Baltic, connected with the mainland by bridges. Pop. 28,300.

Karlsruhe, city in Germany, the capital of Baden, manufacturing machinery; has large railway workshops; built in the form of a fan, its streets radiating from the former ducal palace in the centre. Pop. 155,000.

Karma, term in Indian philosophy indicating the law regulating the sequence of cause and effect, especially in man, so that his state at any time is the necessary outcome of his former deeds and thoughts. It is a fundamental conception in Buddhism and Theosophy.

Karnak, a famous temple near Luxor in Egypt, built by Seti I. and Ramesses II., with other temples in the vicinity.

Karolyi, Michael Adam, Count, Hungarian statesman. Before the World War he was a democratic leader, and during it opposed the German hegemony. He formed a ministry upon the defeat of the dual monarchy in 1918, and in 1919 was provisional president of the new Republic of Hungary. From 1931 to 1932 he was Prime Minister. (1871-).

Karri, the native name of an Australian tree, *Eucalyptus diversicolor*; it is one of the "blue gums," and yields a hard red timber used for wood-paving.

Karroo, name for the high plains in Cape Province, S. Africa, especially the Great Karroo, in the S. centre of the province, which is 350 m. long and about 80 m. broad, and 3,000 ft. above the sea-level; they are used mainly for sheep-grazing.

Kars, town and vilayet of NE. Turkey, W. of Armenia and SW. of Georgia; in Russian hands from 1877 until after the World War. Pop. (vilayet) 306,000.

Kashgar, town of Sinkiang, or Chinese Turkestan, on the Kizil R.; for over 2,000 years an important trading centre; carpets, silk and cotton goods are manufactured; the people are mainly of the Turki race. Pop. c. 30,000.

Kashmir. See Cashmere.

Katabolism, the name for the processes or other decomposition of protoplasm within the living organism, as opposed to anabolism, which is the name given to the building-up of protoplasm, etc., from less complex substances. The two processes considered together are known as metabolism.

Katanga, a district of the Elisabethville province of the Belgian Congo. It is very fertile, and some of the richest copper-mines of the colony are situated around

Elisabethville, the capital. It has an area of 180,000 sq. m. and a population of about one million.

Kathiawar, a peninsula in W. India, between the gulfs of Cutch and Cambay, consisting of several native states in relation with the Imperial Government through the W. Indian States agency. The pop. is about 4 millions.

Katrine, Loch, a long, narrow, beautiful lake in the Trossachs, Scotland, about 30 m. N. of Glasgow, to which it affords an abundant water supply, is 8 m. long and 3 m. broad; the splendid scenery of it is described in Scott's *Lady of the Lake*.

Kaunas (Kovno), a province and city of Lithuania. The province, formerly Russian, is watered by the Niemen, and its chief industries are agriculture and cattle-raising. Area 15,400 sq. m. Pop. 1,857,000. Kaunas, the capital, is a handsome town, trading in grain, and seat of the Lithuanian Government. Pop. 107,000.

Kauri, or **Cowrie**, Pine (*Agathis australis*), a tall coniferous tree of New Zealand and the New Hebrides; it produces a valuable shipbuilding timber and a resin known as gum.



KAURI PINE

Kavalla, the capital of the dept. of Kavalla, Macedonia, Greece, on Lake Kavalla; an important tobacco trade centre. It was occupied by the Bulgars during the World War, but was retaken by Greece in 1918. Pop. (town), 50,000; (dept.) 118,000.

Kayak,

the Eskimo skin canoe, long, narrow and covered over; mostly to hold one occupant, but in some cases two-seated.



KAYAK

Kaye-Smith, Sheila (Mrs. J. P. Fry), English novelist; she passed her early days in Sussex, and her novels deal mainly with Sussex life. Her works include *The Tramping Methodist*, *Green Apple Harvest*, *Shepherds in Sackcloth* and *Susan Spray*. (1889-).

Kazakstan, an autonomous Republic of the U.S.S.R., situated in Soviet Central Asia, formed in 1920 from the former Governments of Uralsk, Turgai, Akmolinsk and Semipalatinsk, and enlarged in 1925 and 1936. The area of the Kazak S.S.R. is 1,048,000 sq. m., and the pop. 6,800,000. The capital is Alma-Ata. The Turkestan-Siberian railway traverses the territory.

Kazan, capital of the Tartar autonomous Republic of the U.S.S.R., one of the most historically interesting cities of Russia, with a university, cathedral, several mosques and a fortress. It is now an important industrial centre, producing soap, chemicals, leather and textiles. Pop. 259,000.

Kea (*Nesor notabilis*), a green New Zealand species of the Loridae (Lories or Brush-tongued Parrots) family, its Maori name being imitative of its cry. As a result of their acquiring a liking for the flesh (especially the kidney fat) of sheep, the New Zealand Government put a price on their destruction.

Kean, Charles John, actor, second son of the following, born in Waterford; made his first appearance in Drury Lane in 1787, which proved unsuccessful, but became lessee of the Princess's Theatre, London,

where he distinguished himself by his revivals of Shakespeare's plays, with auxiliary effects due to scenery and costume. (1811-1868).

Kean, Edmund, English tragedian, born in London; on the stage from his infancy; his first success as Shylock in the *Merchant of Venice* in 1814, followed by equally famous representations of Richard III., Othello and Sir Giles Overreach. He led a very dissipated life, and under the effects of it his constitution gave way. He broke down one evening on the stage, and never appeared again. (1787-1833).

Kearsley, an urban district and town of SE. Lancashire. It has coal-mines and iron-works; paper and cotton manufactures are carried on. Pop. 11,000.

Keats, John, English poet, was the son of a livery-stable proprietor, born in Finsbury, London; was apprenticed to a London surgeon, and subsequently practised medicine himself in London; from 1817 devoted himself to literature, made the acquaintance of Leigh Hunt, Hazlitt, Lamb, Wordsworth, and other literary men; left London for Coleridge, moved next year to Teignmouth, but on a visit to Scotland contracted consumption. In 1819 he was betrothed to Fanny Brawne, and struggled against ill-health and financial difficulties till his health completely gave way in the autumn of 1820; went to Naples and then to Rome, where, in the spring following, he died. His works were three volumes of poetry, *Poems* 1817, *Endymion* 1818, *Lamia, Isabella, and other Poems*, including *Hyperion*, and *The Eve of St. Agnes*, 1820. The dignity, tenderness, and imaginative power of his work contained the highest promise. His letters, of which many are extant, are famous. (1795-1821).



JOHN KEATS

Keble, John, English poet and divine, born at Fairford, Gloucestershire; became Fellow of Oriel College, Oxford, in 1811; in 1827 appeared the *Christian Year*, which he published anonymously; in 1831 was appointed professor of Poetry in Oxford; he was one of four who originated the Tractarian Movement at Oxford, and was the author of several of the *Tracts for the Times*; in 1835 he was presented to the vicarage of Hursley, which he held till his death. He was author of *Lyra Innocentium* and with Newman and others of *Lyra Apostolica*. In spite of Newman's secession he remained faithful to the English Church. (1792-1866).

Kedah, one of the unfederated British Malay States; situated on the W. coast of the Malay Peninsula. The State includes the island of Langkawi and a number of smaller islands in the S. The area of the mainland of Kedah is 3,660 sq. m. Products are rubber, coconuts, betel nuts, tapioca and rice. Pop. 464,000.

Kedgeriee, an Indian dish of rice boiled with onions, eggs, pulse and butter; in European cookery it is a breakfast dish of cold fish, boiled rice and eggs.

Kedron, a valley E. of Jerusalem, formerly traversed by a brook running towards the Dead Sea; near it was the New Testament Garden of Gethsemane. It was visited by Christ on his way to Gethsemane and by David in his flight.

Keelhauling, a naval punishment of centuries; consisted in dropping the victim into the sea from one yardarm, hauling him under the keel and up to the yardarm on the other side; is now a term for a severe rebuke.

Keeling Islands. See Cocos Islands.

Keep, in architecture, the chief tower or dungeon (donjon) of a castle; always the strongest and least accessible part of the building and higher than the rest; sometimes, as at Gisors in Normandy, erected on an artificial mound. The approach was through a bailey or outer court; often the keep was surrounded by a deep ditch; the lower storey contained vaults for keeping prisoners. Being built very solidly, the keeps of old castles are often still in almost perfect condition, as e.g., the White Tower of London, and the Keep towers at Rochester and Castle Rising in England.

Keewatin, E. mainland district of the N.W. Territories of Canada, N. of Manitoba; area, 228,000 sq. m.; very scantily inhabited.

Keighley, a Yorkshire town, on the Aire, 9 m. NW. of Bradford; manufactures woollen and worsted fabrics and spinning machinery. Pop. 40,000.

Keith, Sir Arthur, British anthropologist and anatomist; professor at the Royal Institution, 1917-1923, Secretary 1922-1926 and treasurer 1926-1929; president of the British Association, 1927; author of popular and learned works on anthropology, including *The Antiquity of Man* (1915), *Religion of a Darwinist* (1925), *Darwinism and its Critics*, etc. (1866-).

Keith, George Keith Elphinstone, first Viscount, British admiral, son of the tenth Lord Elphinstone. He saw wide service in the Navy, and amongst other exploits commanded the fleet which defeated the Dutch and captured Cape Town in 1797. He was raised to the peerage as a baron in 1797 and made a viscount in 1814. (1746-1823).

Keith, James, known as Marshal Keith, born near Peterhead, of an old Scottish family; after sharing in the Jacobite rebellion fled first to Spain and then to Russia, doing military service in both, but quitted the latter in 1747 for Prussia, where, under Frederick the Great, he rose to be field-marshal; he distinguished himself in successive engagements, and fell, mortally wounded, at Hochkirch. (1696-1758).

Kelantan, one of the unfederated British Malay States; situated in the W. section of the Malay Peninsula. Area 5,700 sq. m. Population 390,000. The principal river is the Kelantan. The capital is Kota Bharu, with a population of 14,800. The main industry is agriculture; the chief products are rice, oil palm, coconuts, betel nuts and rubber. Manganese mining is carried on.

Keller, Helen Adams, American lecturer and writer, deprived at the age of 1½ years of the senses of sight, hearing and smell; after a special education overcame these handicaps, graduated at Radcliffe College in 1904, and became the standard example of the possibilities of a developed mental life for the blind; wrote *The Story of My Life, The World I Live In*, etc. (1880-).

Kellermann, François Christophe, Duke of Valmy, French general, born in Alsace, son of a peasant; entered the army at 17; served in the Seven Years' War; defeated the Duke of Brunswick at Valmy in 1792; served under Napoleon as commander of the reserves on the Rhine, but supported the Bourbons at the Restoration. (1735-1820).

Kellogg, Frank Billings, American statesman. Born in Potsdam, New York, he became a barrister in 1877, and in 1923 was appointed American Ambassador in London. From 1925 to 1929 he was U.S. Secretary of State, and made his name as the originator of the Kellogg Pact (q.v.); winner of Nobel Peace Prize, 1929; from 1930 to 1935 he was a member of the Permanent Court of International Justice at the Hague. (1857-1938).

Kellogg Pact, a declaration signed in Paris in 1928 by the leading Powers of the world, stating that they renounced war as an instrument of national policy; the pact is named after F. B. Kellogg (q.v.), the United States Secretary of State, who initiated the preliminary negotiations.

Kells, an ancient town in Co. Meath, Eire (Ireland), with many antiquities; gives its name to the *Book of Kells*, a beautiful 9th-Century Celtic illuminated manuscript of the Gospels, now in the library of Trinity College, Dublin.

Kelp, a name given to the ashes of seaweed, used as a source of iodine. In Normandy the corresponding name is varec or varech. The purified kelp is mixed with manganese dioxide and concentrated sulphuric acid and distilled, when iodine vapour is set free and may be condensed.

Kelpie, an imaginary water-spirit which, it is said, appears generally in the form of a horse.

Kelso, a market-town in Roxburghshire, Scotland, beautifully situated on the Tweed, where the Teviot joins it, with the ruins of an abbey of the 12th or the early 13th Century. Pop. 4,000.

Kelvin, William Thomson, first Lord, British physicist, born in Belfast; educated at Peterhouse, Cambridge; professor of Natural Philosophy at Glasgow, 1846; president of the British Association in 1871, and of the Royal Society in 1890; received a peerage in 1892, and the Order of Merit in 1902; invented the siphon recorder for the Atlantic cable, and greatly improved the mariner's compass; made discoveries of high importance in thermodynamics, radiation and almost every branch of physics, and devised several important scientific instruments. (1824-1907).

Kemâl Ataturk (formerly Mustapha Kemal), Turkish

statesman, born at Thessaloniki. Led the Turks to victory in the Graeco-Turkish War of 1922 (q.v.); on the overthrow of the Sultan in 1923 he was proclaimed first President of the Turkish Republic, and re-elected in 1927 and 1935; as virtual dictator of the country has set it on the road to complete modernisation on Western lines. (1881-).



KEMÂL
ATATURK

Kemble, Francis Anne, English actress, born in London; made her début in 1829, and proved a queen of tragedy; in 1832 went to America and married, but in 1848 resumed her maiden name, Fanny Kemble; she gave Shakespearean readings for 20 years. (1809-1893).

Kemble, John Philip, English actor, born in Precoat, Lancashire; began to study for the Roman Catholic priesthood, but adopted the stage, and appeared first at Wolverhampton in 1776; after touring in Yorkshire and Ireland he came to London in 1783, playing Hamlet at Drury Lane; became manager of that theatre in 1788; in 1802 transferred himself to Covent Garden; retired in 1817, and lived at Lausanne till his death. (1757-1823).

Kempfenfelt, Richard, British admiral, born at Westminster; distinguished himself in several actions, was on board his flagship, the *Royal George*, when she went down at Spithead, carrying him and over a thousand others with her. (1716-1782).

Kempis, Thomas à, born at Kempen, near Düsseldorf, son of a poor but industrious craftsman named Hämorkin; joined, while yet a youth, the "Brotherhood of Common Life" at Deventer, in Holland,

and at 20 entered the monastery of St. Agnes, near Zwolle, in Overijssel, where he chiefly resided for 70 years, and of which he became sub-prior; spent his time in acts of devotion and copying MSS., that of the Bible, among others, as well as in the production of works of his own, and in chief the *Imitation of Christ*, a work that, in the regard of many, ranks second to the Bible, and has been translated into many languages. (1380-1471).

Kempston, a village and parish of Bedfordshire, England, on the R. Ouse, 2 m. SW. of Bedford. Its industries are lace-making and brick and drain-pipe making. Pop. 5,500.

Ken, Thomas, English prelate, born in Little Berkhamstead; is famous as the author of hymns, especially the morning one, "Awake, my Soul," and the evening one, "Glory to Thee, my God"; was committed to the Tower for refusing to read James II.'s Declaration of Indulgence, and deprived of his bishopric of Bath and Wells, for refusing to take the oath of allegiance to William III.; afterwards became a leader of the Nonjurors. (1637-1711).

Kendal, county town of Westmorland, England, on the R. Kent, 38 m. S. of Carlisle; manufactures heavy woollen goods and paper. Pop. 16,311.

Kendal, Margaret Grimston (Madge), London debut actress; made her London debut as Ophelia at the age of 16; married William Kendal, the actor, in 1869; played under the managements of John Hare and Squire Bancroft, and retired after a long and successful career in 1908. (1849-).

Kenilworth, a Warwickshire market town, 5 m. N. of Warwick; noted for its castle, where Leicester sumptuously entertained Elizabeth in 1575; it was taken and destroyed by Cromwell in the Civil War. Tanning is the most important industry. Pop. 7,600.

Kennedy, Rev. Geoffrey Ankettell Stud- dert, British cleric. Ordained in 1908, he served in France as a chaplain during the World War, earning the nickname "Woodbine Willie" among the troops, and afterwards wrote several books on social and religious problems of the day. (1883-1929).

Kennedy, Margaret, English novelist; educated at Cheltenham College and Somerville College, Oxford, where she studied history. In 1922 published *A Century of Revolutions*. She became famous with her novel *The Constant Nymph* in 1924. Her later works include *Red Sky at Morning* and *Escape Me Never*. (1896-).

Kennet, a tributary of the R. Thames, rising in Wiltshire, flowing through Berkshire, and joining the Thames at Reading.

Kenneth, name of two kings of Scotland, of whom the first, Kenneth Macalpine (reigned c. 833-860), became first ruler of the whole country by defeating the Danes and Picts, and establishing his capital at Scone; the second (reigned 971-995) gained territory in several wars in the border country between England and Scotland.

Kennington, a southern inner suburb of London, in the borough of Lambeth. Here is the Oval, Surrey's cricket ground. Pop. 69,000.

Kensal Green, a district of NW. London, 4½ m. from Euston. It has two large cemeteries, where many eminent men are buried. Pop. 30,000.

Kensington, Royal borough of London to the W. of Westminster. It stands Kensington Palace (Queen Victoria's birthplace), the Albert Memorial and Hall, several museums, the Imperial Institute, and many other institutions; it has been the place of residence of many famous artistic and literary men. Pop. 180,000.

Kent, English maritime county in the extreme SE.; lies between the Thames estuary and the Strait of Dover, with Surrey and Sussex on the W.; it is hilly, with marshes in the SE. and on the Thames shore; is watered by the Medway, Stour and Darent; has beautiful scenery, rich pasturage, and grows fruit, hops and market-garden produce; a large part of the NW. corner is now a residential suburb of London; includes the cathedral cities of Rochester and Canterbury, the ports of Dover and Folkestone, the naval dockyards of Chatham and Sheerness, and other large towns, including Gillingham, Gravesend, Margate, Ramsgate, Bromley and Beckenham. Area 1,525 sq. m. Pop. 1,220,000.

Kent, Duke of, a title held in former times by Plantagenets, Nevilles and Greys, and latterly by members of the British royal family. After the death of Edward, Duke of Kent (1767-1820), fourth son of George III. and father of Queen Victoria, the title was dormant until bestowed in 1934 on George, fourth son of King George V. and brother of King George VI., who was born Dec. 20, 1902, and trained for the navy, from which he retired in 1929. He married on Nov. 29, 1934, Marina, daughter of Prince Nicholas of Greece, and has two children, Prince Edward, born Oct. 9, 1935, and Princess Alexandra, born Dec. 25, 1936.

Kentigern, St., or St. Mungo, the born in Culross; founded a monastery near Glasgow and another in Wales; was distinguished for his missionary labours; buried at Glasgow Cathedral. (518-603).

Kent's Hole, or Kent's Cavern, near Torquay, Devon, a limestone cave famous for the deposits of bones of mammoth, rhinoceros, hyena and cave-bear, and other animals now extinct in England, and of implements and remains of primitive man.

Kentucky, an American State in the S. of the Ohio basin, E. of the Mississippi; is watered by the Licking, Kentucky and Tennessee R.s.; the climate is mild and healthy; much of the soil is extremely fertile, producing cereals, fruits and pastureage in the "blue grass" region, and large tobacco crops; coal is found in both the E. and the W., and iron is plentiful, as are oil and natural gas; the chief industries are iron-smelting and working; is remarkable for its Mammoth and other limestone caves. Admitted to the Union in 1792, Kentucky was a slave-holding State, but did not secede in the Civil War. The capital is Frankfort, the largest city Louisville; the State University is at Lexington. Area 40,600 sq. m. Pop. 2,615,000.

Kenya, British possession in E. Africa, comprising Kenya Colony and Kenya Protectorate. It is bounded on the N. by Abyssinia and the Sudan, on the W. by Uganda, on the S. by Tanganyika and on the E. by the Indian Ocean and Italian Somaliland. The Protectorate consists of a mainland strip extending 10 m. inland along the coast, with a few islands, rented from Zanzibar. The Colony and Protectorate are traversed centrally from E. to W. by the equator. The land area is 225,000 sq. m.

It consists of a poorly watered land-area, this being three-fifths of the Colony; a plateau varying in height from 3,000 ft. to 9,000 ft.; the Rift valley containing Lakes Rudolf, Nakuru, Naivasha and others. Mount Kenya is 17,040 ft. in height. The chief rivers are the Tana and Athi. It is believed that the Arabs and Persians traded along the coast from the earliest times. Vasco da Gama visited Mombasa in 1488, when it was a flourishing trading centre.

The estimated population is 3,262,000, of whom 18,000 are Europeans. Products

include skins and hides, maize, cotton, sugar, tea and coffee; but financial difficulties, due largely to the raising of uneconomic products which cannot compete against long-established producers elsewhere, have for several years hampered the progress of the Colony. Since the war there has been considerable British settlement in the highlands. The natives are negroes of various stocks, with many Arabs on the coast, and a considerable number of Indian settlers. Mombasa is the seat of government.

Kepler, Johann, astronomer, born at Weil der Stadt, Württemberg, of poor parents; studied at Tübingen chiefly

mathematics and astronomy, became lecturer on these subjects at Graz; joined Tycho Brahe at Prague as assistant; removed to Linz, where he studied the motions of the planets, and established what are known as Kepler's Laws; the first, that the planets move in elliptical orbits, the sun in one of the foci; the second, that, in describing its orbit, the radius vector of a planet traverses equal areas in equal times; and the third, that the square of the time of the revolution of a planet is proportional to the cube of its mean distance from the sun. Poverty pursued Kepler all his days; he died of fever at Ratibon. (1571-1630).



JOHANN KEPLER

Keratin, a substance forming the chief constituent in the hair, feathers, nails and horn of animals.

Kerbela (Karbala), a sacred city of Iraq in the liwa of the same name. It is connected with the Euphrates by canal. It is much visited by pilgrims to the tomb of Hussein. It was occupied by British troops in 1917-1918. Pop. (town) 60,000; (liwa) 107,000.

Kerch, a Russian seaport on the E. shore of the Crimea; had a large export trade, which suffered during the Crimean War, but revived after. Pop. 67,000.

Kerensky, Alexander, Russian politician. A native of Turkestan, he became involved in revolutionary movements in Russia, and was leader of the first revolution in 1917. For five months he was Premier, but was driven from power by the Bolshevik revolution in November, and has since lived in W. Europe, mainly at Paris, conducting propaganda against the Soviet regime. (1881-).

Kerguelen Land, an island with m. long by 80 wide, of volcanic origin, in the Antarctic Ocean; so called after its discoverer in 1773, though called Desolation I. in 1778 by Captain Cook; belongs to France.

Kermes (or Kermes-grains). The dried bodies of the homopterous insects, *Coccus ilicis*, which yield a red and scarlet dye, much used before cochineal was introduced.

Kerosene, the high boiling-point fraction of petroleum, used as oil for lamps; in America the ordinary name for paraffin oil.

Kerry, a maritime county in the SW. of Eire (Ireland), between the Shannon and Kenmare Rs., with Limerick and Cork on the E.; has a rugged, indented coast, Dingle Bay running far inland; is mountainous, containing Mt. Brandon, the Macgillivuddy and Dunkerron ranges, and the picturesque Lakes of Killarney; there is little industry or agriculture, but dairy-farming, slate-quarrying, and fishing are U.E.

prospected; iron, copper and lead abound, but are not wrought; county town, Tralee. Pop. 140,000.

Kesteven, Lincolnshire, England, and a separate administrative county. It has an area of 724 sq. m. and a population of 110,080. Grantham and Stamford are its largest towns.

Kestrel, a numerous genus of small falcons, represented in Britain

by the Common Kestrel (*Cerchneis tinnunculus*), a bird with grey head, rump and tail, reddish-brown back spotted with black; length about 12 in. The female has a brown head and a brownish back. It is a bird of prey, devouring mice, voles and insects, and hovers in the air when preparing to strike, whence the alternative name Wind-hover. It is a British bird, but migrates to India and Africa. The Lesser Kestrel (*Cerchneis naumanni*), a S. European bird, is also found in Britain as a rare visitor.



COMMON KESTREL

Keswick, market town and tourist centre of Cumberland, England, in the Lake District, on the E. Derwent, 20 m. SW. of Carlisle; manufactures woollens, hardware and lead-pencils; is the seat of an annual religious convention which gives its name to a certain phase of Evangelicalism. Pop. 4,700.

Ketch (corruption of Turkish *gaig*, a boat), a form of two-masted vessel, fore-and-aft rigged, main-mast forward, with a fore-and-aft rigged mizzen mast, the mizzen sail being larger and the mizzen mast stepped further forward than in the yawl.

Ketch, Jack, a notorious executioner of Charles II.'s reign, whose name became a synonym for his office; his most famous victims were the Duke of Monmouth and Lord Russell.

Kettering, market town in Northamptonshire, England, manufactures boots and shoes and other leather goods. Pop. 31,700.

Kew, a parish in the borough of Richmond, Surrey, England, connected with Brentford by bridge across the Thames. It is best known for the famous Royal Botanic Gardens, first formed by Augusta, Princess Dowager of Wales, mother of George III., in 1759. The collections of Captain Cook and Sir Joseph Banks were added to it, and in 1840 the gardens were presented to the nation by Queen Victoria. Subsequently they were extended from 11 to 300 acres. They contain orchids, ferns, cactus houses and museums of plant products. The herbarium is the largest in the world, comprising over three million specimens of plants. An observatory, built in 1769, stands in the Old Deer Park, which adjoins the Gardens.

Key, in engineering, a hand-tool for valve-control or a contrivance for obviating vibration. In architecture, something that holds two parts of a structure securely together—e.g., a keystone. In music, a set of notes definitely related and based on a particular note; the lowest tone in each scale is the tonic or keynote, and gives its name to the key, whether major or minor. Also the levers for the fingers in a piano or typewriter. Also an instrument, generally of iron, for moving the belt of a loom forward or backward.

Keyes, Sir Roger, British admiral. He was Commodore of Submarines during the World War, and as commander of the Dover Patrol led the attack on Zeebrugge Mole in April 1918, when the *Vindictive* drew the German fire while block ships were sunk in the mouth of the canal. From 1919 to 1921 he was in charge of the Atlantic cruiser squadron; was Deputy Chief of Naval Staff

from 1921 to 1925, and Commander-in-Chief of the Mediterranean Fleet from the latter year till 1928. (1872-)

Keyham, a suburb of Devonport, in the city of Plymouth, Devon, England. There are naval dockyards, barracks and a naval college. Pop. 14,270.

Keynes, John Maynard, British economist, mist, born at Cambridge; served in the India Office, 1906-1908; and in the Treasury, 1915-1919; represented the Treasury at Peace Conference, 1919; deputy for the Chancellor of the Exchequer on the Supreme Economic Council, 1919, resigning on rejection of his proposals, and wrote his famous *Economic Consequences of the Peace*; has written on *Probability Theory* and on Russia; wrote *The General Theory of Employment, Interest and Money*, 1930, to combat the classical theory. (1883-)

Keys, House of, the third estate in the Isle of Man, consisting of 24 members, elected by the adult inhabitants, men and women.

Keys, Power of the, power claimed, according to Matt. xvi. 19, by the authorities of the Church to admit or exclude from church membership, a power the Roman Catholics allege to have been conferred first on St. Peter and afterwards on his successors in office.

Keyserling, Hermann, Count, German philosopher; born at Kōnno, Livonia; journeyed round the world, 1911-1912, and returned with a knowledge of Oriental mysticism which he grafted on the early teaching he received from Houston Stewart Chamberlain. His philosophy distrusts reason and puts its faith in intuition. His best-known book is *The Travel Diary of a Philosopher*, 1919. (1880-)

Khaki, a buff-coloured material used for British army uniforms. It came into use in the S. African War as a "camouflage" uniform, being calculated, by reason of its similarity in colour to that of the veldt, to lessen the conspicuousness of the wearers. Later it was adopted as the ordinary army dress in place of the earlier uniforms of scarlet and blue, though in 1936 Edward VIII. sanctioned a return to a walking-out dress of blue serge.

Khan, title given to a prince or ruler among the Tartars and later in other countries of the Middle East, e.g., Genghis Khan. The word is also used as the name of an inn or public hostel for travellers.

Kharga, or **The Great Oasis**, the largest oasis of Egypt, in the Libyan Desert. It is over 100 m. in length and approaches 50 m. at its greatest breadth, and produces cereals and dates. Pop. about 8,000.

Kharkov, S.S.R., and until 1934 its capital; 350 m. N.E. of Odessa; a trading centre in agricultural produce, horses and wool, with important manufactures; it has a university. Pop. 654,000.

Khartum, capital of the Anglo-Egyptian Sudan, just above the confluence of the Blue and White Niles, 1,100 m. S. of Cairo; formerly an active slave-trade centre; was captured by the Mahdists in 1885, when General Gordon fell; retaken by Lord Kitchener in 1898; is the educational centre of the Sudan and of increasing commercial importance. Pop. 47,000.

Khatmandu, the capital of Nepal, in the Bagmati and Vishnumati Rts., 74 m. N. of the Indian frontier; is the centre of a considerable trade. Pop. c. 80,000.

Khedive, from 1867 to 1914 the title of the ruler of Egypt, roughly equivalent to "Viceroy"; the first to hold it being Ismail, the son of Ibrahim Pasha (q.v.), by grant of the Sultan, his suzerain.

Kherson, Russian city on the Dnieper, 19 m. from the sea and 60 m. E. of Odessa, with which it has a large trade; timber and tobacco are exported, and soap-making, brewing and wool-cleansing are carried on. Pop. 83,000.

Khingán, a range of volcanic mountains of Gobi, separating Mongolia from Manchuria.

Khiva, of Aral; formerly an independent state under Russian protection, now part of the Uzbekistan S.S.R.; the people are Uzbek Tartars, and the country is a sandy desert with many oases, and in some parts well irrigated from the Oxus; it produces wheat, rice, cotton and fruit; pop. about 520,000. Khiva, the capital, on a canal connected with the Amu, some distance from the left bank of the Oxus, and 300 m. N.W. of Merv, was at one time one of the chief slave-markets in Asia till the trade was stopped by Russia. Pop. c. 21,000.

Khorassan (Khurasan), the largest province of Iran; is on the Afghan border, mountainous, and fertile only in the N., among the valleys of the Elburz range; grain, tobacco and medicinal plants are grown, gold and silver, turquoises and other gems found, and the wool of the district is renowned. The capital is Meshed, a sacred Moslem city, with carpet, jewellery and silk manufactures.

Khyber (or Khaiber) Pass, a narrow defile on the border of British India, 33 m. long, in one place only 10 ft. wide, through lofty and precipitous mountains; lies to the N.W. of Peshawar, and is the chief route between the Punjab and Afghanistan; was the scene of a British catastrophe in the war of 1839-1842, but has been repeatedly forced since, and from 1879 has been under British control.

Kiang-si, an E. province of China. The chief products are tea, cotton, paper, porcelain, coal and other minerals. Area 77,300 sq. m. Pop. 15,820,000. Capital Nan-ch'ang.

Kiao-chau, a district of Shantung, China; occupied by Germany in 1897, and ceded to her on a 99 years' lease by China in 1898; it was captured by British and Japanese troops in 1914, and restored to China the following year. It extends for about 100 m. along the coast, and about 20 m. inland. The chief town of the district is Tsingtao.

Kidd, William, British pirate, born in Greenock; went to sea early, and served in privateering expeditions with distinction. Appointed to the command of a privateer about 1696, and commissioned to suppress the pirates of the Indian Ocean, he went to Madagascar, and there started piracy himself. Entering Boston harbour in 1700, he was arrested, sent to London, tried on a charge of piracy and murder, and executed in 1701.

Kidderminster, town in Worcestershire, England, in the N. of Worcester, 18 m. S.W. of Birmingham; noted for its carpets; manufactures also silk, paper and leather; was the scene of Richard Baxter's labours as vicar, and the birthplace of Sir Rowland Hill. Pop. 29,500.

Kidnapping, the carrying off, abduction or secreting of a person. Heavy penalties are imposed by the Habeas Corpus Act of Charles II. Child-stealing with a view to ransom is a felony punishable in England by seven years' penal servitude. The crime has recently been rife in the United States, where, largely in consequence of the kidnapping and subsequent murder of the infant son of Colonel Lindbergh (q.v.) in 1932, the punishment has been greatly increased.

Kidneys, two organs in the lumbar region of the abdominal cavity, one on each side of the spine; the urinary ducts proceed from the kidneys to the bladder. The function of these organs is to excrete the products obtained from the blood by the secretory cells. The urea, which forms about 2 per cent. of the excretion of urine of the normal man, represents the nitrogenous proteids, and the kidneys are therefore the channels for excreting nitrogenous waste. Among diseases of the kidneys are *nephritis* or *Bright's disease* (the symptom being excessive discharge of urine, but as such discharge may be due to nervous disorders or other trouble, medical advice is always necessary); and *floating kidney*, an abnormal state in which kidneys are movable, but not ordinarily a serious disease. At the top of each kidney is attached a small ductless gland known as the suprarenals or adrenals.

Kiel, on the Baltic, 60 m. N. of Hamburg, is the chief town of Schleswig-Holstein, a German naval station and important seaport, with shipments of coal, flour and dairy produce; has shipbuilding and brewing industries, a university and library. Pop. 218,300.

Kiel Canal, officially the Kaiser Wilhelm Canal, connecting Kiel on the North Sea with Holtenau on the Baltic, was opened in 1895. In 1909 the canal was closed for deepening and widening, and was not again opened till June 1911. During the World War it was used as the headquarters of the German Fleet, and under the Treaty of Versailles it was thrown open to ships of all nations. Germany has now, however, repudiated this, among other provisions of the Treaty.

Kielce, the chief town of the county of the same name in Poland, on the banks of the Słuka. Its industries include brewing, brick, dye and munition making. Pop. (county) 2,936,000; (town) 58,000.

Kieselguhr, a fine earth found in various localities (e.g., Hanover), consisting of the skeletons of minute algae called Diatoms. Chemically it is nearly pure silica. It is used extensively as an absorbent for nitroglycerine, the product being called dynamite.

Kiev, capital of the Ukraine S.S.R., on the Dnieper, 300 m. N. of Odessa, one of the oldest of Russian towns, and Russia's traditional "holy city," where Christianity was proclaimed the religion of the country in 938, and around which the Russian State inaugurated by Rurik was formed between 860 and 1100; has a university and many old churches and monastic buildings; famous for its great trade fairs. Pop. 539,000.

Kildare, in Leinster, in the upper basins of the Liffey and Barrow, W. of Dublin and Wicklow; is level and fertile, with the great Bog of Allen in the N., and in the centre the Curragh, a grassy plain; agriculture is carried on in the river basins; the county town is Naas. Area 664 sq. m. Pop. 57,700.

Kilima-Njaro, a volcanic mountain group, its greatest peak 19,600 ft. high, in the N. of Tanganyika, E. Africa, 170 m. from the coast, with two peaks, Kibo and Kinawenzi. It has been climbed on several occasions, first by Meyer in 1888.

Kilkenny, inland S. central county of Eire (Ireland), in Leinster, watered by the Barrow, Suir and Nore; extremely fertile in the S. and E. producing fine corn, hay and green crops; is moorland, and devoted to cattle-rearing in the N., where also anthracite coal is abundant. Kilkenny, the county town, is noted for a fine black marble quarried near it. Area 796 sq. m. Pop. 68,600.

Killarney, market town and tourist centre, in Co. Kerry, Eire (Ireland), on the shores of the lake, 15 m. SE. of Tralee; has a Roman Catholic cathedral. Pop. c. 5,500.

Killarney, The Lakes of, three beautiful lakes at the northern foot of the Macgillcuddy Reeks, in Co. Kerry, Eire (Ireland), in the basin of the Loane, much resorted to by tourists.

Killiecrankie, Pass of, 15 m. NW. of Dunkeld, Perthshire, Scotland, where General Mackay was defeated by Claverhouse, who fell, in 1689; is traversed by a road and a railway.

Killigrew, Thomas, the elder, British Charles I. in 1633, and later his groom of the bedchamber. Three of his plays produced before the Civil War—*The Prisoners*, *Claracilla* and *The Tarsen's Wedding*—display no poetic talent but considerable wit, and the third gross indecency. He built the first Drury Lane Theatre, 1663; the second, 1674. (1612-1683).

Kilmainham, a suburb of Dublin, Eire (Ireland), with a royal hospital for disabled soldiers and a jail. The Treaty of Kilmainham affecting Irish Government and policy was an agreement said to have been made in 1882 between Gladstone and Parnell, who was then confined in Kilmainham jail.

Kilmarnock, on the Irvine, 20 m. SW. of Glasgow, largest town in Ayrshire, Scotland; is an important railway centre, has carpet factories, and calico and shawls are manufactured; is in the middle of a rich coal and iron district, and has a great annual cheese and dairy-produce show. Pop. 38,100.

Kiln, a furnace for calcining; among the different kinds are kilns for vitrifying articles of clay, such as pottery, porcelain and bricks; limekilns, for breaking down calcium carbonate into lime and carbon dioxide; biscuit kilns for drying malt, hops, grain, fruit, starch, etc.

Kilogram, a metric measure of weight, equal to 1,000 grammes or approximately 2.2046 lb. 1,000 kilograms equal 1 metric ton, or 2,204.6 lb.

Kilometre, a metric measure of length, containing 1,000 metres or 3,280.89 ft. or approximately five-eighths of a mile. A square kilometre equals 0.386 square mile, or approximately 247 acres.

Kilowatt, a measure of electrical power, equal to 1,000 watts. The unit of electric power is the watt, or 1 joule (107 ergs) per second. The relationship between the volt, the ampere and the watt is as follows: volts \times amperes = watts. A kilowatt-hour is the amount of energy used in 1 hour at the rate of 1 kilowatt; it is the ordinary "unit" of electrical power companies.

Kilsyth, town in Stirlingshire, Scotland, 35 m. W. of Edinburgh, with coal and iron mines and cotton manufactures. Pop. 7,560.

Kilt, a kind of short petticoat reaching from the waist to the knees, worn by the Highlanders of Scotland as their national dress. It was proscribed by law after the famous rebellion of 1745, but this law was repealed in 1786. It is made of tartan (cloth woven in coloured stripes crossing at right angles). A pouch, called the Sporan, is hung in front of the kilt. All Highland regiments are kilted except the Highland Light Infantry.

Kilwinning, a market town of Ayrshire, Scotland, on rising ground 2 m. from the sea, 24 m. SSW. from Glasgow. Weaving, iron, fire-clay and engineering are the local industries. It was here that free-masonry was first established in Scotland. Pop. 5,300.

Kimberley, (1) city in Cape Province, Africa, 540 m. from Cape Town, which sprang up after 1870, when diamonds were found there. It was one of the first places to be besieged by the Boers in 1899, and was relieved in 1900 by Sir John French after a siege of 124 days. Pop. (European) 16,000. (2) A district in the N. of W. Australia, famous for its goldfield, discovered in 1882.

Kin, Next of, the person or persons closest in relationship to a deceased person, to whom is distributed the property, real or personal, of a person who dies intestate.

Kincardineshire, E. coast Scottish county, lying between Aberdeen and Forfar (Angus), faces the North Sea, with precipitous cliffs; has much fertile soil under corn, green crops and small fruit, also pasture and grazing land where cattle are reared; the fishing is important, and there are some coarse linen factories; chief towns, Stonehaven and Bervie. Area 382 sq. m. Pop. 39,900.

Kindergarten, a school for young children, where they are taught by the organising of their natural tendency to play, and by interesting them in simple forms of handwork and similar occupations; the method was initiated by Friedrich Froebel (q.v.).

Kinder Scout, hill in Derbyshire, England, 2,688 ft. high, the summit of the Peak group of hills; gives its name to Kinderscout Grit, a rough building-stone which occurs there.

Kinematics, the branch of mechanics dealing with problems of motion as such—that is, without taking into consideration the factors of mass and force. Speed is defined as the rate of motion, or the distance moved divided by the time taken. Velocity involves direction as well as rate of motion. For instance, a ship may have a speed of 16 knots; its velocity includes the direction in which it is moving—e.g., 16 knots SW. Acceleration is rate of change of velocity.

Kinetic Energy, the energy, or ability to do work, possessed by a moving body in virtue of its motion.

Kinetics, the branch of mechanics which deals with the effect of forces upon the state of a body with regard to motion, either causing it to move, or stopping it from moving, or altering its velocity or acceleration. The chief principles of kinetics were discovered by Newton, and are expressed in his three well-known laws of motion, the first of which is as follows: Every body continues in a state of rest or of uniform motion in a straight line unless it is acted upon by a force. The second deals with momentum, or the product of the mass and velocity of a moving body; it states that the rate of change of the momentum of a body is directly proportional to the magnitude of the force acting upon the body, and takes place in the direction in which the force is acting. The third law states that "action and reaction are equal and opposite," or that if a body A exerts a force upon a body B, then B is exerting at the same time an equal and opposite force upon A.

Kinetic Theory of Gases, the theory that the molecules of a gas are in constant and rapid motion and, except in minute particulars, behave as perfectly elastic particles. This theory, due mainly to Clausius, Joule, Clerk-Maxwell, Boltzmann and van der Waals, satisfactorily explains the behaviour of gases under changes of pressure and temperature, the phenomena of diffusion and osmosis, Avogadro's hypothesis, etc., and its main assumptions have now entered the realm of ascertained fact.

King, the chief ruler, magistrate or sovereign of a nation, or one who is invested with supreme authority over a nation, country or tribe. From early times we meet with kings in the valleys of the Nile and Euphrates; kings are found also in the countries of the Near and Middle E., ruling over fairly large territories; but often, too, the name is found to be only that of a ruler of a "city" or fortified village. The chieftains of the first settlers in England were distinguished only by the title of Ealdorman or Heretoga, the former word expressing the civil, the latter the military aspect of the same office. But the successful Teutonic leader soon assumed the regal title, as more accurately denoting his altered relation to his adherents. Anglo-Saxon kingship was personal, not territorial; and the royal prerogatives were not large. But under the Norman kings the royal prerogative was extensive and undefined, the royal power having increased greatly owing to the change from personal to territorial kingship, the growth of the wealth of the Crown and the alliance of Crown and people against the feudal nobles. For the rest, English history is a record of the gradual evolution of the constitutional monarchy as we know it to-day.

King, Rt. Hon. William Lyon Mackenzie, Canadian politician. After some years as a civil servant he became an M.P. in 1908, also acting from that year till 1911 as Minister of Labour; in 1919 he became leader of the Canadian Liberal party, and in 1921 Prime Minister and also president of the Canadian privy council and Secretary of State for External Affairs; he was defeated in 1930, but was re-elected to office by an overwhelming majority in 1935. (1874-).

King at Arms (also King of Arms), the title of the three principal officers, under the Earl Marshal, of the College of Arms—namely, Garter, principal King of Arms, and Clarenceux and Norroy, provincial Kings of Arms, with jurisdiction over heraldry S. and N. of the Trent respectively. There are also a Lyon King of Arms for Scotland and an Ulster King of Arms for Ireland.

King Charles Spaniel, small black-and-tan, pug-nosed, silky-coated, dog, which came into vogue as a pet in the time of Charles I. Its drooping ears are a particularly marked feature.

King-crab, or *Xiphosura*, an order of large arachnids of the family Limulidae, the best-known form of which, *Limulus* or *Xiphosura*, is found on the E. coast of the U.S.A. It is over 2 ft. long, and is one of the few arachnids which can live under water. They delve into sandy bottoms and live on sea-worms. Another group, of which *Tachyplys* is representative, is found in the seas of E. Asia.

Kingfisher, the common name of a bird, family of birds (the Alcedinidae) comprising some 160 species found in all parts of the world, though mostly in Malaya. All live by streams and nest in banks. There are two sub-families: the fish-eating Water-Kingfishers (Alcedininae) and the insect, reptile and crustacean-feeding Wood-Kingfishers (Dacelolininae), distinguished also by their bills. The former have a long, slender bill; the latter a shorter, wider and stouter bill. The family is represented in Britain by one species: the Common King-



COMMON KINGFISHER

fisher (*Alcedo ispida*), a bird with brilliant plumage, very large head, and a long, keel-shaped beak, with comparatively short wings and tail. The Australian Laughing Jackass is a species of Kingfisher.

Kinglake, **Alexander William**, British historian, born near Taunton; gave up the legal profession, in which he had a lucrative practice, for literature; the author of two works, *Bothen* and the *History of the War in the Crimea*, the former a brilliantly written book of travels in the East, published in 1844. (1809-1891).

Kingmaker, **The**, a title popularly given to Richard Neville, Earl of Warwick, who was instrumental in placing Edward IV. to the throne of England by dethroning Henry VI., and afterwards in restoring Henry by the defeat of Edward.

Kings, **The Book of**, two books of the Old Testament, originally one, but divided in the Septuagint into two, containing the history of the Jewish kingdom under the kings from its establishment under David to its fall, and covering a period from 1015 B.C. to 560 B.C., during which time the kingdom fell into two, that of Israel and that of Judah. The author is unknown. In the Vulgate version the two Books of Samuel are called I and II Kings, and the A.V. books of Kings, III and IV Kings.

King's Bench Division, **one** of the three divisions of the English High Court of Justice. The court bears mainly common law actions, though, since the Judicature Act, 1873, all the High Court Divisions have jurisdiction, theoretically, in all cases. There are 17 King's Bench Judges, and the titular president of the Division is the Lord Chief Justice of England. The court also hears application for writs of *certiorari* (q.v.) and *mandamus* (writs calling upon justices of the peace to show cause why they should not exercise their jurisdiction in a particular case); appeals from county courts and quarter sessions; and election petitions. King's Bench Division judges constitute the Court of Criminal Appeal and the so-called Commercial Court, which is merely one of the King's Bench Judges to whom such cases are commonly assigned.

King's College, **London**, constituent college of London University, housed in the Strand; it has faculties of Arts, Laws, Medicine, Science, Engineering and Economics; and also a Faculty of Theology, which is separate from, but a school of, the University. There is also a King's College of Cambridge University, founded in 1441; and King's College, Newcastle-on-Tyne, is a part of Durham University.

King's Counsel, **(or if a Queen is Queen's Counsel)**, on the throne conferred on eminent barristers in England and Ireland, giving them precedence in court and the right to wear a silk gown. They may not act in cases against the Crown without special leave, which is never refused.

King's County. See **Offaly**.

King's Cup, a challenge cup presented by King George V. to be held by the winner of an air race instituted in 1922 by the Royal Aero Club over a 700 m. course in England.

King's Evidence, the evidence of an accomplice tendered by leave of the judge on behalf of the prosecution in a case where the committing magistrate has held out hope of acquittal to such accomplice in consideration of his supplying the want of sufficient evidence to secure the conviction of any one or more of several persons jointly charged. Such evidence is almost necessarily tainted with suspicion, and generally the court will require corroboration.

King's Evil, or *Scrofula*, a skin disease affecting especially the lymphatic glands of the neck, and now considered to be a form of tuberculosis. It was formerly believed in England and France that it could be cured by the touch of a king; *touching* was practised largely by the Stuarts up to the time of Queen Anne, who "touched" Dr. Johnson as an infant.

Kingsford-Smith, **Sir Charles**, Australian airman, born at Hamilton, Brisbane, and educated at Sydney. Fought with the Anzacs in the Gallipoli Campaign, 1915, and in France. After the War he took up commercial aviation and made a number of record flights. In 1935 he disappeared during a flight from England to Singapore. (1897-1935).

King's Inn, the headquarters, in Dublin, of the Eire (Ireland) Bar resembling the Inns of Court of the English Bar; more fully, *The Honourable Society of King's Inn, Dublin*. There are 40 benchers.

Kingsley, **Charles**, English divine and author, born at Holme, near Dartmoor; studied at Cambridge; became rector of Eversley, in Hampshire, in 1844; was the author of *Alton Locke* (1849), *Yeast* (1851), *Hyppatia*, a brilliant book about early Christianity in Alexandria, and *Westward Ho!*, a narrative of the rivalry of England with Spain in the days of Elizabeth; besides other works, including *The Water Babies* and *Hercward the Wake*, he was the author of popular ballads. (1819-1875).

Kingsley, **Henry**, younger brother of the preceding. After a brief experience of life in Australia he returned home and distinguished himself as a novelist. His principal novels were *Geoffrey Hamlyn*, one of the best novels on Australian life, and *Ravenshoe*, his masterpiece. (1830-1876).

Kingsley, **Mary Henrietta**, African traveller and authoress; niece of Charles Kingsley, born in London; wrote *Travels in West Africa* and similar records of her wanderings. (1862-1904).

King's Lynn, ancient market town and seaport of W. Norfolk, England, on the Great Ouse, 2 m. from the Wash. At the Norman Conquest Lynn was already a port with considerable customs. It was besieged by the Parliamentary troops in the Civil War. Industries include fisheries, breweries, corn-mills and machine-shops. Pop. 23,600.

King's Messenger (**Foreign Service**), a messenger or courier appointed by the Foreign Office to carry despatches to its representatives in foreign capitals. Their badge is the well-known silver greyhound.

King's Prize, a prize of £250 presented Sovereign for award to the champion marksman at Bisley. The present conditions are 10 shots at 300, 500 and 600 yards, and 15 shots at 900 and 1,000 yards; the maximum score (since 1925) being 300. In 1930 the prize was won by a woman, Marjorie Elaine Foster, with a score of 280.

King's Proctor, the Treasury solicitor, whose duty it is to intervene to stop decrees nisi in divorce being made absolute where collusion is alleged to have occurred and other instances where it would be contrary to morality to sever the marriage bond. He can demand to see all documents in divorce cases whether privileged or not.

King's Regulations, the official regulations for the organisation of the Army, drawn up in thirteen parts. They comprise some 1,650 articles or paragraphs dealing with the organisation or composition of the Army; duties of commanders; the duties of the general staff;

the appointment and promotion of officers; the service, promotion, employment and discharge of soldiers; discipline and courts-martial; training and education; ceremonial; uniforms and equipment; movement of troops, etc. They are amended from time to time by Army Orders.

King's Speech, the oration made from the Throne at the opening of a new session of Parliament. Although generally read by the King, it is composed by the Prime Minister and his Cabinet colleagues and sets forth the proposed legislative programme.

Kingston, (1) town in Ontario, Canada, and for a few years until 1844 the capital of Canada, on the N.E. shore of the Lake, 150 m. E. of Toronto, with shipbuilding and engineering works; is the seat of Queen's University, military and medical colleges, and an observatory. Pop. 22,000. (2) Capital of Jamaica, on a great bay on the S. coast, on the edge of a sugar-growing district; exports sugar, tobacco and dye-woods, and imports cotton, flour and rice. Pop. 62,700.

Kingston-upon-Thames, county town of Surrey, 10 m. S.W. of London, formerly a seat of Saxon kings, with an old "coronation stone" in its market-place. Pop. 39,800.

Kingstown, former name of Dun Laoghaire (Dunlenny), seaport of Dublin, Eire (Ireland), 7 m. S.E.; was till 1817 but a fishing village; has a harbour designed by Rennie, which cost £525,000. Pop. c. 20,000.

Kingswinford, town of Staffordshire, England, 7 m. S. of Wolverhampton, with coal and iron mines and manufactures of iron, bricks, glass and nails. Pop. (rural dist.) 22,000.

Kinkajou (*Cercopithecus*), a nocturnal mammal of the Racoona (Procyonidae) family, largely a vegetarian-feeder, and having a long, prehensile tail and soft, brownish fur. It occurs in S. America and Mexico.



KINKAJOU

Kinross-shire, a small Scottish county lying between Forth and Fife, round Loch Leven, is agricultural and grazing, with coal mines. The co. town, **Kinross**, is on the W. shore of Loch Leven. Area 82 sq. m. Pop. 7,450.

Kinsale Harbour, coastal inlet of Co. Cork, Eire (Ireland), at the mouth of the R. Bandon; to the W. is the Old Head of Kinsale, a promontory which is the first land seen by ships bound from America to Britain, off which the *Lusitania* was sunk in 1915; James II. landed here on his expedition to Ireland in 1689. Pop. of town of Kinsale, c. 1,800.

Kintyre, a long, narrow isthmus on the Atlantic and the Firth of Clyde; is chiefly hill and grass country; but at Campbeltown are great distilleries; forms part of Argyllshire.

Kipling, Rudyard, English author and poet, born in Bombay, and educated in England; went out to India as a journalist. His stories mainly deal with Anglo-Indian, and especially military, life in India, his *Soldiers Three*, with the rest that followed, such as *Wee Willie Winkie*, gaining for him an immediate and wide reputation. He afterwards issued several volumes of short stories and some distinctive novels, including *The Light that Failed* and *Kim*. As a poet his most successful effort is his *Barrack-Room Ballads*, instinct with a martial spirit,

but in *The Seven Seas* and *The Five Nations* he added greatly to his reputation as a forceful writer. Of his poems *The Recessional* is probably the best known. (1865-1936).

Kipp's Apparatus, so called after P. J. Kipp (1808-1864), an arrangement for generating gases such as carbon dioxide or hydrogen sulphide, the essential feature being that when the delivery-tap is turned off, the chemicals from which the gas is produced are automatically separated from one another by the rising pressure of the gas within the apparatus.

Kirghiz, a Mongolian Turko-Tartar people occupying the Kirghiz steppes, an immense tract E. of the Ural R. and the Caspian Sea, numbering some 3 millions. In 1927 a Kirghiz Soviet Republic was organised, covering much of their territory, as a constituent region of the U.S.S.R. Area 76,000 sq. m. Pop. 1,300,000. Cap. Frunze.

Kirkby-in-Ashfield, town of Nottinghamshire, England, on the borders of Derbyshire, 10 m. from Nottingham; chief industries, brick-making and coal-mining. Pop. 17,900.

Kirkcaldy, a manufacturing and seaport town in Fife-shire, Scotland, extending 4 m. along the N. shore of the Forth, known as the "lang toon." It was the birthplace of Adam Smith, and Carlyle was once a schoolmaster there; manufactures textile fabrics and floorcloth. Pop. 43,900.

Kirkcudbrightshire, a Scottish county on the Solway shore between Wigton and Dumfries, watered by the Rs. Nith, Dee and Cree; one-third of its area cultivated, the rest chiefly hill pasturage. Area 900 sq. m. Pop. 30,340. County town **Kirkcudbright**, on the Dee, 6 m. from the Solway; celebrated for St. Cuthbert's church. Pop. 2,300.

Kirke's Lambs, the soldiers of the English army in the reign of James II., distinguished for their acts of cruelty inflicted on the Monmouth party.

Kirkintilloch, town of Dumbartonshire, Scotland, on the Forth and Clyde Canal, 8 m. N.E. of Glasgow. It has chemical works, iron foundries, steam saw-mills, collieries and iron mines. Pop. 11,800.

Kirkklareli, formerly **Kirk-Kilisse**, town capital of the vilayet of the same name. It is built upon two hills in a fertile valley. The region is agricultural, while the town has a trade in coal, wines, flour, hides and tobacco. The scene of the first great Turkish defeat at the hands of the Bulgars in the Balkan War, 1912, it was ceded by Turkey to the Balkan States, but recaptured later in the year. Pop. (vilayet) 173,000.

Kirk Session, an ecclesiastical court of the minister and elders of a parish, subject to the Presbytery of the district.

Kirkstall, suburb of Leeds, on the R. Aire, in the W. Riding of Yorkshire, England. There are the fine ruins of the Cistercian Abbey of St. Mary (1147).

Kirkuk, town and liwa of Iraq, S.E. of Mosul; there is an oilfield of growing importance, and a trade in hides. Pop. (district) 138,000.

Kirkwall, capital of Orkney, in the E. of Mainland, 3½ m. N.E. of Thurso; has a fine cathedral named from St. Magnus, and some shipping trade; it was in medieval times subject to Norway, and was the residence of the jarls. Pop. 3,500.

Kirriemuir, a small town in Angus, Scotland, 5 m. N.W. of Forfar, native place of Sir J. M. Barrie, and the "Thurms" of his books; manufactures brown linens. Pop. 3,300.

Kirschwasser (cherry water), a liqueur formed from ripe cherries with the stones pounded in it after fermentation and then distilled.

Kish, an ancient buried city of Chaldaea, now known as El Gheimir. Excavations since 1930 have revealed remains of a temple dedicated to the goddess Aruru, and many other relics of early civilisation.

Kismet (Arabic "Kismet," fate or destiny), the Mohammedan conception of the arrangement of man's concerns as foreordained by Allah.

Kissingen, Bavarian watering-place on the Saale, 65 m. E. of Frankfurt-on-the-Main, visited for its saline springs; its waters are used both internally and externally, and are good for dyspepsia, gout and skin diseases. Pop. c. 10,000.

Kistna, river of S. India, rising in the W. Ghats, Bombay Presidency, and emptying, after a turbulent course of 800 m., through an enormous delta into the Bay of Bengal, in Madras.

Kisumu, capital of Nyanza province, Kenya, the chief port on Lake Victoria; a centre of trade and an important air station. Pop. c. 20,000.

Kitcat Club, founded in 1703, ostensibly to encourage literature and art, and named after Christopher Cat, in whose premises it met; became ultimately a Whig society to promote the Hanoverian succession; Marlborough, Walpole, Congreve, Addison and Steele were among the thirty-nine members.

Kitchener of Khartoum,

Horatio Herbert, Earl, son of Col. Kitchener; joined the Royal Engineers, and was first engaged in survey work in Palestine and Cyprus; became a major of cavalry in the Egyptian army 1882, served in the 1884 expedition, was Governor of Suakin 1886, and after leading the Egyptian troops at Handub 1888, was made adjutant-general in the Egyptian army. He was appointed commander-in-chief of that army in 1892, led the expedition of 1898 which overthrew the Khalifa at Omdurman, for which he was awarded a peerage. He was made chief-of-staff to Lord Roberts in the Boer War of 1899, and succeeded him as commander-in-chief. He became War Secretary in Aug. 1914, and threw himself into the work of recruiting an army to face a long struggle, succeeding finally in securing a million men. He figured in several political disputes, and in 1916 sailed on a mission to Russia on the cruiser *Hampshire*, which struck a mine on June 5 and sank; Kitchener's body was never recovered. (1850-1916).



LORD
KITCHENER

Kite, the common name of a number of birds of prey of the Falcon family, including the Common Kite or "Gled" (*Milvus milvus*). This species has a forked tail, is rufous above, rufous-brown below, has a narrow streak of blackish-brown down the feathers and the tail crossed with seven or eight black bars. Though formerly common, is now rarely seen in Britain. The Black Kite (*Milvus migrans*) also occurs in Britain as a straggler.

Kite, a sheet of paper, silk or some other material stretched over a light frame, and flown in the air by means of a cord attached to it and held from the ground. Kite-flying has long been a popular pastime in the Far East, and kites are used in Europe and America for the making of meteorological observations, military signalling and air photography.

Kittiwake, a species of gull, the *Rissa tridactyla*, receiving its zoo-

logical name from the fact that the fourth toe is only a small tubercle, without any horny projecting claw or nail. The head, neck and under-surface are white; back and wings grey. It is common on the coasts of the British Isles.



RED-LEGGED
KITTIWAKE

Kiu-kiang, treaty port of China, on the Yangtse-kiang, in Kiang-si. It is a centre of the tea trade. Pop. 80,000.

Kiung-chow, walled town of S. China, in Kwang-tung province, capital of the Island of Hainan. Three miles from the sea, it trades through the treaty port of Hoichow. Pop. 59,000.

Kiushiu, most southerly of the main islands of Japan, separated from Honshu by a narrow strait. It is mountainous and subject to earthquakes, and possesses in Aso-take the largest volcanic crater in the world. Coal and copper are mined, rice, beans, tea, wheat and tobacco are grown. Nagasaki, Kagoshima and Fukuoka are important towns. Area 16,200 sq. m. Pop. c. 9,000,000.

Kivu, beautiful lake of Belgian Congo, situated among lofty volcanic mountains. It is drained by the Russizi R. into Lake Tanganyika to the S.

Kiwi. See Apteryx.

Klagenfurt, town of Austria, capital of Carinthia, on the Glan R., 40 m. NW. of Laibach. Its fine old buildings include the cathedral, a church with a domed tower and the Landhaus. Pop. 29,700.

Klaipėda. See Memel.

Klausenberg (now called Cluj), city of Rumania, formerly the capital of Transylvania. It is the seat of three bishops and has commercial, musical and agricultural academies. Pop. 100,000.

Kléber, Jean Baptiste, French general born in Strasbourg; served with distinction in the Revolutionary army, accompanied Bonaparte to Egypt, and was left by him in command, where, while in the act of concluding a treaty with the Turks, he was assassinated at Cairo by an Arab fanatic. (1753-1800).

Kleptomania, a morbid tendency to steal for its own sake. It is not considered to be a specific disease, but, pathologically, is associated with various forms of mental aberration. It constitutes no defence to a charge of larceny, unless the medical evidence should prove that the accused laboured under such a defect of understanding as not to realise the character of his act.

Klerksdorp, town of South Africa, in the Transvaal. It is a centre of the cattle industry, and is on a gold-field. Diamonds, also, have been found. Pop. (white) 3,000.

Klipspringer (from Dutch "Klip" a rock), a small S. African mountain antelope (*Oreotragus Saltator*), with an olive-coloured coat, large ears and short upright horns.

Klondike, a small section of the Yukon territory, in NW. Canada, where rich gold-mines were discovered in 1898.

Kluck, Alexander von, German general. He served in the Austro-Prussian and Franco-Prussian Wars, became a general in 1906, and in 1914 took command of the 1st army, which invaded Belgium. He was in charge of the German troops at Mons, the

Marne (commanding the German right wing), and the Aisne, but his failure to capture Soissons in 1916 led to his retirement. (1846-1934).

Knareborough, Yorkshire, England, market town, 14 m. W. of York; manufactures woollen rugs, and trades in corn. Pop. 3,000.

Knebworth, village of Hertfordshire, England, 2½ m. S. of Stevenage. Knebworth House, a fine Elizabethan mansion, is the seat of the Earl of Lytton.

Knee, the joint between the thigh and lower leg in man and the corresponding joint in animals. The knee-cap, or patella, is the bone in front of the knee-joint. The joint is almost surrounded by complex ligaments. The articulation of the joint is like that of a hinge, but there is slight rotatory movement. One of the chief diseases, apart from tuberculosis, to which it is liable is "water on the knee," due to inflammation of the synovial membrane which lines the ligaments, following strain. Dislocation, or fracture of the patella, may occur through a blow. Knock-knee is a condition in which the knees are together and the feet wide apart; in children it is caused by rickets; in older persons by pressure on the joint through strain.

Kneller, Sir Godfrey, portrait-painter, born in Lübeck; studied under Rembrandt and in Italy, came to England in 1676, and was appointed court painter to Charles II., James II., William III., and George I.; practised his art till he was seventy, and made a large fortune; his residence at Twickenham, Kneller Hall, is now the home of the Royal Military School of Music. (1646-1723).

Knight, Charles, London publisher and editor, publisher of *Library of Entertaining Knowledge*, of the *Penny Magazine* and the *Penny Cyclopaedia*, etc., as well as a *Pictorial Shakespeare*. (1791-1873).

Knight, Dame Laura, British artist; studied at Nottingham, London and in America; she first exhibited at the Academy in 1903, and specialised largely in vivid painting of clowns and circus life. A.R.A., 1927; R.A., 1936. She was the first woman to be elected to the Academy for over a century.

Knighthood, a distinction granted to commoners, ranking next after that of baronet, now bestowed by the Crown; formerly the knighthood was a military order, any member of which might create new knights. The former military element in the status of knighthood survives to-day in the accolade or symbolic act of dubbing a man knight by touching his shoulder with the point of the royal sword.

The most distinguished British Order is that of the Garter, and the next is that of the Bath. The Order of St. Michael and St. George is reserved for those who have rendered distinguished service in the Dominions or Colonies. Another British Order of Knighthood is that of the British Empire, founded 1917; the Knights of the Thistle are a Scottish, and those of St. Patrick an Irish, Order. There are two Indian Orders: those of the Star of India and the Indian Empire. Knighthood confers precedence over all other commoners. "Sir" is prefixed to the baptismal name of knights, and "Dame" is the legal designation of the wife of a Knight, though the title popularly used is "Lady"; the designation "Dame" is also given to women who are granted in their own right a dignity equivalent to knighthood.

Knight's Fee, in feudal tenure denoted a fee or fief in respect of which the tenant had to render knight-service; that is, provide the lord with so many knights for military service, according to the

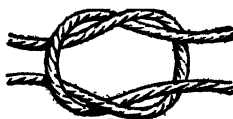
amount of Knight's-fee in his estate. This form of land tenure was abolished in 1660.

Knights of the Round Table, King Arthur's knights, so called from the round table at which they sat, so that when seated there might seem no precedence; numbered popularly at twelve, though reckoned by some at forty; what is alleged to be the original Round Table is preserved as a relic in the Great Hall of Winchester Castle.

Knockmealdown, mountain range in Kire (Ireland), extending for about 12 m. along the borders of Tipperary and Waterford, N. of the Blackwater. Its highest point is 2,600 ft.

Knossus, an ancient city in Crete, 3 m. from the present Candia, famous in ancient legend as the home of the Minotaur (q.v.). It has been excavated in recent times by Sir Arthur Evans and others, extensive remains of an imposing civilisation having been unearthed, including remains of a building supposed to be that on which the legend of the Labyrinth was founded.

Knot, a loop made in a rope or string. Very many varieties of knot have been evolved for use, particularly by seamen in securing ropes and cables on ships; they are broadly classified as knots proper, hitches, bends and splices, and each of these classes has many subdivisions, each with its own proper name. Among them are the overhand knot, made by passing the end of a rope over a portion of itself and then through the loop so formed; the unslippable reef knot, consisting of two overhand knots turned reverse ways; the bowline, fisherman's bend, timber hitch, shroud knot, etc.



REEF KNOT

Knot, a unit used for computing the speed of ships, equal to one nautical mile (6,080 ft. per hour). The word is frequently, but wrongly, used by landmen to refer to the nautical mile itself as a measure of distance.

Knowsley, village of SW. Lancashire, 5 m. W. of St. Helens. Here is Knowsley House, for centuries the seat of the Stanley family (Earls of Derby), containing many pictures by Rembrandt, Rubens and other painters.

Knox, John, Scottish ecclesiastic and reformer, born at Giffordgate, Haddington; studied at Glasgow University; after which he took priest's orders; came under the influence of George Wishart, and avowed the Reformed faith; took refuge from persecution in St. Andrews Castle in 1547; on its surrender was taken prisoner, and made a slave in a French galley for 19 months; liberated in 1549, assisted the Protestant cause in England; fled in 1553 to France; published in 1558 his *First Blast against the Monstrous Regiment of Women*; returned to Scotland for good in 1559, and became minister in Edinburgh; was tried for high treason before the Privy Council, but acquitted in 1563; began his *History of the Reformation in Scotland* in 1566; was in 1571 struck by apoplexy. (1513-1572).

Knoxville, city of Tennessee, U.S.A., Tennessee R., 160 m. E. of Nashville. The seat of the State University, it is also a busy industrial town and centre of the Tennessee marble trade. Pop. 106,000.

Knutsford, urban district and market town of Cheshire, England, 15 m. SW. of Manchester. A picturesque old town, it was the original from which Mrs. Gaskell drew *Cranford*. Pop. 6,900.

Koala (*Phascolarctus cinereus*), a small marsupial of arboreal habit related to the Wombats and Phalangers and found in Australia; hence known as the Australian bear. Has a grey-white coat, tufted ears and no tail. It is a vegetarian feeder and extremely delicate, and in spite of State preservation seems likely to become extinct.



KOALA BEAR

Kobe, seaport of the island of Honshu, 23 m. W. of Osaka, of which it is the port. It lies on the S. side of the island, on Osaka Bay, and has an excellent harbour. Shipbuilding, camphor-distilling and match-making are important industries. Pop. 912,000.

Koch, Robert, German bacteriologist, born in Klausthal, in Hanover; discovered sundry bacilli, among others the cholera bacillus and the phthisis bacillus and a specific against each. (1843-1910).

Koh-i-noor, a famous diamond, weighing 103 carats; once owned by the Great Mogul at Delhi; after passing through several hands it became the property of Queen Victoria in 1850, and has since been one of the British Crown Jewels.

Kohl, name applied to antimony or lead form as a cosmetic for darkening eyebrows and eyelashes; it has long been popular in the East. The word alcohol is derived from its name, which the Renaissance chemist Paracelsus applied to spirits of wine.

Kolchak, Vladimir Vasilievich, Russian Russo-Japanese war of 1904, and commanded the Russian Black Sea Fleet in the World War till the mutiny of 1917 deprived him of his command. Thereafter he made efforts at counter-revolution, and in 1918 formed his own Government at Omak, waging war on the Bolsheviks, by whom he was captured and shot. (1874-1920).

Kolhapur, city and state of Bombay Presidency, India. The Western Ghats run through the State, but in the E. it is flat and well cultivated. The city has remains of ancient Buddhist temples, etc. Area 2,800 sq. m. Pop. (State) 934,000; (town) 70,000.

Köln, the German name for Cologne (*q.v.*).

Komintern, the popular name of the Third or Communist International (see *International*). It was founded in 1919 in Moscow for the organisation of the revolutionary forces of the world. Membership involves the vigorous organisation in the affiliated country of its communist activities. The headquarters are at Moscow.

Königgratz (Czech, Hradec Králové), a city of Czechoslovakia, 14 m. from Prague. Nearby is the village of Sadova where the Austrians suffered a severe defeat at the hands of the Prussians in 1866 during the Seven Weeks' War. Pop. 13,000.

Königsberg, the capital of E. Prussia, on the Pregel, with several manufactures and an extensive trade; has a university, and is the birthplace of Kant, where also he lived and died. Pop. 316,000.

Konya (Konia), city of Asiatic Turkey, the Ikonium of the New Testament, ancient capital of the Seljuks. It is 140 m. S. of Angora, and has many fine old mosques. Silk and woollen goods, carpets and leather are made. Pop. 63,000.

Kopeck, a small Russian copper coin, in value the hundredth part of a rouble.

Köpenick, town in Prussia, Germany, on the outskirts of Berlin, manufacturing chemicals, linoleum, etc.; notorious for the exploits of the "Captain of Köpenick," a shoemaker who in 1906, masquerading as a military officer, induced the burgomaster of the town to part with the balance of the municipal funds, which were not returned.

Kopje, a Cape Dutch word, from "Kop," "head," meaning a small flattened hill. In the S. African War they acquired a sinister significance, being used as cover for Boer marksmen.

Koran, or *Quran*, the sacred book of the revelations received by the prophet from the Angel Gabriel. It is the standard of Islamic faith and practice, and was arranged and edited by Mohammed's disciples after his death. The language of the original is Arabic.

Kordofan, province of the Anglo-Egyptian Sudan, on the W. bank of the Nile; an undulating dry country, furnishing crops of cotton and millet, and exporting gums, hides and ivory; was lost in the Mahdist revolt of 1883, but recovered by Lord Kitchener's expedition in 1898; El Obeid, the capital, is 230 m. SW. of Khartoum. Pop. c. 500,000.

Korea (Chosen), peninsula of E. Asia, jutting in a southerly direction between the Yellow Sea and the Sea of Japan, formerly an independent kingdom, but annexed by Japan in 1910. It is a mountainous territory; the people are Mongols, and Buddhists by religion. After being for 300 years tributary to China, it passed under Japanese influence, and by the Chinese defeat in the war with Japan, 1894-1895, was left independent. The climate is healthy, but subject to extremes; rivers are icebound for four months. The country is mainly agricultural, growing rice, cereals, cotton and tobacco. There are gold, iron, copper and graphite mines, and extensive manufactures of paper, and a silk industry. Most of the trade is with Japan. The capital is Keijo-fu (formerly Seoul). Area 85,000 sq. m. Pop. 22,900,000.

Kornilov, Lavr Georgievich, Russian general, who in 1917 led a rebellion against Kerensky (*q.v.*), and after his imprisonment and escape organised a volunteer army against the Soviet Government; this attempt being also unsuccessful he fled to the Caucasus, and was killed. (1870-1918).

Kosciusko, mountain peak of New South Wales, the highest in Australia (7,328 ft.), in the Australian Alps.

Kosciusko, Thaddeus, Polish general, patriot, born in Lithuania; first saw service in the American War on the side of the colonists, and, returning to Poland, twice over did valiant service against Russia, but was taken prisoner at the battle of Maciejowice in 1794; set at liberty, he removed to America, but returned to settle in Switzerland, where he died; he was buried at Cracow beside John Sobieski. (1746-1817).

Kosher, from Hebrew *Kasher*, "fit," or "proper," connotes food prepared according to the Jewish Law; meat or other articles not so prepared are called "trifha," "unclean."

Kosice (formerly Kaschau), a beautiful town in Czechoslovakia, on the Hernad R., 140 m. NW. of Budapest; manufactures paper, pottery and tobacco; is noted for hams, and has an agricultural school. Pop. 70,000.

Kosovo (Kosova), former vilayet of Turkey, now included partly in Yugoslavia and partly in Albania, the latter

country having a prefecture of that name (pop. 49,000). The area was the scene of much fighting at various times, including a Turkish defeat in the First Balkan War and a Serbian rout in the World War.

Kossuth, Louis, Hungarian patriot, born near Zemplén; studied law, and later became editor of several Liberal papers in succession. Elected member of the Diet at Pest in 1847, he demanded autonomy for Hungary, and set himself in 1848 to drive out the Hapsburgs and establish a republic. He raised a large army and large funds, but Russia aided Austria, and the struggle proved in vain. Defeated at Temesvár and escaping to Turkey, he came to England in 1851, and lived there for many years. (1802 or 1806-1894).

Kostroma, district of Russia in the NW. coast of the Persian Gulf, adjoining Iraq. Area 2,000 sq. m. Pop. c. 80,000. Its capital, Kostroma, near the junction of the Volga and Kostroma R., has an old cathedral. Pop. 91,000.

Koweit, or Kuwait, semi-independent principality of Arabia on the NW. coast of the Persian Gulf, adjoining Iraq. Area 2,000 sq. m. Pop. c. 80,000. Its capital, Koweit, is an important seaport and trading centre, with the best harbour on the Persian Gulf. Pop. 60,000.

Kowloon, or Kaulung, peninsula in S. British colony of Hong Kong. It contains the city of Victoria and the town of Kowloon (pop. 328,000) and was ceded to Great Britain in 1860.

Kowtow, a Chinese gesture of respect, consisting of the three-fold inclination of the forehead to the floor while in a kneeling posture; the refusal of this mark of respect to the Emperor of China by Lord Amherst's embassy from Great Britain in 1816 resulted in its dismissal in disgrace.

Kra, isthmus of, narrow isthmus of Siam, connecting the Malay Peninsula with the mainland, at its narrowest point only 10 m. across. It has been proposed to construct a ship canal through it, which would greatly shorten voyages to the Far East.

Kraal, a Hottentot or Kaffir village, being a stockade; and the community of such a village. The word corral, used of a cattle enclosure, is derivative from it.

Kragujevac, town of Yugoslavia, 60 m. S. of Belgrade, on the W. Morava. Once the capital of Serbia, it was held by the Turks for 400 years, and suffered severely in the World War. It has munition factories. Pop. 27,200.

Krakatoa, a volcanic island in the Sunda Strait, narrow strait of Sunda, between Java and Sumatra; scene of a volcanic eruption in 1883, which destroyed the island and caused a tidal wave, which swept round the globe, causing great havoc in Java and Sumatra. The eruption raised quantities of dust, which made the sunsets in all parts of the earth unusually red.

Kraken, a huge fabulous sea-monster, reported as at one time seen in the Norwegian seas; it would rise to the surface, and as it plunged down drag ships and every floating or swimming thing with it.

Krassin, Leonid Borisovich, Russian politician; an engineer by profession, practised in Germany and elsewhere till 1914 after leaving Russia in 1908; became Commissar for Trade and Industry on formation of the Soviet Government; in 1920-1921 in England negotiated a trade treaty with Russia; afterwards Russian ambassador successively at Berlin, Paris and London. (1870-1926).

Krefeld-Urdingen, in Rhenish Prussia, 12 m. NW. of Düsseldorf; important manufacturing

town; noted for its silk and velvet factories founded by Protestant refugees; has also machinery and chemical works. Pop. 165,000.

Kreisler, Fritz, Austrian violinist. He studied the violin at Vienna, where he was born, and in Paris; after touring America he made his London début in 1902; during the World War he fought in the Austrian army. (1875-).

Kremlin, a fortified area in the centre of Moscow, containing numerous buildings which are now used almost entirely as Government offices, museums, etc. It was founded by Ivan III. in 1485.

Kreuger, Ivar, Swedish industrialist and financier, who, after working in America and S. Africa, returned to Sweden to found the Swedish Match Trust, which obtained a virtual international monopoly of match-making; his financial operations placed various European Governments under obligations to him; he committed suicide after the disclosure of certain financial scandals which had widespread repercussions. (1880-1932).

Kreutzer, Rudolph, French violinist, of German antecedents, to whom Beethoven's *Kreutzer Sonata* in A major was dedicated. (1786-1831).

Krishna (i.e. the swarthy one), an important figure of Hindu mythology, the latest incarnation of Vishnu (q.v.); his story is told in the *Bhagavadgita*, a Sanskrit poem which holds much the same place in Indian affections as does the New Testament in those of Europeans.

Krishnamurti, Indian religious leader, born in Madras; educated under Theosophist auspices by Mrs. Annie Besant (q.v.), and in 1911 the subject of a lawsuit between the latter and his father, who sought unsuccessfully to regain control over his upbringing; an "Order of the Star in the East" existed from 1911 to 1929 to prepare the way for his expected world campaign as a religious teacher; is the author of several works on theosophical lines. (1891-).

Krolewska Huta (formerly Königs-Hütte), town in Polish Silesia, 5 m. SE. of Beuthen. Standing in a rich coal- and iron-field, it has large iron works. Pop. 79,000.

Krone, a silver coin of Denmark, Norway and Sweden, its value being about 1s. 1½d. at par. The Swedish name is Krona. The pre-war currency unit of the Austrian Empire (at par valued about 10d.) was also so called.

Kronje, Piet Arnoldus, Boer general. He led the troops that captured the Jameson raiders of 1896, successfully commanded the Boer forces at Modder River and Magerfontein, but was defeated and captured by Roberts at Paardeburg in 1900, after which he was exiled for two years to St. Helena. (1846-1911).

Kronstadt, the port of Leningrad, at the mouth of the Neva; one of the chief Russian dockyards and naval stations. Pop. c. 32,000.

Kroo (Kru), a W. African negro race living on the coast of Liberia and its neighbourhood, also called Krobboys. They are skilled as swimmers.

Kroonstad, town of Orange Free State, S. Africa, 110 m. SW. of Johannesburg, centre for the dairy-farming and agricultural district of Kroonstad; there are some diamond-mines. Pop. 9,000 (including 4,000 white).



THE KREMLIN

Kropotkin, Prince Peter, Russian anarchist, sociological writer and persecutor in Russia and France, settled in England; his best-known works are *Mutual Aid*; *Fields, Factories and Workshops* and *The Conquest of Bread*. (1842-1921).

Kruger, Stephanus Johannes Paulus, South African statesman, born in Rastenburg; became member of the Transvaal Executive Council in 1872; in 1882 was chosen President, and was afterwards three times elected to the same office. He was in charge of the negotiations between the Boers and the British Government, the breakdown of which resulted in the South African War, at the outbreak of which he fled to Holland, dying shortly afterwards in Switzerland. (1825-1904).



STEPHANUS
KRUGER

Krugersdorp, gold-mining town of the Transvaal, S. Africa, in the W. Rand, 20 m. NW. of Johannesburg. Near here, at Doornkop, Dr. Jameson surrendered to the Boers. Pop. (white) 18,000.

Krupp Factories, great steelworks and arms and munition works at Essen, Germany, founded by Alfred Krupp (1810-1887); based on the introduction of the Bessemer process about 1857, an enormous business was built up, with its own collieries and iron-mines. During the World War over 100,000 persons were employed in the manufacture of military requirements. After the War the works turned to the production of various kinds of industrial machinery, etc., but since the advent of the Hitler régime and the rearmament of Germany they have again devoted their attention to armament production on a scale unsurpassed elsewhere in the world.

Krylenko, Nicolai, Russian lawyer and public prosecutor, born at Bielov. A protagonist of revolutionary ideas long before the World War, he was virtually exiled for his publications, which included *The Research of Orthodoxy*. Returned to Russia in 1916; at the Revolution of 1917 became a delegate to the first congress of Soviets; and later, after the fall of Kerensky, commander-in-chief of the Bolshevik forces. After this he earned considerable notoriety as a ruthless Public Prosecutor and Commissar of Justice until his supersession by Orsyenko in 1937. (1885-).

Krypton, a non-metallic chemical element belonging to the group of rare gases; symbol Kr, atomic number 36, atomic weight 82.9. It occurs in the air in the proportion of about one part in 20,000,000, and was discovered in 1898 by Sir William Ramsay and Prof. M. W. Travers.

Kuala Lumpur, capital of Selangor, Malay Peninsula, and largest town in the Federated Malay States. Rubber growing and tin-mining are carried on. Pop. 114,000.

Kuban, river of S. Russia, in Ciscaucasia, rising in Mt. Elbruz and emptying, after a course of 450 m. in two streams into the Black Sea and Sea of Azov. It flows through the Kazak province of Kuban. Area 37,000 sq. m. Pop. 2,630,000.

Kubelik, Jan, Czechoslovak violinist, and composer, born in Michle, he studied at Prague Conservatoire, and commenced giving violin recitals in 1898, after which he toured Europe, America and Australia, besides being for a time Royal Violinist at the Rumanian Court. (1880-).

Kublai Khan, Mongol warrior and Emperor of China, completed the conquest of that country begun by

Genghis Khan, established Buddhism as the State religion, and ruled over the whole of Asia, excepting India, Arabia and Asia Minor; as well as European Russia and Hungary; his Oriental State is described by Marco Polo. (1216-1294).

Kudu, or Koodoo (*Strepsiceros kudu*), one of the largest African antelopes, a handsome beast with reddish-brown coat marked with white stripes. The male has long, spiral horns.



KUDU

Kuen-Lun, Central Asiatic mountain range, N. of Tibet, 18,000 to 25,000 ft. high; stretches for 2,500 m., with a breadth of 100 m.

Ku Klux Klan,

an American secret society founded in the Southern States after the Civil War to oppose the influence in American life of negroes, Roman Catholics and others of whom its founders disapproved; revived in 1915 by W. J. Simmons, to uphold the domination of whites and Protestants, some of its members undertook a campaign of terrorism which was responsible about 1924 for numerous lynchings and other lawless acts, its members using disguises and an esoteric ritual; after 1928 it fell into rapid decline.

Kumasi (Coomassie), the capital of Ashanti in the British Gold Coast Colony, W. Africa. At one time "blood-stained" and primitive, it is now a clean, modern town, with plentiful amenities. It was captured by Wolseley in 1874, since when it has been rebuilt. Pop. 40,000.

Kumiss (Koumiss), a beverage among the Kalmyks, made by fermentation from mare's milk.

Kümmel, a liqueur flavoured with cummin (q.v.) and caraway seeds and containing 33 per cent. of alcohol; made mainly at Riga.

Kun, Béla, Hungarian communist of Jewish parentage; became journalist, and was during the World War a prisoner in Russia. Sent to Hungary by Lenin, he organised a Revolution in 1919, and became Dictator, the Karolyi Cabinet resigning. The revolt was crushed by Hungarian intervention, and Kun resigned, fled to Vienna, and thence to Russia. He returned to Vienna in 1928, but was sent back to Russia. (1886-).

Kuomintang, the Chinese Nationalist Party, formed originally by the followers of Sun Yat Sen (d. 1925). Its executive committee on Oct. 4, 1928, promulgated the "Organic Law (or Law Governing the Organisation) of the Nationalist Government of the Republic of China" though in December of 1931 this was considerably amended. The Chinese National Government at Nanking is appointed by the Party, to the Congress of which it is responsible.

Kuopio, province and town of Finland, and is hilly country with many lakes, cattle-breeding, dairy-farming and iron-mining are carried on. Area 14,590 sq. m. Pop. 356,000. The capital, Kuopio, is an important trading point and centre of lake navigation. Pop. 23,000.

Kurdistan, stretch of territory in the Middle East, in Iraq, Iran and Turkey, inhabited by the Kurds, a wild, pastoral people who are largely fanatical Mohammedans, and have repeatedly risen against the Governments that attempt to control them, seeking autonomy or independence. They number about 14 millions.

Kuria-Muria Islands, a group of five British islets in the Arabian Sea, chiefly important as a cable station. Guano is obtained. Area 28 sq. m. Pop. c. 2,000.

Kurile Islands, a chain of 26 islands, the peninsula of Kamchatka, enclosing the sea of Okhotsk; they form the Japanese province of Chishima (area 3,850 sq. m.) and are very sparsely inhabited.

Kursk, town of Russia in the Central Black Sea, Soil Area, capital of the province of Kursk. It manufactures spirits, soap, candles and leather, and has a yearly fair. Pop. 103,000.

Kustendil, town of Bulgaria, on the Struma, 40 m. SW. of Sofia, seat of a Greek archbishop. Pop. 26,000.

Kutais, town of Georgia, in the U.S.S.R., and formerly capital of Georgia. Hat-making is the chief industry. Pop. 70,000.

Kut-el-Amara, province and town of the Euphrates, 290 m. from Basra. In 1915 General Townshend was besieged here by the Turks and surrendered after 143 days with 9,000 men, British troops having lost 20,000 men in trying to relieve the town. Under General Maude it was recaptured in 1917. Pop. (prov.) 120,000.

Kwang-chau-wan, small territory in South China, east of the Lui-Chow peninsula, leased by France from the Chinese Government since 1898, and governed as part of French Indo-China; a free port, exporting swine, cattle and ground-nuts. Area 200 sq. m. Pop. 230,000.

Kwang-si, mountainous province of S. Kwang-tung. It is watered by the Si-kiang and its tributaries. Timber and cinnamon are produced, and there are many minerals, but little worked. Yungning is the capital. Area 84,900 sq. m. Pop. 13,385,000.

L

Laager, an encampment, especially one the S. African veldt. At first used by Boer pioneers when trekking, laagers were widely employed as military encampments during the S. African campaigns.

Laaland, Danish island in the Baltic, separated from Schleswig-Holstein by Fehmarn Belt. It is fertile and low-lying, and has oak and beechwoods. Maribo is the capital. Pop. 87,000.

Labarum, the standard which was borne before the Emperor Constantine, symbolising the vision of the cross in the sky which led to his conversion to Christianity. It consisted of a gilded spear bearing a cross-bar from which depended a jewelled purple cloth, the spear being crowned by a golden wreath, in the centre of which were the first two letters of the name of Christ.

La Bassée, industrial and mining town of France, 16 m. SW. of Lille. It was taken by the Germans in 1914, and remained in their hands for four years, being reduced to ruins by bombardments. Pop. 34,000.

Labiateae, a large family of herbaceous or shrubby plants, with four-cornered stems and leaves devoid of

Kwang-tung, coastal province of S. China, including Hainan I., and the ceded territories of Hong-Kong. It is rich industrially and agriculturally, and has important fisheries. Its largest city is Canton; its capital, Kwangchow. Area 84,000 sq. m. Pop. 32,300,000.

Kwei-chau or **Kwei-chow**, interior province of China, mainly mountainous and sparsely inhabited, largely by aboriginal tribes. It is watered by the Yangtze and the Wu, and has an unhealthy climate. Its mineral wealth is great but imperfectly exploited. Kwei-yang is the capital. Area 69,200 sq. m. Pop. 9,000,000.

Kyd, Thomas, Elizabethan dramatist, born in London, and trained a scrivener, but won fame as a writer of tragedies, of which the best was *The Spanish Tragedy*. (1557-1595).

Kyles of Bute, narrow, curved strait separating Bute from the Scottish mainland (Argyllshire), and opening at both ends into the Firth of Clyde. It is 16 m. long, and noted for its beautiful scenery.

Kyoto, from 784 to 1868 the capital of Japan, and now its fourth largest city, on the Kamo R., inland, 190 m. W. of Yedo; is the centre of Japanese Buddhism, and is noted for its pottery, bronze-work, crêpes and velvets. Pop. 1,080,000.

Kyrie Eleison, means "Lord have mercy upon us," and with *Christe Eleison*, "Christ have mercy upon us," occurs in all Greek liturgies, in the Roman Mass, and, in its English equivalent, in the Book of Common Prayer; it is known as "the Lesser Litany."

Kyrle, John, English philanthropist, celebrated by Pope as the "Man of Ross," from the name of the place in Herefordshire where he lived; was distinguished for his benefactions; gave his name to the Kyrle society, founded, among other things, for the betterment of the homes of the people. (1037-1724).

stipules and covered with glands secreting aromatic oil. They occur in most parts of the world, some 200 genera and 3,000 species being recognised, among the chief genera being *Rosmarinus* (rosemary), *Lavandula* (20 species, including Lavender), *Salvia* (550 species, including sage), *Thymus* (33 species, including thyme), etc.

Labour, in economics, one of the three of wealth, the other two being land and capital. Labour, however, may be unproductive, or only indirectly productive of wealth. Industrial processes have been greatly facilitated by the labours of scientists, so that the labour of an "unproductive labourer" may be productive of wealth.

Division of labour is an important consideration in political economy. Its three advantages, according to Adam Smith, are (1) increase of the workman's dexterity, (2) saving of time by the workman's concentration upon one employment, and (3) the greater likelihood of suitable machinery being invented if the mind of the workman is concentrated on a special process. A fourth advantage is that each workman can be employed solely on the work most suited to him.

A still more powerful agent in increasing

productiveness than division of labour is co-operation, and this may be either simple or complex. Karl Marx claimed that he was the first to point out the twofold nature of the labour embodied in a community, the concrete labour which creates "use-values" and counts qualitatively, being work, while the abstract labour which creates value and counts quantitatively is labour. This formula leads to Marx's analysis of the "errors" of the orthodox economists and his fundamental axiom that the economic structure of society is, and always has been, the basis upon which everything else rests.

Labour, Ministry of, a department of the British government, established in 1916 to replace the Labour Department of the Board of Trade, in order to administer unemployment exchanges and deal with wage disputes, unemployment insurance and questions of labour administration generally. Its wide powers, especially in relation to trades unions, also embrace the adjudication of industrial claims through the Industrial Court, and there is a special department which co-operates with the International Labour Organisation of the League of Nations. The secretarial, employment, training, and unemployment assistance departments, and the industrial relations and international labour branches are all located at Montague House, Whitehall; there are also out-stations at Bristol, Birmingham, Manchester, Leeds and Edinburgh.

Labour Day, the first Monday in September, held as a legal public holiday in all parts of the U.S.A. and Canada and their dependencies, except the Philippine Is., and celebrated by labour processions. In Europe, Socialist organisations have for many years regarded May 1st as their Labour Day.

Labour Exchanges, centres where the unemployed are informed of vacancies and where employment insurance benefits are paid. They were established in England in 1910, and are now known as Employment Exchanges (q.v.).

Labour Party, since the post-War disintegration of the Liberal Party one of the two great rival political organisations of Great Britain. It formed its first Government in 1924 and its second in 1929, though in neither case did it have control of a majority in the House of Commons. Its eventual purpose is the establishment of a Socialist commonwealth. Besides its individual membership, a number of organisations are affiliated to it, including most of the British trades unions. Not until 1906 did it secure any great measure of Parliamentary representation, but in that year it returned 40 members to the Commons, and by 1922 this figure had risen to 142.

At the 1929 election it returned 287 members, but the Labour Government then formed fell in 1931 as a consequence of the financial crisis which developed in that year, and led to a split in the Cabinet, the then leader of the Party and Prime Minister, J. Ramsay MacDonald, deserting it to lead a combination of the Conservatives and many Liberals with a small rump of "National Labour" men. The ensuing General Election reduced the Labour Party in the Commons to 52, but at the 1935 Election it returned 154 members. In 1936 George Lansbury (q.v.) was succeeded as Leader of the Party by Major Attlee.

At the beginning of 1937 the National Executive decided that at the next General Election it would concentrate on a programme of social reconstruction which could be carried during the lifetime of a single Parliament. It has refused on various occasions to co-operate with the Communist Party in a "United Front," but at present (1938)

conversations are taking place as to the possibility of resumed co-operation with the Independent Labour Party, which broke away from the Labour Party in 1932 and has since acted independently.

Labrador, peninsula of E. Canada, washed by Hudson Bay, the Greenland Sea, and the Gulf of St. Lawrence; it forms a high tableland, with many lakes and rivers, and forests of birch and fir. The climate is too severe for agriculture. Summer is very short, and plagued with mosquitoes. The rivers abound in salmon; the fox, marten, otter and other animals are trapped for their fur; iron and labradorite are plentiful. The inhabitants are chiefly Eskimos. Area 510,000 sq. m.

The name Labrador is specifically applied to the region along the E. coast of the Labrador peninsula, between Blanc Sablon, in the S., and Cape Chidley, in the N., with an area of about 110,000 sq. m. It is a dependency of Newfoundland, to which it was attached in 1927 by a decision of the Privy Council, in settlement of a boundary dispute between Newfoundland and the province of Quebec, to which the rest of the peninsula belongs. Pop. (dependency) 4,700.

Labradorite, a mineral of the felspar igneous rocks, especially in those of Labrador. It often displays brilliant, iridescent colours, and is then used in jewellery.

La Bruyère, Jean de, French essayist and moralist, born in Paris; was tutor to the Duke of Bourbon, the grandson of the great Condé, and spent a great part of his life in Paris in connection with the Condé family. His most celebrated work is *Les Caractères de Théophraste* (1688), which abounds in wise maxims and reflections on life, but offended contemporaries by its satires under disguised names. (1645-1696).

Laburnum, a genus of small, hardy, deciduous trees of the natural order Leguminosae. There are only three known species, one of which, *Laburnum vulgare*, is an ornamental tree common in Britain, and noted for its hanging racemes of beautiful yellow flowers. The roots, bark and seeds are poisonous.

Labyrinth, a name

given to a structure composed of intricately winding passages. The most remarkable examples were those of Egypt and of Crete. The Egyptian labyrinth, to the E. of Lake Moeris, consisted of an endless number of dark chambers, connected by a maze of passages; it was possibly a vast cemetery. The Cretan labyrinth was supposed to have been built by Daedalus, to imprison the Minotaur; Perseus, however, aided by Ariadne, penetrated the labyrinth and slew the monster, being guided on his return by a skein of thread. The nearest modern approach to the labyrinth of antiquity is the garden maze, of which that at Hampton Court is perhaps the most celebrated example.

Lac, or Lakh, a term employed in India for a hundred thousand; 100 lacs make a crore, the word rupees often being understood.

Laccadive Islands, a group of low-lying islands 200 m. W. of the Malabar coast of India, 14 in number, mostly barren (9 only are inhabited) and yielding chiefly coconuts. Boat-building and the manufacture of coir are carried on. They were annexed by Great Britain in 1877 and are under the Administration of Ceylon. Area 80 sq. m. Pop. 15,000.



LABURNUM
VULGARE

Lace, a name for various kinds of fine, open fabric, often of elaborate pattern, as in the case of Mechlin lace and Honiton lace. In the trade, the varieties are classified into "needle-point," "machine-made" and "pillow" lace. Needle-point, or "point," originated as embroidery or twisted braid, and is worked on a fabric foundation. The earliest point lace was made in Venice in the 16th Century. Brussels point lace is characterised by a star or flower ornament worked separately and sewn on to the foundation. Machine-made originated in Nottingham in 1768, at first taking the form of tulle or net to be used as a foundation for "pillow" lace, which is lace made by hand with bobbins on a pillow or cushion. Modern machine-made lace, made by power-driven looms, repeats most of the features of hand-made lace. The invention of the bobbin-net machine by John Heathcote in 1809 was the first great advance in the machine-made lace industry. The machines in general use to-day are those based upon the loom invented by John Levor in 1813.

Lacedæmon, an alternative name for Sparta, capital of Laconia and the chief city of Peloponnesus.

Lachesis. See Fates.

Laconia, or **Laconica**, ancient name for Sparta, a country of the Peloponnesus, the inhabitants of which were noted for the brevity of their speech, whence the word "laconic" in English.

Lacquer, a substance used in the Far East for ornamenting the surface of wood and, more rarely, metals. It consists of the sap of the lacquer tree (*Rhus vernicifera*), strained and slightly evaporated, applied in successive layers and allowed to harden. It is then polished, and may afterwards be embellished by the application of gold and silver in various forms, mother-of-pearl or other shells, or precious stones. Lacquer can also be coloured successfully by the addition of various substances, Chinese red lacquer, coloured cinnabar, being especially celebrated. In the West the word lacquer is often applied to a solution of shellac or other resins in a solvent such as alcohol, applied to metal surfaces to preserve them from rust or tarnish.

Lacrosse, a pastime originating among the N. American Indians, which has become a national sport in Canada, and thence has spread over most of the English-speaking world. It was introduced into England in 1876, the English Lacrosse Union being formed in 1892; there is a county championship, as well as international and inter-varsity matches.

The game is played with a rubber ball, 4½-5 oz. in weight, and each player is provided with a peculiarly shaped stick or "crosse," which gives the game its name. The crosse is made of hickory, and is of any convenient length, but must be no more than 12 ins. in maximum breadth; one end is bent at an obtuse angle, and sustains a triangular coarse net of thongs or catgut, the apex of which is attached to the handle.

There are two 6 ft.-square goals, standing 100-130 yds. apart, with agreed side boundaries. Each team consists of 12 players, and the object is to catch the ball in the net of the crosse and throw, or kick, it through the opposing goal. Players are permitted to carry the ball upon the crosse, but (except the goalkeeper) must not handle it.

Lactation, the process of feeding the mother, or suckling. It is a characteristic of all mammals. The milk is drawn from the mammary glands, of which there are two in the human mother, while the number increases with the number of young in other mammals.

Lactic Acid, the general name for several isomeric organic acids, having the same chemical formula and composition, of which the most familiar is the acid produced in sour milk by the fermenting action of bacteria upon lactose, or milk-sugar; other isomeric forms of lactic acid occur in fermenting cane-sugar and in muscle tissue, accumulations of the latter being responsible for the phenomenon of muscular fatigue.

Lactometer, an instrument for determining the amount of butter-fat in milk. In its usual form it is a graduated glass tube which is filled with the milk to be tested; the latter is allowed to stand until the cream separates, when its amount is read from the scale.

Lactose, or **Milk-Sugar**, the sugar which forms an integral part of all mammalian milk; it is left in the whey after removal of the casein by the action of rennet, and can then be obtained in crystals by evaporation. Though less sweet than sucrose, or cane-sugar, it is more easily assimilated, and is therefore preferable for feeding infants.

Ladino, a variety of the Spanish tongue, based on the Castilian of the 16th Century, spoken especially in the Near East (Turkey, the Levant, etc.) by Sephardic Jews descended from those expelled from Spain and Portugal at the end of the 16th Century. The name is sometimes also given to Romansch, a Romance language spoken by many inhabitants of Canton Grisons, since 1937 recognised as one of the national languages of Switzerland.

Ladoga, the largest lake in Europe, situated almost equally in Russia and Finland, the frontier between which intersects it; Leningrad is about 25 m. from its S.W. end. The lake is more than 120 m. in length and 80 m. wide; with an area of 7,000 sq. m., nearly as large as Wales. It receives the Its. Volkhov, Voska and Svir, and drains into the Gulf of Finland by the Neva; but so dangerous is navigation that the extensive shipping is carried round the S. shores by a system of canals.

Ladrones, or **Marianne Islands**, a widely scattered group of islands in the N. Pacific, 1400 m. E. of the Philippines; they are 14 in number, and together have an area of 24,400 sq. m. A number of them, towards the N., are uninhabitable, owing to the presence of active volcanoes; the S. islands produce cotton, indigo and sugar. Guam is the largest island and belongs to the U.S.A., being ceded in 1898 by Spain, which formerly owned all the islands. The remainder were sold to Germany in 1899, and since the World War have been governed by Japan under mandate. Pop. (natives) 50,000, (Japanese) 20,000.

Ladybird (Coccinellidae), a family of beetles (coleoptera), exhibiting bright red or yellow colouring, with black or white spots. There are 2,000 species, all having short, clubbed antennae and heads largely concealed by the thorax. Most species feed on the larvae and imagines of Aphides and other insects destructive to crops. In various parts of the world species of ladybirds have been introduced for the specific purpose of thus helping agriculture.

Lady Chapel, a chapel dedicated to attached to a church.

Lady Day, the festival of the annunciation of the Virgin Mary, March 25; a quarter-day in England, Wales and Northern Ireland.



LADYBIRD

Lady's Mantle (*Alchemilla vulgaris*), a perennial plant of the family Rosaceae; a native of temperate climates, and found wild in Great Britain. It bears small yellow or green blossoms in clusters and large, many-lobed leaves. Alpine Lady's Mantle (*Alchemilla alpina*) is a more useful garden species.

Ladysmith, town of Natal, S. Africa, near the Klip R., 200 m. NW. of Durban, at an elevation of 3,280 ft.; it is an important railway junction, and has railway workshops. Founded in 1851 and named after the wife of Sir H. Smith, Governor of the Cape, it was besieged by the Boers for 121 days (Nov. 1899–Feb. 1900) during the S. African War. Pop. 7,000.

La Fontaine, Jean de, French poet and fabulist, born at Châteauneuf-Thierry, in Champagne; began his serious literary career with a metrical translation from Terence, which brought him the patronage of the Intendant Fouquet. In 1664 appeared the first part of his *Fables*, which are remarkable for their exquisite grace of expression and sparkling wit, while his celebrated *Fables* began to appear in 1688, and ever since have delighted readers of all ages. (1621–1695).

Lager, a light beer produced in Bavaria (Munich) and elsewhere on the Continent. It differs from the typical English beer in that the mashing process is of the "decoction," and not of the "infusion" type; also a different yeast is used, which sinks during fermentation instead of remaining at the top. Lager has to be stored for some four or five months and cooled before being ready for consumption. It has an alcoholic content of 3 per cent., as against about 4 per cent. in ordinary English beer.

Lagoon, a shallow lake of salt or brackish water, communicating with the sea, but separated from it by a bar or sand-spit. Lagoons are usually found along flat coast-lands where the tide is but slight. Another form of lagoon is that enclosed by a coral atoll (q.v.).

Lagos, town and seaport of Nigeria, of which it is also the capital. It stands upon an island near the N. shore of the Bight of Benin, and is joined to the mainland by a bridge. It has large docks, floating docks and wharves and is connected by rail with Kano, 700 m. to the NE. There is a large and valuable trade with all parts of Nigeria, especially in palm oil and kernels, cotton, cocoa, ground nuts, hides and rubber. Pop. 130,000.

Lagrange, Joseph Louis, Comte, French mathematician, born at Turin; had gained at the age of twenty-five a European reputation by his abstruse algebraical investigations. Appointed director of the Berlin Academy in 1786, he pursued his researches there for twenty years. In 1787 he removed to Paris, where he was appointed professor of mathematics and received a pension from the Court. Napoleon made him a count. His writings include important treatises on mechanics, analysis, the calculus, and the theory of functions. (1736–1813).

La Hogue, or **La Hague**, a promontory of France, forming the N. extremity of the Cotentin peninsula, dept. of Manche, about 12 m. NW. of Cherbourg. In the neighbouring roadstead a French fleet sent by Louis XIV. to invade England on behalf of James II. was destroyed by the combined English and Dutch fleets, May 19–23, 1692.

Lahore, city of India, on the Ravi, a tributary of the Indus, 1,250 m. by rail NW. of Calcutta. It is the capital of the Punjab, and an important railway centre; it has many fine buildings, both English and native, the latter including the Mogul fort

and its mosques; there is also a university and a medical school. The town is the headquarters of a division of the Indian Army. Pop. 430,000. The district of Lahore, one of the most important in the province, is well irrigated by the Bari Doab Canal, and produces plentiful crops of cereals, pulse and cotton. Area 2,700 sq. m. Pop. 1,131,000.

Laissez-faire (lâz. let things alone), the name given to the "let-alone" system of political economy, in opposition to State interference or regulation in private industrial enterprise.

Lake (dyeing), a generic name for a variety of insoluble red and other pigments, prepared mostly by precipitating solutions of organic colouring matters with a metallic mordant. The colouring matter of common lake is Brazil wood, but superior varieties are made from cochineal, lac, kermes, and the root of the madder-plant.

Lake, a sheet of water formed in a depression of the earth's surface. When very large, lakes are known as inland seas, such as the Caspian Sea, while small mountain lakes go by the name of tarns. Geologically, lakes are classified into those which once formed part of the sea but have been cut off by the elevation of the sea-bed; and depressions in the land-surface which receive a portion of the drainage. The Caspian and the Sea of Aral are instances of the first class; the Great Lakes of N. America, Lake Tchad and indeed most other lakes belong to the second. These depressions may arise either from partial sinking of the land, or from the eroding effect of glaciers. The world's largest lakes are the Caspian Sea and Lake Superior.

Lake District, a region of Northern England, in Cumberland, Westmorland and Lancashire, which, within a circle roughly 30 m. in diameter, contains the chief English lakes, including Windermere, Rydal Water, Conistone Water, Ullswater and many others. The mountain, lake and river scenery is of world-famous beauty, and is much frequented by tourists. Sca Fell Pike, Sca Fell, Helvellyn and Skiddaw are the highest peaks, the first-named being 3,210 ft. high. The village of Keswick is perhaps the most popular centre for visiting the Lake District; others are Ambleside, Windermere and Grasmere. The District is rich in literary associations, with memories of Wordsworth, Gray, Coleridge, Southey, Keats and others.

Lake Dwellings, primitive settlements of which have been found in many parts of Europe, but chiefly in Switzerland, the N. of Italy, Austria, Hungary, Germany, Scotland and Ireland. In the Swiss lakes, piles, consisting of unbarked tree trunks, were driven in a short distance from the shore, and strengthened by cross-beams; extensive platforms laid on these held small villages of rectangular huts. These were sometimes accessible only in canoes, but more often were connected with the shore by a narrow bridge. In Scotland and Ireland the erection was rather an artificial island constructed in shallow water with brushwood, logs and stones.

La Linea, Spanish town in the province of Cadiz, N. of Gibraltar; its main occupation is supplying fruit, dairy produce, etc., for the inhabitants of Gibraltar. Pop. 63,000.

Lamaism, the form of Buddhism prevalent in Tibet and Mongolia, which has become very much corrupted from the original teaching of Buddha and is overlaid with magic and divination. It is characterised by a highly developed system of male and female monasticism and a complicated hierarchy of priests, chief of whom are the Dalai Lama, who inhabits the Potala at

Lhasa, and the Tashi Lama, who lives at Shigatse; each is regarded as the incarnation of a previous lama.

Lamarck, Jean Baptiste, French naturalist, born at Bazentin, Picardy; entered the army at the age of 17 and served in the Netherlands. In his *Flore Française* (1778) he adopted a new method of classification of plants. In 1778 was appointed botanist in what ultimately became the Jardin des Plantes, and in 1793 became professor of Zoology, devoting himself particularly to the study of invertebrate animals. He held advanced views in biology, which were not appreciated till the advent of Darwin. (1744-1829).

Lamartine, Alphonse Marie de, French poet, born at Mâcon. His first volume of poetry, *Méditations*, appeared in 1820; *Harmonies* in 1830, *Chute d'un Ange* and *Jocelyn*, 1837 and *Recueillements*, 1839. Of his prose works, which range from short tales to historical monographs, the most celebrated is the *Histoire des Girondins*, 1847. He played a notable part in contemporary politics, entering the Chamber as a royalist in 1834, and becoming a member of the provisional Government and Foreign Minister in 1848; unsuccessfully stood for the presidency, 1849 and was pensioned under the Empire. (1790-1869).

Lamb, Charles, English essayist and poet, critic, born in London: entered the East India Office in 1792, where he served for 33 years. His first poems appeared in 1796, but his plays *John Woodvil* (1802) and *Mr. H—* (1806) were failures; collaborated with his sister Mary in *Tales from Shakespeare* (1807), and contributed to Leigh Hunt's *The Reflector*; from 1820 contributed to the *London Magazine* the series of immortal essays later (1823) collected as *The Essays of Elia*, upon which his fame chiefly rests. The friend of Wordsworth, Southey, Leigh Hunt and others, his letters are almost as delightful as his essays. (1775-1834).



CHARLES LAMB

Lamb, Mary Anne, English authoress, sister of Charles Lamb (q.v.), in whose care she lived after having at the age of 32, in a fit of insanity mortally stabbed her mother. She was part-author of the popular *Tales from Shakespeare*. (1764-1847).

Lambeth, London, lying between Southwark and Camberwell on the E. and Westminster and Wandsworth on the W., and including the districts of Kennington, Brixton, Vauxhall and parts of Norwood. Its notable buildings and establishments include the London County Hall, St. Thomas's Hospital and Lambeth Palace, the official residence of the Archbishop of Canterbury, which has a magnificent library and portrait-gallery. It is largely an industrial quarter, producing chemicals, soap, pottery and earthenware, etc. Pop. 277,000.

Lamellibranchia. See Bivalves.

Lamentations, Book of, one of the Old Testament, traditionally ascribed to Jeremiah, but more probably the work of several unknown hands; written apparently after the fall of Jerusalem, in 586 B.C., and in sight of its ruins.

Lamia, in Greek legend, a vampire who and fed upon the blood of her lovers; the subject of the well-known poem of the same name, by John Keats.

Lammas, the first day of August, literally "the loaf-mass," day or festival day at the beginning of harvest; it is one of the cross quarter-days, Whitsuntide, Martinmas and Candlemas being the other three.

Lammermuir, or Lammermoor, range of hills in E. Lothian and Berwickshire, Scotland, culminating in Lammer Law (1,733 ft.). They terminate at the North Sea coast in St. Abb's Head.

Lampblack, a very finely divided, by burning fats, resins or the oily products of coal-tar distillation in a limited supply of air. It is used in the manufacture of motor-tyres, printer's ink, copying paper, black pigments and other commodities.

Lampoon, a scurrilous personal piece of satire, generally on some prominent individual. The word is from the French "lampion," a drinking-song, so called from the exclamation "lampions!" i.e., "let us drink," frequently introduced into such songs.

Lamprey, an order (Hyperoartia) of the fish remarkable for the powerful sucker bearing horny teeth which it has in place of jaws, and by means of which it attaches itself to other fish to feed, scraping away the flesh with its rough tongue. They occur in N. and S. temperate seas, three species being found in British waters—the sea-lamprey (*Petromyzon marinus*), large and spotted and a yard or more in length, the river lamprey, partly inhabiting fresh-water, and the lampern (*Lampetra fluviatilis*) which is found in estuaries and has a habit of attaching itself to a stone by its mouth. Lampreys were at one time a favourite article of food.

Lanark, county town of Lanarkshire, SE. of Glasgow; has a cattle-market and carries on cotton-spinning, weaving and tanning; 1 m. to the S. is New Lanark, associated with the socialistic experiments of Robert Owen. The district is a most beautiful, including as it does the Falls of the Clyde and the ravine of Cartland Craig, and is historically rich, with memories of William Wallace. Pop. 6,000.

Lanarkshire, inland county of Scotland, occupying the valley of the Clyde; the middle and S. are hilly, with such outstanding peaks as Tinto (2,335 ft.), and are adapted for cattle and sheep-grazing and for dairy-farming. The NW. region is very rich in coal and iron, and consequently includes many industrial towns, such as Glasgow, Motherwell, Hamilton, Coatbridge and Airdrie. Fireclay, shale and lead are also found; comparatively little grain is grown, but fruit-farming and market-gardening are productive. The other industries include ship-building, engineering and the manufacture of textiles. Lanark is the county town, though Glasgow is by far the largest and most important. Area 880 sq. m. Pop. 1,686,000.

Lancashire, county of England, extending along the shore of the Irish Sea from the Lake District and the mountains of Cumberland in the N. to the Mersey in the S. It is bounded on the E. by Yorkshire and Westmorland; the northern portion forms the peninsula of Furness, which comprises a district of Lakeland. The sea-coast is mostly occupied by a plain. Nowhere does the land stand higher than 1,331 ft. The chief rivers are the Mersey, Lune and Ribbles, with their tributaries. The Manchester Ship Canal and a number of other artificial waterways are important means of transit.

The soil is a fertile loam, which produces

wheat, oats, potatoes and other crops; while there is much dairy-farming and sheep-rearing. Iron and coal are the chief minerals, and support vast mining and manufacturing industries, chief among the latter being the spinning and weaving of cotton and other textiles, as well as engineering, shipbuilding, bleaching, dyeing and the manufacture of iron, steel, glass, soap, leather, rubber, paper and chemicals.

The county town is Lancaster, but the largest and most important towns are Liverpool, Manchester, Burnley, Blackburn, Wigan, Bolton and Preston; Blackpool, Southport, Morecambe and Lytham St. Anne's are popular holiday resorts. Liverpool and Manchester are university towns and also, with Blackburn, bishoprics. Area 1,889 sq. m. Pop. 5,039,000.

Lancaster, county town and riverport of Lancashire, England, on the estuary of the Lune, 50 m. NW. of Manchester; manufactures furniture, linoleum, cotton, machinery and railway plant; the Norman castle is now used as the assize court and jail. Pop. 43,480.

Lancaster, city of Pennsylvania, U.S.A., 70 m. W. of Philadelphia; tobacco, linoleum and machinery are among the principal manufactures. Pop. 60,000.

Lancaster, House of, dynasty that ruled England 1399-1461, taking its name from the dukedom of Lancaster possessed by its founder Henry IV. (q.v.). Henry IV. was succeeded by his son Henry V., who in turn was succeeded by his son Henry VI.; on the latter's deposition in 1461, the House of Lancaster came to an end, and the Yorkist dynasty began in the person of Edward IV.

Lance, a horseman's long spear used formerly in tilting and jousting at tournaments. Later it became a cavalry weapon, and as such was used in most European armies. The modern British cavalry lance has a bamboo shaft 9 ft. 1 in. in length, with a triangular steel point, and bears a red and white pennon. In 1927 it was abolished in the British army for all but ceremonial use.

Lance Corporal, in the British uncommissioned officer below the rank of corporal, or an acting corporal; those on the establishment of a battalion wear a single chevron on each sleeve. A lance-sergeant is a corporal acting as sergeant.

Lancelet (*Amphioxus lanceolatus*), a small marine animal having a gristly

rod or notochord in place of a spine; from 1½ to 2½ in. in length. It resembles true fishes in form, and has been found in British seas and

LANCULET

is tapered at both ends. It inhabits coastal waters. It has no proper head, eye or gills and no fins apart from one on the back. It has a flattened side bearing striated lines.

Lancers, cavalry regiments whose chief weapon was the lance. Regular lancer regiments were introduced into Western European armies by Napoleon, after the pattern of those in the Polish service. After Waterloo several regiments of British Light Dragoons were converted into lancers, and there were eventually British lancer regiments whose arms included, besides the lance, a sword and, later, a carbine. The German Uhlans were also equipped like British lancers and classed as medium cavalry. See also *Lance*.

Lancers, the name of a set of quadrilles, or square dances of French origin; there are five figures and eight dancers make up a set.

Lanchester, town of Durham, England; it is a coal-mining centre, and has saw-mills; remains of a Roman station crown a nearby hill. Pop. 33,700.

Lanchow, city in Western China, capital of the province of Kansu, on the Hwang-ho; it is the trade centre of the district, which produces coal, silk, furs and coarse textiles. Pop. c. 400,000.

Lancing, village of Sussex, England, on the coast, 2 m. E. of Worthing; chiefly noted for its boys' public school (with a fine chapel) founded by Canon Woodward in 1848. Pop. 3,000.

Land, in English law, includes not only water (such as stretches of river), but buildings of all kinds, and indeed everything which comes within the popular description of "property," as that word is used in the unscientific but easily understood phrase, "the property market." English land laws grow out of the feudal system as that system was adapted to the needs of a monarch who was not prepared to allow his baronial adherents to rival the royal power. The greatest interest an English subject can have in land in England is an "estate in fee simple," which, however, falls short of an absolute title only in that it is subject to the vague overlordship of the Crown.

Until recently English land laws were still remarkable for certain feudal archaisms, such as fines on succession to copyholds, but Lord Birkenhead's Law of Property Act, 1925, swept away these survivals, including among them ancient forms of land tenure such as copyhold and gavelkind, and also the time-honoured device of entailing estates so as to preserve continuity of succession in a direct line. In 1936, an Act was passed for the compulsory redemption of the tithe-rent charge. The law has also been much altered so as to confer wider powers of development on the tenant of land for life under a marriage settlement. The rules of intestate succession were also amended, so that land now passes on intestacy to the next-of-kin, in the same way as personality; the institution of primogeniture and the heir-at-law has thus virtually disappeared.

The old law of conveyance always presupposed transfer of land by deed, but, although a deed is still the customary mode of transfer, a system of land-registration has, theoretically, replaced it in the County of London and in one or two towns; but even there it is supplementary only, and most purchasers would be advised by their solicitors to rely on a deed. Land may be taken compulsorily by or through the state for public undertakings, such as railways, etc., subject to compensation to the owners according to the provisions of the Land Clauses Acts.

Land-crab, the common name of a crab, family of crabs of the Geocar-

cinidae family. Some are amphibious (especially those of the genus *Uca* which are found in tropical America, often in mangrove swamps). Other species are found in the West Indies. These are the true land-crabs, but the term is sometimes extended to include species of other families which are terrestrial in habit.

Another important genus is *Geocarcinus*.

Landes, dept. of SW. France, on the Bay of Biscay; it is called after the landes, the extensive sandy and marshy tracts along the coast; forest products, iron and horses are among its principal products. Area 3,666 sq. m. Pop. 251,506.



LAND-CRAB

Landgrave, title given to certain noble-men of the Holy Roman Empire and conferring a greater dignity than that of a simple count. It was restricted to a few families, notably those of Hesse and Fürstenberg. It is now obsolete.

Land League, an organisation founded by Michael Davitt in Ireland in 1879 to deal with the land question, and suppressed in 1881 as illegal.

Landlord and Tenant.

The relation of landlord and tenant arises when one person gives to another exclusive possession of land, buildings or mines, for a definite period, or from year to year; the interest in the property which remains to the landlord is called the reversion, and usually (though not necessarily) he has the right to receive from the tenant payment in the form of rent.

It is not essential that the tenant should actually enter upon the property for the relationship of landlord and tenant to arise; but exclusive occupation is essential to the relationship; and a transaction on any other terms, leaving the landlord in control, is not a lease, but a mere licence. A lodger is a tenant and not a licensee if he has a separate apartment, and the landlord, whether resident or not has no control over that part of his premises.

Tenancies are either for a fixed term of years, called a leasehold, or from year to year, called a yearly tenancy, or for some shorter term than a year, including e.g., the tenancy of a lodger. The essential terms of an agreement for a lease (i.e., the contract entered into prior to the drafting of the formal lease) are (1) identification of the parties, (2) identification of the premises to be leased, (3) commencement and duration of the term and (4) the rent or other consideration to be paid. A precise or technical form of words is not required to constitute a valid lease, but it is advisable to make use of conventional precedents, especially from the tenant's point of view, inasmuch as omissions generally mean additional burdens upon the tenant, and not upon the landlord.

Agreements for a lease are not enforceable unless evidenced by a written memorandum, though, if the tenant enters into possession, the agreement takes effect as a tenancy at the will of the landlord, and if the landlord accepts rent, it is construed as a yearly tenancy. A lease taking effect for a term not exceeding 3 years, at the best rent which can be reasonably obtained, may be made orally or by writing under hand only; but all leases for over 3 years must be by deed, otherwise they are void for the purpose of conveying or creating a legal estate, though they may constitute an interest at will only, i.e., a tenancy that can be terminated by either party at will. Such a tenancy is implied upon a mere general letting, unless the circumstances show that a tenancy from year to year was intended.

A weekly or other periodic tenancy is determinable by notice to quit, which should be given so as to expire at the end of any completed period of the tenancy; but any question as to the validity of the notice can be avoided by giving it in general form, i.e., to quit at the end of the next completed week (or month, year, etc.) of the tenancy after the date of the notice.

The tenant usually covenants to pay rent, rates and taxes (except landlord's property tax); to keep the premises in tenantable repair; and at the end of the term to deliver up the premises in good repair; to insure the premises against fire, to permit the landlord to enter and view the state of repair; and not to assign or sublet without the landlord's consent. (By the Landlord and Tenant Act, 1927, the

landlord cannot unreasonably refuse consent to assignment of the tenancy.) The landlord usually covenants that the tenant shall have quiet enjoyment.

In the absence of express agreement, the tenant and not the landlord is bound to do repairs. Failure to do the repairs may be followed by notice of breach of covenant and, if the repairs are not done in a reasonable time thereafter, by proceedings for ejectment. A tenant who has tried to comply with the request to repair may, however, get relief in the courts. If the premises be burnt down, the tenant must still pay rent in the absence of express proviso in the lease to the contrary, and if he is under a repairing covenant, he must also pay so much of the expenses of repair as are not covered by the insurance moneys.

The right of the landlord to distrain for rent is subject to numerous limitations and, usually, distress is only levied by a certificated bailiff holding a warrant. The law of landlord and tenant remains unaffected in principle by the post-war Rent Restriction Acts, but is much affected in practice. (See *Rent Restriction Acts*.)

Landor, Walter Savage, English author, born at Warwick; figured first as a poet with *Gebir* (1798) and the tragedy *Count Julian* (1812), and then as a writer of prose in his *Imaginary Conversations* (1824-29), *William Shakespeare* (1834), *Pericles and Aspasia* (1836) and *The Penamaron* (1837); in his *Hellenics* (1847) and *Antony and Octavius* (1856) he reverted once more to poetry. (1775-1864).

Landrail, or **Corncrake** (*Crex crex*), a British summer bird, wintering in Africa, with reddish-brown plumage and a harsh note (giving rise to the name crake). It nests on the ground and is frequently heard on open cornlands. See *Crake*.



LANDRAIL
(ADULT MALE)

Landscape Gardening,

the art of arranging artificial gardens to produce the most pleasing effects by due combination of their various elements. The art was developed by the Italians of the Renaissance, and carried thence to France, where it reached a high degree of perfection in the parks of the palaces of Versailles and Fontainebleau. In England perhaps its greatest exponents were "Capability Brown," who in the 18th Century was responsible for the Gardens at Blenheim Palace, and Sir Joseph Paxton (q.v.). The art has reached its highest pitch in Japan, where the "Miniature garden" of a few square yards sometimes combines all the possible features of a beautiful garden by the skilful use of flower, tree and water effects.

Landseer, Sir Edwin Henry, English animal-painter, born in London; sketched animals before he was six years old, and at 12 exhibited in the Royal Academy. In his early period he portrayed simply the form, colour and movement of animal life, but later he added usually some appealing sentiment, which made his pictures enormously popular. Elected A.R.A. in 1826, and R.A. in 1831, he was knighted in 1850. The Hone of the Nelson monument in Trafalgar Square were modelled by him. (1802-1873).

Land's End, a bold promontory of granite rock on the SW. coast of Cornwall, with scenery of wild grandeur; it is the most westerly point of England. A mile off-shore is the Longships lighthouse.

Land Tax, a tax on freehold and leasehold property, payable on any land in respect of which the tax has not been redeemed. The Finance Act, 1910, introduced four new taxes—namely, duties on increment value, reversions, undeveloped land and mineral rights—but the first three were repealed in 1920.

Lane, Sir William Arbuthnot, British surgeon, born at Fort George, N.B.; demonstrated the effect of the "Lane kinks" in connection with intestinal anastomosis; author of manuals on surgery and anatomy; founder and president of the New Health Society and a popular writer on health topics. Created a baronet, 1913. His name was removed from the Medical Register in 1931 at his own request. (1856-).

Lanfranc, Archbishop of Canterbury, born at Pavia early in the 11th Century; became prior of the monastery of Bec, France, in 1045, and head of a famous school; in 1066 was elected prior of the abbey of St. Stephen at Caen, and came over to England with William the Conqueror, who appointed him to the archbishopric rendered vacant by the deposition of Stigand (1070); he was William's trusted advisor, but his influence declined under Rufus. (d. 1089).

Lang, Alexander Matheson, British actor-manager; born in Montreal, a cousin of Dr. C. G. Lang, Archbishop of Canterbury. Acted in the companies of Sir F. Benson, Mrs. Langtry, Ellen Terry and George Alexander; a popular dramatic actor, being especially successful in Shakespeare and such plays as *Mr. Wu* and *The Wandering Jew*. (1879-).

Lang, Cosmo Gordon, British divine, born at Aberdeen; became a canon of St. Paul's in 1901, was Bishop of Stepney from 1901 to 1908, and in the latter year was made Archbishop of York; in 1928 he became Archbishop of Canterbury, and as such officiated at the coronation of George VI. in 1937. (1864-).

Langland, William, the presumed author of *Piers the Plowman*, who is supposed to have been born about 1332 at Clebury Mortimer, Shropshire; took minor orders, married and removed to London; the greater part of his active life was occupied with his great poem, which presents a vivid picture of English life under Richard II. Some authorities, however, have questioned Langland's existence, ascribing *Piers the Plowman* to unknown authors.

Langton, Stephen, English prelate, educated in France; in 1206 was made Cardinal by Innocent III., presented to the archbishopric of Canterbury, and consecrated at Viterbo in 1207. King John refused to acknowledge him, and the kingdom was put under an interdict. Eventually established in the primacy, 1213, the prelate took up a constitutional position, and mediated between the King and the barons to the advancement of political liberty. He helped to formulate Magna Carta. (d. 1228).

Langtry, Lily, English actress; the daughter of W. C. le Breton, Dean of Jersey; went on the stage, 1881; distinguished for her beauty (she was known as "the Jersey Lily") and for her performance of Shakespearean parts; in 1899, married, as her second husband, Sir Hugo de Batho. (1852-1929).

Languedoc, a former province in the S. of France, annexed to the French crown in 1361, and now comprising roughly, the depts. of Haute Garonne, Ariège, Hérault, Aude, Gard, Lozère, Tarn, Ardèche and Pyrénées-Orientales.

Lanoline, a greasy compound of wool-fat and water used as a basis of various ointments for application to the human skin.

Lansbury, George, British Labour politician, born in Suffolk. In early life he worked as a labourer in the service of a railway company; in 1884-1885 was in Queensland, Australia, and on his return entered his father-in-law's timber business. Abandoning Liberalism for Socialism in 1890, he became two years later a Poor Law Guardian, and in 1903 a Borough Councillor for Poplar, and served on the Royal Commission on the Poor Laws, signing the Minority Report in 1909. He entered Parliament for Bow and Bromley in 1910, resigning in 1912 to fight a by-election as a Women's Suffrage candidate. From 1912 to 1922 he edited Britain's first Labour newspaper, the *Daily Herald*. He was Mayor of Poplar in 1919-1920, and was imprisoned for his refusal, with certain other Councillors, to authorise payment of the County rate.

He entered Parliament again in 1922, and in 1927-1928 was chairman of the National Labour Party. In the Labour Government of 1929-1931 he was First Commissioner of Works, and was responsible for the institution of the "Lansbury Lido," the popular bathing-place at the Serpentine, Hyde Park. After the General Election of 1931 he became leader of the Parliamentary Labour Party, resigning in 1935, as his strongly pacifist views were not accepted by a majority of the party. He has written an autobiography, *My Life*, and various pamphlets and books on political questions. In 1938 he undertook a number of trips abroad with a view to urging on the heads of other States the necessity for a round-table conference settlement of the world's difficulties. (1859-).

Lanthanum, a chemical element, one of the rare earth metals. A white, malleable and ductile metal, it was discovered by Mosander in 1839. It is attacked by water, with the evolution of hydrogen. Symbol, La; atomic number, 57; atomic weight, 138.9; density, 6.15.

Laocoön, a Trojan priest of Apollo, who, for having offended the god, was, with his two sons, crushed to death in the coils of two enormous serpents. This legend inspired one of the grandest examples of ancient Greek sculpture, which is now preserved in the Vatican.

Laodicea, Eight ancient cities bore this name, of which the chief was situated on the Lycus, in Phrygia. A city of great commerce and wealth, it boasted schools of art, science, medicine and philosophy, and an early Christian bishopric. Though the Church was stigmatised for lukewarmness in the Revolution, two councils assembled here in A.D. 363 and 476, the former of which influenced the determination of the canon of both Testaments.

Laomedon, the founder of Troy, who persuaded Apollo and Neptune to assist him in building the walls, but refused the recompense when the work was finished. In consequence, Neptune sent a monster to ravage the country, which could be propitiated only by the periodical sacrifice to it of a maiden. The lot having fallen on Hesione, the King's daughter, Hercules at the latter's entreaty slew the monster and delivered the maiden.

Laon, town of France, capital of the dept. of Aisne, 87 m. N.E. of Paris. It has a fine 12th-14th Century cathedral, and its history goes back to Roman days. Captured by the Germans in Aug. 1914, it was retaken by the French in Oct. 1918. Pop. 14,000.

Laos, a French protectorate in Indo-China, N. of Siam; it produces rice, cotton, teak, gold and tropical fruits. The capital is Vientiane. Area 89,300 sq. m. Pop. 1,012,000.

Lao-tze, a Chinese sage, born in the province of Honan about 604 B.C., a contemporary of Confucius. He composed the celebrated Tao-té-King, or canon of the "way" of reason and virtue, which on account of its high ethics has become one of the sacred books of China. He was the founder of Taoism, one of the three principal religions of China, the other two being Confucianism and Buddhism.

La Paz, dept. of NW. Bolivia; comprising an arid plateau in the N. and mountains in the S. Area 40,686 sq. m. It is rich in agricultural and forest products, and llamas and alpacas are reared; copper and tin are mined. Pop. 800,000. Also the name of a town of Bolivia, situated 12,000 ft. above the sea, 42 m. SE. of Lake Titicaca. It is the seat of a bishop and a university town, and has railway connection with the Pacific; it has been the actual capital of Bolivia since 1898, though Sucre is still the legal capital. Pop. 150,000. Also the name of the capital of the southern portion of Mexican Lower California. Pop. 8,000.

Lapis Lazuli, a mineral of an attractive blue colour, much used in jewellery and lapidary work; as a source of the pigment ultramarine it has been largely superseded by chemical compounds. The best lapis lazuli comes from Afghanistan, Siberia and S. America.

Laplace, Pierre Simon, Marquis de, astronomer, born at Beaumont-en-Auge, Normandy. After teaching in his native place, he went to Paris (1787), where he became professor in the Royal Military School, and, in 1785, a member of the Academy of Sciences. He published many treatises on lunar and planetary problems and on electricity, magnetism, physics and mathematics, but his most brilliant achievements include the demonstration of the stability of the solar system and the production of the *Mécanique Céleste* (1799), in which he carried on the work of Newton and other scientists and promulgated a nebular hypothesis. (1749-1827).

Lapland, a region in the N. of Europe, to the W. coast of Norway and divided between Norway, Sweden, Finland and Russia. Mountainous in the W., it becomes more level in the E., where are many marshes, lakes and rivers. In summer the daylight is unbroken, but in winter there is perpetual darkness for from two to three months; the climate is, on the whole, severe. Most of the region is densely forested, while in Swedish Lapland especially there are rich deposits of iron and copper, which have been made accessible by the electric railway from Luleå, on the Gulf of Bothnia, to Narvik, on the Atlantic coast. The Lapps, a race partly nomadic, are allied to the Finns, small of stature, thick-lipped, and with small, piercing eyes. Though nominally Christians, they are very superstitious.

La Plata, city and port of Argentina, founded in 1882 as the capital of the province of Buenos Aires. It has some handsome buildings, including a cathedral, treasury, government house, assembly building and municipal hall. There is a university and an observatory, while the museum is of outstanding importance. Meat-packing is the main industry. There is a large harbour, communicating by canal with the port of Ensenada, on the La Plata estuary. Pop. 121,000.

La Plata River, a broad estuary in S. America, from 28 to 140 m. broad and 200 m. long, with Uruguay on the NE. and Argentina on the SW., through which the Uruguay and Paraná rivers pour into the Atlantic. It is much exposed to storms; its best harbour is at Montevideo.

Lapwing, or Green Plover (*Vanellus vanellus*), a familiar British bird of the plover (Charadriidae) family; distinguished by an erectile black crest on the head, white on the sides on the neck and abdomen, and a glossy black back.

The bird has a distinctive and erratic flight. Its unusual cry has given it the name of peewit. It is found in fields and marshland. The eggs are brown, mottled with olive. It is an offence punishable with a fine up to £5 to sell the bird or the bird's eggs for human consumption between March 1 and Aug. 31.



LAPWING

Larceny. Simple larceny is defined as the felonious taking and carrying away of the goods of another with intent to deprive him of them permanently. Compound larceny is theft accompanied by aggravation, such as stealing from the person with violence, or from the house or person of another, with or without violence; but in such cases the offence really becomes merged in the more serious offence of burglary, housebreaking or robbery.

Larceny by finding is the offence of appropriating goods, the true owner of which may be found by inquiry.

Larch (*Larix*), a genus of coniferous trees, with small, linear, deciduous leaves, natives of Europe, Asia and N. America. They yield a tough, durable timber, resistant to moisture, and provide a valuable turpentine. Some of the Far-Eastern species are beautiful ornamental trees. The Common Larch (*Larix europæa*) is extensively cultivated.

Lard, strained and purified swine's fat, used in cooking, the manufacture of margarine and the production of candles. It is not infrequently adulterated with other animal fats, and synthetic imitations are produced from cottonseed oil and other vegetable bases.

Lares, household deities of the Romans. Originally the tutelary gods of the family agricultural holdings, they were afterwards regarded as the presiding deities of home life, and in each household images of them—in the form of youthful beings bearing a cup and drinking-horn—were kept in a shrine near the hearth. Some authorities, however, support the traditional view that the lares were the deified family ancestors. Besides the domestic lares there were public lares, who were protectors of the whole community.

Largo, market town and seaside resort of Fifeshire, Scotland, 3 m. NE. of Leven. Fishing is the chief industry. Alexander Selkirk was a native. Pop. 3,200.

Largs, burgh and seaside resort of Ayrshire, Scotland, on Largs Bay, Firth of Clyde, 12 m. SW. of Greenock; a tumulus covers those slain in the Battle of Largs (1263), between the Scots and Norwegians. Pop. 6,000.

Lark, a family (Alaudidae) of small birds inhabiting N. of Europe and N. Asia, though one genus, the *Otocorys*, is represented in the Now World and is not distinguishable from the Shore Lark of Europe and Asia (*O. alpestris*). Nearly all of them nest on the ground in grassy lowlands. All sing as they soar. The family is represented in Britain by the skylark (*Alauda arvensis*) and the Wood-lark (*A. arborea*), both of which are residents. The Shore Lark or European Horned Lark (*Otocorys alpestris*) is a winter visitor to this country, but is a native of only the extreme N. of Europe, particularly

Norway. Some seven other species including, e.g., the Short-toed and the White-winged Lark, are also very occasionally found as stragglers. The name Lark is also frequently applied to many birds which do not belong to the Alaudidae as now understood. Thus the Mud Lark, Rock Lark and Tit Lark, which are all pipers, and the Grasshopper Lark which is a warbler.

Larkspur. See Delphinium.

Larne, seaport of Northern Ireland, in Co. Antrim, 24 m. N. of Belfast; with a good harbour at the mouth of Lough Larne, and regular steamer services with Stranraer, Glasgow, Liverpool, etc.; linen is made. Pop. 8,000.

La Rochefoucauld, François, Duc de, French writer of maxims, born at Paris. Imprisoned in the Bastille for a Court intrigue, he later joined the Fronde under the influence of Mme. de Longueville, and was twice severely wounded in the ensuing hostilities. His celebrated *Maxims* appeared in 1665, and at once established his reputation as the greatest French writer of his type. They are brief and pithy aphorisms, the fruit of a long and varied experience of life. His *Letters* and *Memoirs* are also noteworthy. (1613-1680).

Larva, the first condition of an insect on it is in form a grub, caterpillar or maggot. The name is also applied to an immature insect from the time it breaks through the shell, whatever degree of development it may have reached in the egg. In the orders Orthoptera, Hemiptera and Homoptera, the larva resemble the perfect insect, except in wanting wings, while in the Hymenoptera, Coleoptera, Neuroptera, Diptera and Lepidoptera, they completely differ. The term is also applied to the immature forms of the lower animals, such as those of frogs, crustaceans, etc.

Laryngitis, inflammation of the larynx, the condition usually known as "sore throat"; in its simpler forms it may be acute or chronic. Acute laryngitis usually develops from a simple cold, but it may accompany some other disorder, such as influenza, scarlatina, measles or small-pox. Chronic laryngitis results generally from over-use or straining of the voice, giving rise to hoarseness, and tickling in the throat. Paroxysmal laryngitis occurs in young infants, especially those suffering from rickets or adenoids; it causes a reflex spasm of the glottis, which, unless prompt medical assistance is forthcoming, may terminate in fatal asphyxia.

Laryngoscope, an instrument for inspecting the larynx. It consists of a small plane mirror on a thin stem, which is introduced into the back of the throat, and a large concave mirror for reflecting light upon it. The reflector may be fixed to a stand or attached to the forehead of the operator.

Larynx, the organ of voice, situated in the upper part of the throat. It is built up on the cricoid cartilage above the trachea, and takes the form of a cylindrical box. The movements of the glottis, or aperture between the muscles of the larynx, produce the voice, by altering the size and shape of the glottis.

La Salle, René, Cavalier, Sieur de, French explorer, born at Rouen; settled in Montreal in 1686, and in 1689-1690 carried out exploration in Canada; later visited France on several diplomatic missions; in 1679, with a few companions, explored the neighbourhood of Lake Michigan and the upper course of the Mississippi, and next year descended that river to its mouth, claiming its basin for Louis XIV. of France

as "Louisiana," of which he was made governor; visited France, 1683, and on his return to the Mississippi to found a settlement, lost his way and was killed by his followers during a mutiny. (1643-1687).

Lascars, East Indians serving as seamen on board British vessels. They have proved very tractable and make excellent sailors; they are mostly Mohammedans.

Laski, Harold Joseph, English political economist, born in Manchester. Lecturer in history, McGill University, Montreal, 1914-1916; at Harvard, 1916-1920 and 1933; Dublin, 1936. Connected since 1920 with the London School of Economics; appointed professor of Political Science in London University, 1928. Author of *Political Thought from Locke to Bentham*, 1920; *Foundations of Sovereignty*, 1921; *A Grammar of Politics*, 1925; *Communism*, 1927; *Dangers of Obedience*, 1930; *Rise of European Liberalism*, 1936. (1893-).

Las Palmas, town and seaport of the capital of the Spanish province of Las Palmas; situated on the N.E. coast of Grand Canary. It has an excellent harbour, with coaling and other facilities. There is an old cathedral, and the town is a holiday resort. Pop. 84,000.

Lassalle, Ferdinand, German socialist, extraction; became a disciple of Hegel; took part in the Revolution of 1848, and was imprisoned. In 1861 his *System of Acquired Rights* started an agitation of labour against capital. Next year he founded an association to secure universal suffrage and other reforms and in 1863 established the beginnings of the Social Democratic Party. At Geneva, having fallen in love with a young lady betrothed against her will to a Rumanian nobleman, Lassalle challenged the latter to a duel and was mortally wounded. (1825-1864).

Lasso, a long-noosed rope, generally of raw cowhide, used by the gauchos of Argentina for catching wild cattle. Its use has thence spread to the cowboys of N. America.

Last Supper, the memorial meal celebrated by Jesus on the eve of His betrayal, at which He blessed the bread and wine, offered thanks to God, and commanded the perpetual repetition of the act in memory of Himself. The Christian sacrament or ordinance, variously known as the Mass, Eucharist or Communion Service, is the renewal of this sacramental meal.

László de Lombos, Philip Alexius, Hungarian painter, born at Budapest; studied at Munich and Paris. At first a genre-painter, in 1892 he turned to portraiture; from 1907 resided in England, becoming a naturalised British subject in 1914. A popular society painter, his sitters included many members of the British and other royal families and many other celebrities. (1869-1938).

Lateen Sail, a triangular sail common to boats of the Mediterranean, the term being a corruption of "Latin."

Latent Heat, the heat used in changing a substance from solid to liquid form (*latent heat of fusion*), or from liquid to vapour (*latent heat of vaporisation*).

Lateran, the palace, basilica, built in Rome by Constantine about 333, and serving as the residence of the Pope till 1308; from it no fewer than five oecumenical councils received their names. The *Lateran Treaty*, between Italy and the Pope, by which the



LATEEN SAILS

former recognised the Pope's sovereignty over the Vatican City State, was signed there in 1929. The church near by, called the Church of St. John Lateran, is the cathedral church of the Pope, as Bishop of Rome; it was erected upon the site of a palace of Plautius Lateranus.

Laterite, a soft, friable, reddish-brown rock containing oxides of iron and aluminium and covering large areas in S. India, Malaya, W. Africa, S. America, Australia and elsewhere.

Lathe, a machine used in engineering workshops to rotate a piece of wood, metal or other material while shaped by a tool held against it in order to produce cylindrical work. The ordinary lathe performs numerous operations, including plain and taper turning, facing, boring and screw-cutting. There are many types used for special purposes, such as watchmakers', turners' and gear-cutters' lathes, as well as the very large ones such as are used for boring big guns and turning railway axles.

Latimer, Hugh, English bishop and Leicester; gained the favour of Henry VIII. by approving of his divorce, and was appointed Bishop of Worcester in 1535. As a preacher of the Reformed faith, he lost the royal favour and was thrice imprisoned. Under Edward VI. his zeal as a preacher had full scope, but under Mary he was tried for heresy and burnt at the stake at Oxford with Nicholas Ridley. (c. 1490-1555).

Latin, the language of the ancient Romans. It is a branch of the Aryan group of tongues, and exhibits affinity with Celtic. With the conquest by the Romans of all the neighbouring tribes, the Latin language slowly spread over Italy, and then gradually prevailed throughout Christendom. In the third Century B.C. Latin was a mere patois, but by the period of the Empire it had reached a maturity which made it an admirable language for historians and orators; but it has never been pre-eminently a vehicle for lyric poetry, a fact which may explain the survival to this day of other Italian dialects. Nor again is it a medium for highly imaginative thought, which accounts for the favour accorded by ancient Roman philosophers and others to the Greek language and culture. Yet it became the language of diplomatic Europe and out of it grew the Romance languages, French, Spanish, Italian, Portuguese, Rumanian, etc.

Latitude, in geography, the angular distance of a place on the surface of the earth from the equator, measured on the meridian of the place. Latitude is North or South, according as the place is N. or S. of the equator. Circles whose planes are parallel to that of the equator, are called circles of latitude, or parallels of latitude, the latitude of every point upon each circle being the same.

Latitudinarians, the name given to a body of theologians belonging to the Church of England who, at the end of the 17th Century, sought to subordinate the dogma and ceremonial of the Church to the principles of liberal philosophy and reason.

Latium, a territory of ancient Italy extending from the Tiber to the Mediterranean, and inhabited by a people known as Latins, who formed the Latin League of 30 States. The Latin colony at Rome was admitted to the League, and eventually became its head, defeating the rest of the Latins in 340 B.C. Subsequently, many of the towns of Latium were admitted to Roman citizenship. To-day Latium comprises a dept. of Italy, with an area of 6,636 sq. m. Pop. 2,619,000 (including that of Rome).

Latten, a metallic alloy of copper and zinc, not distinguishable in practice from brass, used widely in the Middle Ages for making various goods and for the brasses of sepulchral monuments. The name is now used only for the varieties of brass that are fashioned into articles of ecclesiastical use.

Latter-day Saints. See **Mormonism**.

Latvia, Republic of Europe, situated round the E., S. and W. shores of the Gulf of Riga; it contains many lakes and marshes. The chief river is the Dvina. Agriculture and dairy-farming are among the chief industries but there are extensive forests and the timber trade is very valuable. The mineral wealth is inconsiderable; fishing is carried on, and flax, timber, butter, paper and glass are exported. The capital is Riga, which is also an important seaport; other large towns are Liepaja (Libau), Daugavpils (Dvinsk) and Jelgava (Mitau). Until 1918 Latvia formed part of the Baltic provinces of Russia. Its constitution, as defined in 1922, is that of an independent democratic Republic, with a President elected triennially. Pop. 1,950,000.

Laud, William, Archbishop of Canterbury, born at Reading, son of a clothier; was ordained in 1601; early gave evidence of his High-Church proclivities and his hostility to the Puritans; rose rapidly in the Church, becoming Archbishop of Canterbury in 1633. High in favour with Charles I., he joined Strafford as one of the King's chief advisers, his rigorous persecution of dissenters making him almost universally detested. His high-handed Church policy brought about his impeachment and execution for high treason. (1573-1645).

Laudanum, an alcoholic tincture of the alkaloids morphine and narcotine. A soporific and anodyne, it is sometimes administered for gastric troubles, looseness of the bowels, etc., and as an outward application in cases of lumbago, inflamed joints and similar ailments.

Lauder, Sir Harry MacLennan, Scottish comedian, born at Portobello. After working as a mill-boy and coal-miner, he took to the stage as an amateur, and made his professional debut in London in 1900, subsequently achieving immense popularity on both sides of the Atlantic by his Scottish songs, largely of his own composition, such as *Roadin' in the Gloamin'* and *I Love a Lassie*; he was knighted in 1919, and received the freedom of Edinburgh in 1922. His only son was killed in the War. (1870-).

Lauderdale, John Maitland, Duke of, Scottish politician. At first a zealous Covenanter, he attended the Westminster Assembly as a Commissioner for Scotland, 1643. A royalist in the Civil War, he was captured at Worcester, 1651, and imprisoned for nine years. As Scottish Secretary of State at the Restoration, he devoted himself to establishing the absolute power of the King in Church and State, his measures being responsible for the rising of 1666 and, in part, for that of 1677. Appointed to the Privy Council, he sat in the "Cabal" ministry, was made duke in 1673, and remained in power till 1680. Harsh, bigoted and unscrupulous, he was long hated in Scotland for his severity against the Covenanters. (1616-1682).

Lauenburg, a former duchy of N. Germany, between Holstein and Mecklenburg, at one time belonging, with Holstein, to Denmark; annexed by Prussia in 1805, and now forms a district of the province of Schleswig-Holstein. Area 453 sq. m. Pop. 56,000. The capital is Ratzeburg.

Laughing Gas. See **Nitrous Oxide**.

Laughing Jackass, *a genus (Dacelo) of birds of the*

Alcedinidae (Kingfisher family, *q.v.*), found in Australia, the principal species being *Dacelo gigas*, a large brown bird so named from its peculiar laughing cry.



Laughton, Charles, English actor, who made his first stage appearance in 1926. He has appeared with his wife, Elsa Lanchester. **LAUGHING JACKASS** His film successes in America and English productions from 1932 onwards including *The Private Life of Henry VIII.*, *Ruggles of Red Gap*, *Mutiny on the Bounty* and *Rembrandt*. (1899-).

Launceston, town of Cornwall, England, 18 m. NW. of Tavistock, the scene of fighting during the Civil War. Pop. 4,000. Also the name of a seaport of N. Tasmania, at the head of the estuary of the Lt. Tamar, 40 m. SE. of Port Dalrymple. It is a holiday resort and an important industrial centre, carrying on tin-smelting, engineering, saw-milling and the manufacture of woollens, furniture and china. Pop. 33,000.

Laundry, an establishment for cleansing clothes and textile fabrics. In large modern laundries different fabrics are treated by different processes, all articles being classified before cleaning. The process used depends on the kind of soiling matter present, whether it is soluble in water or albuminous, greasy or oily, or a stain with a semi-dyeing effect. In addition to water, the materials used are soap, alkalis and mixtures of these. Thorough rinsing, essential for the production of good colour, consists in a series of dilutions. The machines used are washing machines, usually of the rotary type; hydro extractors; a drying-room through which air is circulated by fans to drive away steam; calendars, or mangles, and polished and heated ironing-beds. The industry has a research association for the investigation of its problems.

Lauraceae, an order of evergreen plants, native to the temperate regions, of which the laurel is a typical genus.

Laureate, *Poet*, originally an officer of the business it was to celebrate in verse any joyous occasion connected with royalty, such as the sovereign's birthday. It is now an honour bestowed by royalty on an eminent poet, with a definite obligation to produce verse on occasion. The present Poet Laureate is John Masefield.

Laurel, a genus of a glossy-leaved evergreen shrubs of the order Lauraceae, containing two species *Laurus nobilis*, the Sweet Bay, a Mediterranean plant now cultivated in Britain, and *Laurus camariensis* found in the Canaries and Madeira. The bay tree grows to as much as 60 ft. high, is deep green to olive in colour, with dusky or purplish-black berries. The berries and oil have astringent properties; the leaves are aromatic and are used in condiments. The name laurel also forms part of the popular term for a number of other trees, the Cherry-laurel (*Prunus Laurocerasus*) being a species of Rosaceae, the Spurge-laurel (*Daphne Laureola*) a British species of Thymelaeaceae.

Laurentian Rocks, a system of rocks, rocky strata, over 30,000 ft. in thickness, and covering an area of over 200,000 sq. m., N. of the St. Lawrence R. in Canada. They consist of an immense series of crystalline rocks, limestone, gneiss, quartzite and mica schist. The series forms a sub-division of the Archaean system, lower and older than the Cambrian.

Lausanne, town of Switzerland, on the slopes of the Jura, 1 m. from the N. shore of Lake Geneva; the capital of the canton of Vaud. It is noted for its educational institutions—especially the historic university—and museums, and its magnificent 13th-Century cathedral. It has manufactures of tobacco, chocolate and machinery, and does a considerable trade, as well as being a tourist resort. Pop. 76,000.

The Treaty of Lausanne (1923), signed here, defined the post-War frontiers of Turkey. The Lausanne Conference (1932) was attended by European Powers for the discussion of reparations.

Lausanne, Treaty of, the treaty which terms between the Allies and Turkey after the World War. After Turkey's unconditional surrender in 1918, a peace treaty was concluded at Sévres, 1919; but the Angora Turks refused to accept this treaty which placed Smyrna under Greek control, and, declaring war on Greece, expelled her armies from Asia Minor. The Lausanne Treaty gave E. Thrace, including Adrianople, to Turkey, mandated Palestine and Iraq to Britain, and Syria to France, and abolished Turkish claims to Arabia. An important clause guaranteed the freedom of the Dardanelles, but by the Montreux convention, 1936, Turkey regained the right to fortify the Straits.

Lava, a general term for all rocks originating in molten streams from volcanoes; includes traps, basalts, pumice and obsidians. The surface of a lava stream cools and hardens quickly, presenting a cellulose structure, like pumice, while below, the heat is retained much longer and the rock when cooled is compact and columnar or crystalline.

Laval, *Pierre*, French statesman; born at Châteldon (Puy-de-Dôme). He entered the Chamber in 1814, and filled various ministerial posts before becoming Prime Minister, 1931-1932. Minister of Colonies, and later of Foreign Affairs, 1934, he retained that office on again becoming Prime Minister, at the end of that year. He was responsible, with Sir Samuel Hoare (*q.v.*) for the abortive Hoare-Laval plan for satisfying Italian aspirations in Abyssinia, 1935, and in 1936 resigned to give way to Blum after the Left victory at the Elections. (1883-).

La Vallière, *Louise, Duchesse de*, mistress of Louis XIV. of France; born at Tours, she became maid-of-honour to the King's sister-in-law Henrietta. Louis originally made her his mistress to conceal an amour with Henrietta, but ended by returning her ardent affection. A modest, religious and good-hearted woman, her influence upon the King was salutary while it lasted, but about 1667 she was supplanted by Mme. de Montespan, and eventually entered a convent. (1644-1710).

Lavender (*Lavendula*), a genus of fragrant flowering shrubs of the natural order Labiatae. There are some 20 species native to the Mediterranean and India, a number of which are cultivated in England for the sake of their fragrant perfume and for the volatile aromatic oil obtained from them. The chief species so cultivated are the Dutch Lavender (*Lavendula vera*), with its hoary leaves and greyish-blue flowers, and *L. Spica*, the old English Lavender. All species yield good honey.



DUTCH LAVENDER

Lavery, *Sir John*, British artist, born in Belfast; he studied in Glasgow, London and Paris, and became celebrated for his portraits; he was knighted in 1915 and was made an R.A. in 1921. (1856-).

Lavoisier, Antoine Laurent, French chemist, born in Paris; a gold-medallist of the Academy of Sciences (1786). He became assistant chemist to that body, 1788; introduced improvements in manufacturing gunpowder; discovered the composition of the atmosphere and the nature of oxygen and of the phenomenon of combustion, and overthrew the "phlogistic" doctrine, thus ranking as one of the founders of modern chemistry. Called to account during the Revolution for his actions as a farmer-general of the revenues, he was guillotined. (1743-1794).

Law, in jurisprudence, a general rule of external human action enforced by a sovereign political authority, to which in theory conduct *must* under penalty conform, and thus distinct from a "law" of God, nature or ethics, to which the conduct of men or things either ought to, or is in practice observed to, conform. Law in this sense has its source in legislation by statute or other ordinance of the sovereign authority, or in precedent, judicial decisions of the past being taken as authoritative declarations of law for the future. Equity is really a form of the latter kind of law. The "Common Law" of England is the result of the growth of a body of principles founded on past decisions in particular cases, and owing much of its importance to its co-ordination by Coke. The volume of Statute Law, in Great Britain as in other countries, has grown enormously in recent years, and is added to almost daily by new Acts of Parliament, by-laws and Orders in Council, etc.

A practical division of the field covered by national law is into (1) Private Law, further divided into Civil Law and Criminal Law, which in their turn are further subdivided into "Substantive Law" or rights and duties, and "procedure" or remedies; and there are yet further divisions into "Property" (real and personal), "Obligations" (contractual relationships, actionable wrongs or Torts, etc.), and Status (e.g., the law of master and servant, of husband and wife, etc.); and (2) Public Law—i.e., Constitutional Law and Administrative Law. By Public Law is meant not the whole of the law that is applicable to the State and to its relations with its subjects, but only those parts of it which are different from the Private Law concerning the subjects and their relations to each other. Administrative Law is concerned with the numerous forms and instruments in and through which the lower ranges of governmental activity manifest themselves.

Generally, all questions which arise for consideration and determination in a court of law are either questions of law or of fact, meaning by the former a question as to what the law is on a particular point; questions of fact, where there is a jury, are for its decision; questions of law are for the Court to decide.

Law, Andrew Bonar, British politician, born in New Brunswick, Canada. He entered Parliament as a Conservative in 1900; in 1902 he became Parliamentary Secretary to the Board of Trade, and in 1911 succeeded Balfour as leader of the party; Colonial Secretary in the 1915 Coalition. He declined the premiership the following year, and served under Lloyd George as leader of the House of Commons, Chancellor of the Exchequer, and, in 1919, Lord Privy Seal. He was a British envoy at the Peace Conference of 1919. In 1922 he led the Conservative party out of the Coalition and took office as Prime Minister, but resigned after some months. (1858-1923).

Law, John, Scottish financier, born in Edinburgh, visiting London in 1661, he got into debt, killed a man in a duel, and escaped to Amsterdam. In 1716 he

started a private bank in Paris, the success of which induced the Regent Orleans in 1718 to institute the "Royal Bank of France," with Law as director. Next year he floated the "Mississippi Scheme" for the settlement of Louisiana, but after a show of success the scheme proved a bubble. He had to fly to Brussels, his property being confiscated. He died at Venice. (1671-1729).

Law, William, English author and divine, born at Kingscliffe, Northamptonshire, took orders in 1711, and in 1727 became associated with the family of the elder Gibbon, grandfather of the historian, and spent ten years with them as tutor, friend and spiritual director. He was an able theologian and dialectician, and an exponent of German mysticism, and his writings, especially *A Serious Call to a Devout and Holy Life*, contributed greatly to the evangelical revival. (1686-1761).

Law Courts, a building in the Strand, London, occupied by the Supreme Court of Judicature; it was erected in 1874-1882, at a cost of £1,000,000, from the designs of G. E. Street, completed by Sir A. Blomfield and A. E. Street.

Law Lords, those members of the House of Lords, including Lords of Appeal, who are selected to act as members of the House when acting as the highest court of appeal.

Lawn, a fine white cotton or linen fabric, of an open texture, plain or printed. The white sleeves, which are a characteristic part of the dress of an English bishop, are of lawn, whence, derivatively, the word connotes the dignity or position of a bishop.

Lawn Tennis. See Tennis.

Lawrence, city of Massachusetts, U.S.A., 25 m. NW. of Boston; its industries include textile and foundry goods. Pop. 85,000.

Lawrence, Arabella Susan, British Labour politician; educated at Newnham College, Cambridge. She was a member of the London School Board, 1900-1904, the London County Council, 1910-1926, and the Poplar Borough Council, 1919-1924. Labour M.P. East Ham North, 1923-1924, 1926-1931, she became Parliamentary Secretary to Ministry of Health, 1929-1931. Organiser of the National Federation of Women Workers, 1912-1921. She became chairman of the Labour Party in 1930. (1871-).

Lawrence, David Herbert, British poet and novelist, born at Eastwood, Nottinghamshire, the son of a coal-miner. He was educated, with the aid of a scholarship, at the high school and University College, Nottingham, and became a school-teacher, afterwards travelling in Italy, Australia, Mexico and elsewhere. His novels include:—*The White Peacock*, 1911; *Sons and Lovers*, 1913; *The Rainbow*, 1915 (suppressed by police prosecution); *The Plumed Serpent*, 1926 (about Mexico); *Lady Chatterley's Lover*, 1928. Among his poems are *Amores*, 1916, and *Look! We Have Come Through!*, 1917. He also wrote several plays. (1885-1930).

Lawrence, John, Lord (Laird Law-lance), British soldier and administrator, born at Richmond, Yorkshire; entered the Bengal Civil Service in 1829, and on the annexation of the Punjab was appointed Commissioner and afterwards Lieutenant-Governor. By his justice and the reforms he carried through he so won the esteem of the Sikhs that at the Mutiny (1857) he was able to disarm the Punjab mutineers, raise 59,000 men and capture Delhi. As Governor-General of India (1864), his rule was characterised by wise policy and sound finance. He was raised to the peerage in 1869. (1811-1879).

Lawrence, Sir Henry, older brother of the preceding, born at Matara, Ceylon; joined Indian army in 1823, fought in the Burmese, Afghan and the 1st and 2nd Sikh Wars, and in 1856 became Chief Commissioner of the Punjab. During the Mutiny, which he had foreseen and tried to avert, he organised the heroic defence of Lucknow, in which he perished. He wrote much on Indian affairs, and also founded the Lawrence Military Asylums. (1806-1857).

Lawrence, Sir Thomas, British painter, born at Bristol, the son of an innkeeper; as a boy, supported his family by his portraits; moved to London, 1785, and studied at Royal Academy, soon becoming popular; an A.R.A. in 1791, he was next year appointed painter to the King; in 1794 he became an R.A., being then the most fashionable painter of the day; knighted in 1815, he became P.R.A. in 1820. (1769-1830).

Lawrence, Thomas Edward, British scholar and soldier, who became the "uncrowned King of Arabia." Born at Tremadoc, Wales, he specialised in Oriental languages at Oxford, and in 1911 helped to excavate the site of Caracemish, travelling much in Syria and Iraq. In the World War he provoked the Arab rebellion against the Turks and helped to break down their rule in the Near East; was prominent at the Peace Conference, 1919, but disgusted with what he considered a betrayal of the Arabs by the Allies, he threw up his rank of colonel and enlisted in the Air Force under the name of Shaw. He was killed in a motor-cycle accident. His story of the Arab war, *The Seven Pillars of Wisdom* (1926) caused a sensation; an abridged version, *Revolutions in the Desert*, appeared in 1927. He also published an original translation of Homer's *Odyssey*. (1888-1935).

Lawrence, St., a deacon of the Church martyrdom under Valerian, 258, by being roasted on a gridiron, which he is represented in Christian art as holding in his hand. His feast is kept on Aug. 10.

Lawyer, the common name for a legal practitioner who may be in England either a Solicitor (q.v.) or a Barrister (q.v.).

Layamon, an early English poet who lived in the late 12th Century, and was by his own account a priest at Elnley, near Radstone, on the Severn. He was the author of a poem of 32,240 lines called *Brut*, paraphrased from Robert Wace, which purports to be a chronicle of Britain, and is of interest as showing the transition between Anglo-Saxon and the English of Chaucer. It is written chiefly in alliterative (q.v.) verse though in places rhyme is introduced and the alliteration dropped.

Lay Brother, a member of a monastic order, a tery who is under the monastic vows of obedience and chastity, but is exempted from study and from performing certain duties at religious services.

Layering, the operation of propagating plants by layers; it consists in bending the shoot of a living stem into the soil, the shoot afterwards striking root while still tied by the parent plant.

Lay Reader, a layman licensed to read certain prayers in the English Church, and perform other minor religious functions. See also Lay Vicars.

Lay Vicars, officers of a cathedral whose duty it is to sing as much of the service as might be performed by laymen, or by those in minor orders. In the older cathedrals they sometimes formed a corporation; in others they were persons in holy orders, but in the majority of the later cathedrals they are merely paid singers.

Lazaretto, a plague hospital; also a building or ship in which the crew and passengers of a vessel arriving from some infected port are placed in quarantine.

Lea, river of Bedfordshire, Hertfordshire, Middlesex, England, rising near Luton and flowing generally E. and S. to meet the Thames at Poplar. Its length, including tributaries, is about 60 m.

Leacock, Stephen Butler, Canadian humorist and economist; born at Swanmoor, Hants., England; but migrated to Ontario, 1876. Graduating Ph.D. at Chicago, 1903, he was lecturer in Political Science, McGill University, Montreal, 1901-1908, and professor of Political Economy, 1908-1936; has toured the Empire as a Rhodes lecturer, and written many books on economics and literature. He is best known as a humorist, as such being the author of, among others, *Literary Laposes*, 1910; *Nonsensical Novels*, 1911; *Moonbeams from the Larger Lunacy*, 1915; *Further Foolishness*, 1917; *Hellements of Hickconomics*, 1936. (1869-).

Lead, a metallic chemical element belonging to the same group as carbon, silicon and tin. Symbol, Pb; atomic number, 82; atomic weight, 207.22. Lead, which occurs naturally mainly as its sulphide, PbS, in the mineral galena, is a soft, bluish-white metal of high specific gravity (11.35); it is stable in dry air, and is only slowly attacked by moist air, hence being useful for roofing purposes.

On account of the ease with which it can be manipulated, it is made into plumbers' fittings and water-pipes, though these are not ideally suitable for use with drinking-water if the latter is pure, since lead passes into solution in such water. All soluble lead compounds are poisonous, giving rise to a serious and often fatal condition known as plumbism. With hard water, an impervious lining is soon formed on the inside of the pipes, and no further solution takes place. A number of salts of lead, however, have application in medicine on account of their astringent properties.

Mixed with a little antimony, lead is used in making shot, and many valuable alloys, such as pewter, and various antifriction metals contain lead as one of their ingredients. Among the compounds of lead, white lead, a basic lead carbonate, is the basis of most oil paints; red lead is used in plumbing and as a pigment; and sugar of lead, or basic lead acetate, is employed in the cotton and dyeing industries. Lead tetraethyl is the anti-knock agent in "ethyl" petrol. Lead and lead oxide or litharge are used for the plates in an electrical accumulator, while lead chromate is used as a yellow pigment ("chrome yellow"). The so-called "blacklead" of pencils is not lead, but graphite, a form of carbon. The world's chief lead-producing districts are S.E. Missouri, U.S.A., Broken Hill, in Australia, and parts of Central Spain.

Lead, an instrument, consisting of a piece of lead attached to a line or cable, used at sea for measuring the depth of water.

Lead Poisoning, or **Plumbism**, the poisoning by the introduction into the body of some compound of lead, such as white lead, or sugar of lead. Chronic lead poisoning may show one or more of the following symptoms: pains in limbs, anaemia, colic, paralysis, nephritis and impairment of vision. In Great Britain, lead workers are protected as far as possible by stringent Home Office regulations.

Leaf, part of a plant's foliage, normally consisting of a green blade on a stem. A leaf consists of two parts, a stalk, called the petiole, and an expanded surface called the blade or lamina (when the petiole is absent, the leaf is said to be sessile). The under-surface generally differs from the upper in colour and structure, being usually paler and less glossy. Leaves are the breathing

became the mother of Castor and Pollux and of Helen of Troy; was frequently the subject of ancient art.

Lee, the side or quarter of a ship opposite to that from which the wind blows; or the sheltered side. The lee-shore is the shore under the lee of a vessel, the shore towards which the wind blows; and a lee-tide is one which runs in the same direction as the wind. Leeway is the deviation or loss from her course which a ship makes by drifting to leeward.

Lee, Nathaniel, English playwright. His tragedies include *Nero*, *The Rival Queens*, *Constantine the Great*. With Dryden, he adapted Sophocles' *Oedipus* and wrote *The Duke of Guise*. (1653-1692).

Lee, Robert Edward, American soldier and Confederate leader in the Civil War, born at Stratford, Virginia. Educated at West Point, he became captain of engineers in 1838; distinguished himself in the Mexican War, 1846; head of the U.S. Military Academy, 1852-1855. On the outbreak of the Civil War he was appointed General by the Confederate Congress of Virginia, 1861. Succeeding General Johnston in command of the army at Richmond, he won the Seven Days' Battle against McClellan; later fought, and on the whole successfully, some of the greatest battles of the war, including Antietam, Fredericksburg, Chancellorsville, Gettysburg and Spotsylvania; invaded Maryland and Pennsylvania, but was forced to surrender, with 28,000 men, to Grant at Appomattox, April 9, 1865. Forfeiting his estates after the war, he became President of Washington College (since called the Washington and Lee University), which post he held until his death. He was a man of devout religious faith, a high sense of duty, great courage and ability as a soldier. (1807-1870).

Lee, Sir Sidney, English writer and scholar, born in London. In 1883, he became assistant-editor of the *Dictionary of National Biography*, and editor in 1891. His *Life of William Shakespeare*, 1898, has become a standard work, and he edited an authoritative edition of Shakespeare's works in 1906. His remaining works include lives of Queen Victoria, Edward VII. and others. He was knighted in 1911, and from 1913 to 1924 was professor of English Literature at East London College. (1859-1926).

Leech, the common name of all the sucking, worm-like, aquatic annelids (q.v.) of the order Hirudinea. Some species in Egypt and the Near East can cause great distress and even death from hemorrhage to human beings and animals when they enter the larynx and nasal cavities with water. One species was formerly much used in medicine in England and on the Continent for bleeding patients when cupping was inadvisable. It is green in colour with yellow bands.

Leeds, city of England, on the Aire, 25 m. SW. of York, in the W. Riding of Yorkshire. The many fine buildings include the city hall (opened in 1933), royal exchange, corn exchange, art gallery and infirmary. The university, founded 1904, has a celebrated medical college. The pre-eminent industries are those connected with woollens and clothing; in addition, there are printing, coal-mining, engineering and leather industries. Pop. 483,000.

Lee-Enfield Rifle, a rifle, loaded by breech-bolt action, introduced in 1902, and, as improved five years later, adopted in the British Army. The magazine can hold ten cartridges, which are forced up by the action of a spring in the magazine.

Leek, market town of Staffordshire, England, 10 m. NE., of Stoke-on-Trent. Silk thread, ribbons, etc., are made. It has the remains of an abbey. Pop. 19,400.

Leek (*Allium porrum*), a biennial plant of the family Liliaceae; its long, cylindrical bulbs are eaten as a table vegetable. It contests with the daffodil the honour of being the national symbol of Wales, and is, often worn by Welshmen on St. David's Day, March 1.

Lee of Fareham, Arthur Hamilton Viscount, British politician. He entered Parliament in 1900, filled several minor offices, and became Minister of Agriculture, 1912-1921, and First Lord of the Admiralty, 1921-1922. He gave Choquers Court, Buckinghamshire, to the nation as a country residence for Prime Ministers, 1920. Created a baron in 1914, and Viscount in 1922. (1868-).

Leeuwarden, city of the Netherlands, capital of the province of Friesland; it produces musical instruments, goldsmiths' work and dairy products. Pop. 54,000.

Leeward Islands, a group of islands forming part of the Lesser Antilles, and constituting a British crown colony, now united with the Windward Is. under one Governor. They are in the Caribbean Sea, N. of the Windward Is., and comprise the five presidencies of Antigua (with Barbuda and Redonda), St. Christopher (with Anguilla and Nevis), Dominica, Montserrat and the Virgin Is. (with Sombroero). The capital is St. John, in Antigua. Products include sugar and molasses, cotton, limes, tomatoes, coconuts, tobacco and salt. Total area 727 sq. m. Pop. 138,000.

Le Fanu, Joseph Sheridan, Irish journalist and author; now principally remembered for his novel *Uncle Silas*, first published in 1864. (1814-1873).

Leg, the limb, or hinder limb, of an animal; strictly only that portion from the knee downwards, built around two bones, the tibia or shinbone and the fibula. The human leg has been considerably modified as a result of man's adoption of the erect posture in walking. Invertebrate animals frequently have numerous legs, insects generally having six and crustaceans eight or ten.

Legacy, in English law, a gift of personal property by will. A specific legacy is the gift of a particular identifiable thing, whereas a general legacy is a simple money gift. A "demonstrative" legacy is one which is partly specific and partly general, e.g., a sum of money left with reference to a particular fund for payment. The legatee's vested right to the gift is not complete without the assent of the executor.

Legacy Duty, a duty payable on all bequests of or successions to personal estate. It is payable by the beneficiary unless the will provides that the legacy shall be free of duty, in which case it comes out of the estate. The rates of duty are: husband and wife, lineal ascendants or descendants and their spouses, 1 per cent.; brothers and sisters of deceased or their descendants, 5 per cent.; other persons, 10 per cent. Duty is not payable where the net value of the estate does not exceed £1,000, or on specific legacies (other than in cash) under £20 in value.

Legal Practice. See Lawyer.

Legal Tender, the form of money, whether coin or notes, which a creditor must accept if offered in payment of debt. Bank of England notes, including £1 and 10s. currency notes, and gold, are legal tender up to any amount; silver is legal tender up to £2, and copper up to one shilling.

Legate, the title of the Pope's highest medieval times this office was attached to

certain bishoprics, such a bishop being styled *legatus natus*, and the title is still a prerogative of some sees. There was another and more important kind of legate, the *legatus missus* entrusted with a definite mission from the Pope; he could be either *legatus delegatus*, with restricted powers, or *legatus a latere*, in this case generally a cardinal, who had very wide authority. The functions of legates are generally performed to-day by the lesser representatives known as nuncios.

Legation, the official residence of a political envoy or ambassador to a foreign country; also the ambassador or envoy sent to any foreign Court on a mission, together with his staff. The name "legation" is now confined to the diplomatic representatives of the Papacy.

Leghorn (Ital., *Livorno*), Italian city in Tuscany, originally the seaport of Pisa, which it has outgrown; it has a shipbuilding industry and a naval academy, and is an important shipping centre. Pop. 125,000.

Legion, one of the main formations of the Roman Army, a body of some six thousand troops composed of both cavalry and infantry, which fought in a fixed formation. Each legion was commanded by a *legatus*, or lieutenant, and divided into ten cohorts. The legions were distributed over various parts of the Empire, three being usually stationed in Britain.

Legion of Honour, a French Order, instituted by Napoleon to provide distinctions for meritorious civil or military service. The President of the Republic is its head, and the members are divided into five classes, Grand Crosses, Grand Officers, Commanders, Officers and Chevaliers.

Legislation, the making or enacting of laws, more especially by representative assemblies. Legislation as now understood in England is a development of the 14th Century. Prior to the reign of Edward II., almost all changes in the law had been initiated by the King and the Council, or the Magnates, though the Commons had always had the right of petitioning the Crown for the removal of grievances, and it was this right which developed into a right to initiate legislation. Aided chiefly by their control over supply, the Commons exercised an ever-increasing influence on legislation during the later medieval period. The Crown can still legislate on various matters by means of Orders in Council, but this power is nowadays dependent upon its receiving authority from Parliament to do so in specific cases.

Legislature, a person or, more generally, body of persons invested with the power to make, amend or repeal the laws of a country or State and of raising and appropriating the national revenues. In democratic countries it usually consists of two Houses, one at least of them popularly elected, acting concurrently; and generally requires the assent of the Supreme Executive Authority to validate its Acts; in many countries, however, the veto of the latter may under prescribed conditions be overridden. In "totalitarian" States the legislature is superseded by, or dependent upon, the will of the dictator or national leader.

Legitimacy, the status of a child born in lawful wedlock. A child born out of lawful wedlock may, however, be legitimated in the eyes of the English law (under an Act of 1926), provided that both parents were free to be married at the time of the birth of the child, and the child then suffers no legal disabilities, except that it cannot succeed to or transmit any title or dignity. Such legitimization has long been recognised in Scots law.

Legitimists, a name given to the branch of the Bourbon dynasty in France, after the revolution of 1830, as opposed to the Orleanists, who supported the claims of Louis Philippe.

Leguminosae, a natural order of plants comprising the pulses (peas, beans, etc.), acacias, mimosa, clover, gorse and many other species. The food value of many of the species is largely due to a protein, known as legumin, found in the seeds, which grow in symmetrical pods.

Lehár, Franz, Hungarian composer, born at Komorn; became conductor at Vienna. His first serious opera *Juliuska* (afterwards called *Tatiana*), 1896, being unsuccessful, he turned to light opera, beginning with *Wiener Frauen* and *Der Bästebinder* in 1902. *Die lustige Witwe* (*The Merry Widow*), 1905, made him famous. Among his other operas are: *The Count of Luxembourg*, *Gipsy Love*, *Frasquita*, *The Land of Smiles*, *Giuditka*. (1870-).

Leibnitz (Leibniz), Gottfried Wilhelm, German mathematician and philosopher, born at Leipzig; studied at Leipzig university and in 1686, became doctor of law at Altdorf, and soon afterwards served the Elector of Mainz in a legal and diplomatic capacity; visited Paris and London on political work, and associated with the leading savants of the day; afterwards served the House of Brunswick, becoming librarian at Wolfenbüttel, 1690; life president of new Berlin Academy, 1700. Of his numerous scientific achievements, the most important is his discovery of the calculus. In philosophy he propounded the doctrine of substance and the system of "monadology," in which matter was conceived of as existing in the form of monads, or atoms, simple, self-active beings in mutual harmony, but each animated by an individual force emanating ultimately from God. The statement of these philosophical views is to be found in his *Theodicee* and *Monadologie*. (1646-1716).

Leicester, a county town of Leicestershire, England, on the Soar, 40 m. E. of Birmingham. Once an ancient Roman town on the Fosse Way, it has important Roman, and other remains, including a Roman forum, a basilica and bath, excavated in 1937. There are a number of ancient churches, including the cathedral of the diocese, as well as ruins of a Norman castle, and 12th-Century abbey. The University College was founded in 1921. The manufacture of hosiery, boots and shoes are the staple industries; woollens, cotton and lace, rubber goods, furniture, beer, ironware and bricks are also produced. Leicester became a city in 1919. In 1935, its boundaries were extended. Pop. 262,000.

Leicester, Robert Dudley, Earl of, fifth son of the Duke of Northumberland. Winning the Queen's notice about 1558, he received many offices and honours, and on the death in 1560, under suspicious circumstances, of his wife, Amy Robsart, aspired to the Queen's hand. In 1564 he was proposed as husband to Mary Queen of Scots, and in the same year was made Earl of Leicester. He married the dowager Lady Sheffield in 1573, and afterwards, bigamously, the Countess of Essex. After a short term of disfavour, he was appointed commander in the Netherlands, 1585, and subsequently at Tilbury, but proved an incapable soldier. (c. 1551-1588).



EARL OF
LEICESTER

Leicestershire, midland county of England, bounded by the of Nottingham, Lincoln, Rutland, Northampton, Warwick and Derby. An inland county watered by the Soar, it is under corn and pasture. Leicester cattle and sheep are noted, and there is an important dairy industry. Melton Mowbray being celebrated for its pies. There are coal and iron-mines, and granite, slate and limestone are obtained; hosiery-making is the chief industry. The chief towns are Leicester, the county town, Loughborough, Hinckley and Melton Mowbray. Area 824 sq. m. Pop. 542,000.

Leigh, market town of Lancashire, England, 7 m. SE. of Wigan. Coal is mined, and textiles, iron and brass are made. Pop. 45,000.

Leighton, **Frederick Leighton**, Baron, English artist, born at Scarborough; studied in the chief art-centres of the Continent; in 1855 exhibited at the Royal Academy "Cimabue's Madonna carried in Procession through Florence," which was followed by many well-known pictures, chiefly devoted to Greek classical themes, such as "Captive Andromache," "The Bath of Psyche," "Perseus and Andromeda" and "The Return of Persephone," which show the scholar as well as the artist. He became an R.A. in 1868 and president of the Royal Academy in 1878. In 1896 he was made a peer. (1830-1896).

Leighton Buzzard, urban district town of Bedfordshire, England, 7 m. NW. of Dunstable, on the Grand Junction canal. Straw-plaiting is carried on. Pop. 7,100.

Leinster, the SE. province of Eire (Ireland), including the counties of Carlow, Dublin, Kildare, Kilkenny, Leix, Longford, Louth, Meath, Offaly, Westmeath, Wexford and Wicklow. Area 7,600 sq. m. Pop. 1,219,500.

Leipzig, city of Germany, in the W. of Saxony, 70 m. NW. of Dresden. The old portion is narrow and quaint, with historic buildings; the new is well built with splendid edifices. It is the seat of the Supreme Court of the Republic, and boasts an old university, which has a magnificent library and well-equipped medical school, and one of the finest conservatories of music in Europe. Its chief trade is in books, furs, leather and cloth, and its chief industries include printing, bookbinding, type-founding and the manufacture of musical instruments, artificial flowers, tobacco, chemicals, etc. It was the birthplace of Leibnitz and Wagner, and is associated also with Bach and Mendelssohn. It is noted for its annual fairs, which attract visitors from all over the world. Napoleon was defeated by the Allies here in 1813, in the famous "Battle of the Nations." Pop. 713,000.

Leith, seaport of Scotland, on the Forth, contiguous to Edinburgh, with which it was incorporated in 1920, and whose port it is; has large docks and shipyards, and extensive stores for wine and whisky. Manufactures include sugar, soap, flour, sail-cloth, spirits, chemical manures and engineering products. Pop. 81,000.

Leitrim, county of Connaught, Eire (Ireland), on the Northern Ireland (Fermanagh) border, with a short coastline on Donegal Bay. Carrick-on-Shannon is the county town. Lough Allen divides it in two. Area 590 sq. m. Pop. 50,900.

Leix (formerly Queen's County), one of the inland counties of Leinster, Eire (Ireland), N. of Offaly (King's County). The Slieve Bloom Mountains are in the N. and the principal rivers are the Barrow and the Nore. Agriculture and dairy farming are the chief

activities. Port Laoighise (Maryborough) is the county town; others are Portarlington and Abbeyleix. Area 664 sq. m. Pop. 49,950.

Lely, **Sir Peter**, English painter, born in Westphalia. After studying in Holland, he settled in London in 1641, and soon devoted himself exclusively to portrait-painting, being patronised by Charles I. and Cromwell. Under Charles II. he reached the height of his career, being knighted (1679) and appointed painter to the King, whose courtiers and favourites comprised the majority of his sitters. His series of portraits of the Court ladies is at Hampton Court Palace. (1618-1680).

Leman, **Lake**, another name for the Lake of Geneva (g.v.).

Lemberg, alternative name for the town of Poland also known as Lwów (g.v.).

Lemming, a rodent of the family Muridae; indigenous to Scandinavia, but found in most Continents. It is about 6 in. in length, blackish-brown in colour, with fawn on the back. The lemmings are remarkable for migrating in great numbers at the approach of winter; it is said that large numbers of them rush at times into the sea to drown.

Lemnos, an island in the Egean Sea, 30 m. SW. of the Dardanelles. Rich in Greek classical associations, it was especially famous for its medicinal earth, formerly widely exported as an antidote to poisons. Kastro, on the W. coast, is the principal town. Grain, wine, fruit and tobacco are produced. Annexed by the Turks in 1657, it was restored to Greece after the World War. Pop. 4,000.

Lemon, the popular name of the *Limonum* variety of the Citron tree (*Citrus medica*), of the natural order Rutaceae; also of its fruit, which resembles that of the citron, but is longer, less knobbed at the extremity, and has a thinner skin. Lemons are largely grown in Southern Europe, Palestine and the West Indies.

Lemon Sole, a flat fish (*Pleuronectes microcephalus*) allied to the common sole, but smooth-skinned and of an orange hue, marked with brownish spots. It is edible, but its flesh is inferior in quality to that of the sole proper.

Lemur, the common name of the

nocturnal forest-dwelling mammals of the sub-family Lemurinae, of the family Lemnuriidae, and sub-order Lemuroidea of Primates, this being regarded as the lowest sub-order. They are characterised by long snouts, a small, flat skull, giving them a fox-like appearance, long, narrow bodies, fore- and hind-limbs of equal length and opposable thumbs. Their chief habitat is Madagascar. The related sub-families in the same group include the Loris and the Aye-aye.

Lena, river of Siberia, rising near Lake Baikal and flowing past Yakutsk after a course of 2,875 m. into the Arctic Ocean.

Lenglen, **Suzanne**, French lawn-tennis player, born at Compiègne. Instructed by her father, she became champion of Picardy at the age of 14, and in 1914 won the hard-court singles and doubles. On her debut at Wimbledon in 1919 she won the English ladies' singles championship and also the ladies' doubles, retaining the former until 1923 and regaining it in 1925, after a



SMITH'S DWARF
LEMUR

period of illness. In 1927 she became a professional, but retired next year. She was Olympic champion in 1921. (1899-1938).

Lenin, N., the pseudonym of Vladimir Ilyich Ulianov, Soviet Russian political leader, born at Simbirsk (now called Ulianovsk in his honour). As a law student at Kazan he joined the revolutionaries with his brother, who was executed in 1891 for an attempt on the Czar's life, while Vladimir was temporarily banished. In 1894 as "N. Lenin" he engaged in Marxist propaganda in St. Petersburg, for which in 1896 he was imprisoned and sent for 3 years to Siberia, where he wrote his important *Development of Capitalism in Russia*. After his release, he lived for a time in London, returning to Russia to take part in the 1905 revolution. From 1907 he was not in Russia again till 1917, when he helped to overthrow the provisional government of Kerensky. As president of the Soviet (council) of People's Commissaries, he established the Soviet régime, though inclining towards the end of his life to "the new economic policy," which departed from communism in some measure to allow capitalism to function under rigid control. His tomb in the Red Square, Moscow, has become a place of pilgrimage for his followers from all over the globe; Petrograd was re-named Leningrad in his honour. (1870-1924).

Leninakan (formerly Alexandropol), the largest town in the Erivan district of Russian Armenia, with trade in silk. Pop. 65,800.

Leningrad, city of Russia, at the head of the Gulf of Finland, on the banks and delta of the Neva. A large number of bridges span the main stream and its numerous divisions; massive stone quays hold back the waters, but a rise of 12 ft. floods the city, an annual occurrence in the older parts. The river is icebound for half the year, but the short summer is very hot. Its public buildings, cathedrals, churches and monuments are magnificent, while the Nevski Prospekt (now Prospekt of 25th October) is one of the finest streets in Europe. One of the centres of Russian culture, Leningrad has a university and numerous libraries, museums and scientific institutions, as well as theatres and art galleries. The Winter Palace was the magnificent former residence of the Czsars, while there are other large palaces at the nearby Peterhof, Gatchina and Oranienbaum. As Petersburg, the city was founded by Peter the Great in 1703, as a "window upon Europe"; until 1918 it was the capital of Russia. During the World War its name was altered to Petrograd, and after the Revolution to Leningrad. It has been considerably extended and modernised under the Soviet rule. Connected with the Volga basin by a canal, it is a railway centre and Russia's chief port, with a huge foreign trade. Pop. 2,776,000.

Lennox, an ancient district of Scotland which included the sheriffdom of Dumbarton and part of Stirlingshire, Perth and Renfrew. It gave its name to an earldom of the Stuart family, several holders of which have figured prominently in Scottish history from the 13th Century; it was elevated into a dukedom in 1581. The dukedom of Richmond and Lennox was created in 1675 for the illegitimate son of Charles II. by the Duchess of Portsmouth.

Lennox Hills, a Scottish range in the Dumbarton border, of which the Campsie Fells are a part; Earl's Seat, the highest, is almost 1,800 ft. in height.

Leno, Dan, British comedian, born at George Galvin. Trained as an acrobat and contortionist, he travelled the country as a dancer, being the world's champion clog-

ger, in 1880; first appeared as "Dan" in London, 1883, at the Oxford Theatre; 1891 appeared in *The Babes in the Wood* in pantomime at Drury Lane, and thereafter played annually in pantomime at that theatre, being the most popular comedian of his time. (1861-1904).

Lens, a spherical piece of glass (or more refracting rays of light passing through it, and so magnifying or diminishing the apparent size of an object. Lenses are made in a variety of shapes, according to the functions they have to perform. Double convex or double concave lenses are those in which both surfaces are convex or concave respectively, while plano-convex and plano-concave lenses have one surface convex or concave, as the case may be, and the other plane or flat; there are also concavo-convex lenses. The point where the previously parallel rays of light converge, after being refracted by a lens, is called the focus, the distance of which from the centre of the lens is the "focal length."



LENSES:
convex (left)
and concave

Lens, town of France, in the Dept. of Pas-de-Calais, 13 m. NNE. of Arras. The centre of an important coal-mining area, it is an industrial town, with steel, engineering and other works, and is a railway junction. It has been a strategic point in several wars; the Prince of Condé defeated the Spaniards here in 1648, and, occupied by the Germans almost throughout the World War, it was a scene of intense fighting and suffered extensive damage. Pop. 30,000.

Lent, a period of fasting previous to Easter; at first lasting only forty hours, but gradually extended to three, four or six days, different churches eventually prolonging it to three and six weeks. In the early 7th Century Pope Gregory the Great fixed it for the Western Church at forty days from Ash Wednesday to Easter Sunday, excluding Sundays; in the Eastern Church it begins on the Monday after Quinquagesima, and excludes both Saturdays and Sundays. In the Anglican Church the season is marked by special services, but the fast is not rigidly kept.

Lenthall, William, Speaker of the House of Commons, born at Henley-on-Thames. Called to the Bar in 1616, he entered the Short Parliament, 1640, and in the same year became Speaker of the Long Parliament. His behaviour when Charles I. ordered him to reveal the whereabouts of the five members he had come to arrest is celebrated. He became master of the Rolls, in 1643, was again Speaker in 1654, and Lord Keeper in 1659. Though he had helped to bring about the Restoration, he was dismissed from office on the accession of Charles II. (1591-1663).

Lentil (*Lens esculenta*, or *Ervum lens*), a small branching plant, resembling the vetch, with pale blue flowers in twos and threes, and short legumes with two or four seeds. It is cultivated in France and Germany for the sake of the seeds which are used as a food-stuff, and frequently in preparing soup.

Leo, the fifth sign of the zodiac, which the sun enters about July 22. The constellation of Leo contains the two bright stars Regulus and Deneb, of first and second magnitude respectively. The meteoric shower known as Leonids emanates from a point in Leo, and is observed annually, about Nov. 13.

Leo, the name of six emperors of the E. of which the chief was Leo III., Emperor of the East, surnamed the Isaurian, born in Isauria; a capable general, he was raised to the throne by the army in 717,

defeated on sea and killed the Saracens who threatened Constantinople, and introduced liberal measures in taxation and the status of slaves, he headed the iconoclast movement, which provoked the opposition of the people and the hostility of the and clergy, and led to the secession of the province of Ravenna from the Greek empire. (c. 680-740).

Leo, the name of many popes, the chief of which were L. I., Saint surnamed the Great. He was distinguished for his zeal against heretics, presided at two councils, and persuaded Attila to retire from Rome on his invasion of Italy (452), as he persuaded Genseric in 455 to moderate the outrages of his troops. He formulated several leading doctrines of the Church. (d. 461). L. III., proclaimed Charlemagne emperor of the West in 800. Driven in 799 from the papal chair by a conspiracy, he was reinstated by Charlemagne, who next year visited the city and was crowned emperor by the pope. (d. 816).

L. IX., otherwise Bruno. Held the Easter synod of 1049 at which collation of the clergy was re-enjoined. He was pope from 1049 to 1059.

L. X., Giovanni de' Medici, son of Lorenzo the Magnificent, a patron of art, science and letters. It was his issue of indulgences to raise funds for the rebuilding of St. Peter's that aroused the indignation of Luther and provoked the Reformation. (1471-1521). L. XIII., born at Carpineto; graduated as doctor of theology, and in 1537 became a priest; as delegate of Perugia, 1546, introduced many reforms; later he became a bishop and nuncio to France, archbishop, 1546, and cardinal, 1553. Elected pope in 1573, he displayed enlightened views on the trend of modern thought, but refused to compromise where Church interests were affected. He encouraged the study of Church history and threw open the Vatican archives and library to students. (1510-1593).

Leominster, borough of Herefordshire, England, 12 m. N. of Hereford. An ancient town, once a centre of the wool trade, it now trades in hops and cider. Pop. 5,700.

Leon, a province and former kingdom of NW. Spain, with the Cantabrian mountains to the N. and W., and the plain of Castile to the S. and E. It is mainly devoted to agriculture and sheep-rearing. Area 5,935 sq. m. Pop. 454,300.

Leon, town of Spain, the capital of the province of Leon, situated on a mountain slope, 174 m. NW. of Madrid, at the confluence of the Torio and Bernesga. It has a beautiful 13th-Century cathedral, and an 11th-Century collegiate church. The town has been of historical importance from Roman days; belonging in turn to Goths and Moors, it became the capital of the Christian kingdom of Leon in the early 10th Century. Pop. 22,000.

Leon, city and former capital of Nicaragua, S. America; there are textile manufactures, and a university. Pop. 60,000.

Leonardo da Vinci, Italian artist and savant, born at Vinci in the Val d'Arno; showed early a wonderful aptitude for art; studied under Andrea del Verrocchio, 1470-1477, and then worked as a master for Lorenzo the Magnificent, the first of several distinguished patrons. His pictures are few, but of the sublimest quality; they include "The Virgin of the Rocks," "The Battle of the Standard" (now lost), "The Virgin with St. Anne" and the immortal "Mona Lisa." His masterpiece was the famous tempera painting of the "Last Supper" on the wall of a convent refectory at Milan (1494-1498), which, though much damaged by damp and neglect, remains one of the artistic wonders of the world. By

common consent, Leonardo was animated by one of the greatest intellects of all time and was a man of universal genius. Poet, musician, scientist, engineer, philosopher and mystic, he epitomises in a single individual the spirit and achievements of the entire Renaissance. His *Treatise on Painting* has been widely translated. He also wrote papers on the structure of the eye, hydraulics and the classification of plants, and invented a flying-machine, as well as the camera obscura. (1452-1519).

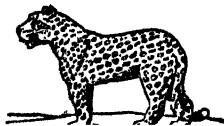
Leoncavallo, *Ruggero*, Italian operatic Naples, After studying at the Naples conservatoire, he became a professional musician and led a wandering life. His opera *Pagliacci* (1892) swiftly brought him popularity, which, however, was not fully sustained by his later works, of which *Zaza* (1900) and *La Bohème* were the most successful. (1858-1919).

Leonidas, King of Sparta, succeeded to the throne about 489 B.C. During the Persian invasion of Greece by Xerxes, Leonidas, with 300 Spartans and 1,100 other troops, was entrusted with the defence of the Pass of Thermopylae, where, apart from a contingent which surrendered, they fell fighting to the last man.

Leonids. See Leo.

Leopard (*Felis pardus*), an animal of the cat family (Felidae), found in

Africa, Ceylon, the East Indies and Borneo. Its colour is tawny to red-buff, thickly spotted with black rosette-shaped spots, which unite to form bands on the hindquarters and legs. Its length may be as much as 4 ft. It is fierce and bloodthirsty, often killing far more than it can devour, and has been known to eat human flesh.



LEOPARD

Leopold I., King of the Belgians, son of the Duke of Saxe-Coburg-Saalfeld; in his youth, served in the Russian army; visited England in 1815, and in 1816 married Princess Charlotte, who died next year. He declined the throne of Greece in 1830, but became King of the Belgians in 1831, and proved a wise, firm, constitutional sovereign. In 1832 he married the princess Louise, daughter of Louis Philippe of France. (1790-1865).

Leopold II., King of the Belgians, born in Brussels, son and successor of Leopold I.; he travelled much in Europe, N. Africa and the East. In 1885 he founded the Congo Free State as his personal property, out of which he made a fortune in a questionable manner, his cruel and arbitrary treatment of the natives, which was notorious, leading to the annexation of the territory by the Belgian State in 1908 after an inquiry. He married in 1863 the Archduchess Marie of Austria, but his private life was the subject of much scandal. (1835-1909).

Leopold III., King of the Belgians, the son of King Albert; educated at Eton College and the university of Ghent, and entered the Belgian army; in 1926 married Princess Astrid of Sweden, who was killed in a motor accident in 1935; succeeded his father in Feb. 1934. (1901-).

Leopoldville, capital of the Belgian Congo, on the Congo, S. of Stanley Pool. It is connected by railway and oil pipe-line with Matadi, and is an important centre for Congo steamer services. Pop. (white) c. 2,000.

Lepanto, or *Spakto*, small port of Greece, N. of the Gulf of Corinth, once an important town. Near it

from the East to visit the infant Jesus (Matt. II) are known as the Three Magi. Traditionally their names were Gaspar, who brought frankincense, the emblem of divinity; Melchior, who brought gold, the emblem of royalty; and Balthasar, a negro, who brought myrrh, the emblem of mortality. Their bodies are alleged to have been translated in the Middle Ages to Cologne, where their bones are still shown in the Cathedral.

Magic, the supposed art of influencing the course of nature or future events by occult means; the word is derived from the "Magi" (q.v.) who were believed to be skilled in enchantment. Magic, extensively practised by primitive man, is one of the main sources from which has grown religion on the one hand and natural science on the other. It has been practised in one form or another in every age and country; and has frequently been developed into an elaborate system. "Black" magic is that directed to the production of harmful or undesirable effects, or which involves supposed communication with evil spirits. "White" magic is either beneficent or neutral, and includes such widely different practices as astrology and conjuring.

Magic Lantern, a device for casting diagrams from an illuminated slide on to a screen, for entertainment or instruction. The lantern has a concave mirror to increase the intensity of the light (generally an incandescent lamp or an arc), a condensing lens which distributes the light over the slide, and a projection lens to focus the image on the slide. The slide is a transparent positive of the required picture printed from a glass negative on to a glass plate.

Magistrate, one in whom is vested authority in affairs of civil government; in other words, an administrator of the law. In this sense the King is the first magistrate in a monarchical state, while in a republic the President is the chief magistrate. The word is now more usually applied to subordinate officers to whom a part of executive judicial power is delegated; in England it means, specifically, a minor judicial officer, such as a justice of the peace, a stipendiary, or a police magistrate; in Scotland a provost or bailie of a burgh. Prior to the Local Government Act, 1888, the administrative work of the counties fell to the lot of the justices or magistrates, but that Act, while leaving them their judicial functions, took away the bulk of their administrative functions. (See also Justice of the Peace).

Magna Carta, "the great charter," John by the barons of England at Runnymede on June 15, 1215, that guaranteed various rights and privileges to the subjects of the realm, and established the supremacy of the law over the will of the monarch; it has ever since been looked upon as the foundation-stone of English political liberties.

Magna Græcia (Great Greece), name given in classical times to the southern part of Italy, which had been extensively colonised by the Greeks.

Magnalium, a light, easily-worked alloy of aluminium (about 95 per cent.) and magnesium (about 5 per cent.). It is used in the construction of aircraft, internal combustion engines, etc.

Magnesia, the old-fashioned name for a compounds. Thus calcined magnesia is magnesium oxide, MgO ; *magnesia alba levis* is a white powder precipitated on addition of sodium carbonate to a cold solution of magnesium sulphate; *magnesia alba powderosa* is a somewhat similar compound obtained by adding sodium carbonate solution to a boiling concentrated solution of magnesium sulphate.

U.E.

Fluid magnesia is a solution of magnesium carbonate. Calcined magnesia is used as a refractory lining for electric furnaces; the other varieties find application in medicine for the relief of minor ailments of the alimentary canal.

Magnesium, a metallic chemical element, related to beryllium, calcium and zinc. Symbol Mg ; atomic number 12; atomic weight 24.32. Being chemically very active, it is not found free in nature. It is, however, widely distributed in the form of its compounds, e.g., dolomite (a double carbonate of magnesium aluminate), magnesite, spinel (magnesium silicate), and asbestos or calcium magnesium silicate. It is also one of the constituent elements of the green colouring matter (chlorophyll) of plants, and is therefore essential to plant life. It is a silvery-white metal which burns with an intensely brilliant white light and is therefore used in fireworks, star-shells, flashlights, etc. It is also an ingredient of many alloys, e.g., magnalium (q.v.).

Magnesium Sulphate, *Epsom salt*.

Magnetic Induction, a magnetic power of producing magnetism in pieces of iron or steel near it.

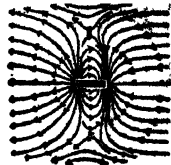
Magnetic Poles, (of the earth), two points on the earth's surface, where the dip of the needle is 90° . They are at a considerable distance from the geographical poles, and their positions are not constant.

Magnetism, Magnets have been known since classical times, and owe their name to the

fact that lumps of natural magnet-stone (lodestone, i.e., "way-stone" or "guiding-stone,"—chemically, magnetite) were found in the earth near Magnes (the modern Manissa, near Smyrna). The use of lodestone in compasses was quickly superseded when it was discovered that a steel needle could itself be magnetized by rubbing it (always in the same direction) with a fragment of lodestone, and in the 12th Century Alexander Neckham describes the pivoted needle that was carried on ships to show sailors their course. The modern science of magnetism began with William Gilbert, who, in 1600, published his celebrated treatise *On the Magnet and on that Great Magnet the Earth*.

It is a peculiar fact, hitherto unexplained, that the earth behaves as though it were a huge magnet, with poles near (but not at) the N. and S. geographical poles. Upon this behaviour, the use of the magnetic compass depends, the N.-seeking pole of the compass needle pointing towards the N. magnetic pole of the Earth, and the S.-seeking towards the S. Every magnet is surrounded by a region in which its influence may be experienced, and this is known as its magnetic field. A magnetic field may be mapped by sprinkling iron filings in the field and observing their subsequent conformation.

If a coil of insulated wire is wound round a piece of soft iron and a direct current of electricity is passed through the coil, the iron is found to be a magnet as long as the current is passing, but loses its magnetism as soon as the circuit is broken; this property is made use of in various instruments, e.g., the electric bell. A similar coil of wire, without the iron, and free to rotate in a horizontal plane, is found to behave like a compass needle when the current is flowing; it is, in fact, a magnet. If the coil forms a closed circuit, without a



MAGNET
(showing
field of force)

supply of electricity, & momentary current is induced in it if a magnet is suddenly pushed into it. This fact, discovered by Faraday, is the principle of the dynamo or generator.

Magneto, an apparatus for generating high-voltage alternating electric currents to produce ignition in an internal combustion engine. It is used in aeroplanes, tractors, motor boats, etc., but has generally been superseded in motor cars by a coil and battery circuit.

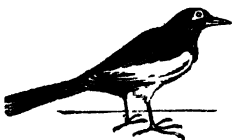
Magnificat, The, the hymn of the Virgin Mary (Luke i. 46-55); used as part of the evening service in both the Anglican and Roman Catholic Churches, and often sung to elaborate musical settings.

Magnitude, in astronomy the measure of a star's brightness. Ptolemy, in cataloguing the stars, assigned the fifteen brightest known to him to the first magnitude, and those just visible to the naked eye to the sixth. On the modern scale those of the first magnitude are $2\frac{1}{2}$ times as bright as those of the second, those of the second $2\frac{1}{2}$ times as bright as the third, and so on. Some have a fractional or even negative magnitude, e.g., that of the sun is minus twenty-six; the absolute magnitude is the intrinsic brightness, making allowance for the star's distance.

Magnolia, the typical genus of the natural order Magnoliaceae, comprising 21 species of trees and shrubs native to China, Japan and North America. They bear large flowers and foliage, on account of which they are cultivated in England. Some hybrid varieties have been developed.

Magpie (*Pica pica*),

a familiar bird of the crow (Corvidae) family, common in the British Isles. It is about 18 in. long, has a long glossy tail, greenish-black plumage and black and white wings and underparts.



MAGPIE

Magyars, the dominant race in Hungary, a people of Finno-Ugrian stock who appear to have migrated from the plains of Central Asia.

Mahabharata, one of the two great India, a work of slow growth, with no single author. It relates the story of a war between two peoples in Northern India, in the early days of the Aryan settlement, and consists of upwards of 100,000 verses.

Mahaffy, Sir John Pentland, Irish scholar, born in Switzerland. He was educated in Germany and in 1856 entered Trinity College, Dublin, where he became a fellow in 1864. In 1871 he became Professor of Ancient History and was knighted in 1918. His published works include *Greece from Homer to Menander*, *History of Classical Greek Literature*, and *Alexander's Empire*. (1839-1919).

Mahanadi, a great Indian river which, after flowing eastward for over 500 m., the last 300 of which are navigable, falls into the Bay of Bengal near Cape Palmyras. Its volume in flood is enormous, and renders it invaluable for irrigation.

Mahatma, literally "great soul." In Theosophists, a dian name, used also by the teacher; in recent times it has frequently been applied to Gandhi.

Mahdi, a religious teacher and revivalist, equivalent in many ways to the Jewish Messiah, whom certain Mohammedan sects expect to arise in a future age and lead

them against the infidel world. The name was applied particularly to Mohammed Ahmed, a fanatic born in Dongola about 1843 who claimed the title, and at the head of an army of dervishes raised his standard in the Sudan. He was unsuccessfully opposed by the Egyptians, and Khartoum, occupied by them, fell into his hands, General Gordon being slain just as the British relief army under Lord Wolseley approached its walls in 1885, a few months after which Ahmed died at Omdurman.

Mah Jongg, a Chinese game played with 144 domino-like pieces, or tiles, usually by four players. The pieces are arranged in six suits, and counters are used. The game had an era of popularity in America and Europe in the nineteen-twenties.

Mahler, Gustav, Austrian musical composer of Jewish antecedents, born at Kalischt. He conducted from 1880 in various parts of Europe, and in 1897 became director of the Court Opera at Vienna. Visited England and conducted German opera at Drury Lane, 1892. He composed several symphonies, and the famous *Lied von der Erde*. (1860-1911).

Mahmud II, Sultan of Turkey; came to the throne in 1809; crushed a rebellion on his accession by putting to death his brother, on whose behalf the Janissaries had risen; introduced various military and administrative reforms; by his defeat at Navarino in 1827 he lost Greece, which declared its independence, and at his death was in conflict with Mehemet Ali, Governor of Egypt. (1785-1839).

Mahmud of Ghazni, Sultan of Afghanistan from 999, who, after deposing his brother Ismail, founded a powerful Afghan state from which he made repeated raids into India. (d. 1030).

Mahogany, a name applied to a number of timbers of various botanical origins. The true mahogany is the wood of *Swietenia Mahagoni*, a tree indigenous to tropical America. The colour varies from yellow to a rich red brown; it is very hard and fine-grained and can be highly polished; hence its great popularity for furniture. Other varieties include the *Swietenia macrophylla* of British Honduras, and "Spanish" mahogany, grown in the West Indies. The *Khaya senegalensis*, or African mahogany, grows in Nigeria and Uganda.

Mahomet. See **Mohammed**.

Mahony, Francis, Irish author, born in Cork, a priest, who became known by his *nom de plume* of Father Prout; contributed to *Fraser's Magazine*, and was foreign correspondent to the *Daily News* and the *Globe*; his poem *The Bells of Shandon* is well-known. (1804-1866).

Mahrattas, Hindu race in Central India, which in the 18th Century secured power over a large part of that country, but came into conflict with the British, and were finally subdued in 1843. Their successors still rule in Gwalior, Indore, and Baroda.

Maia, in Greek mythology, the daughter of Atlas, the eldest of the seven Pleiades (q.v.), and the mother by Zeus of Hermes.

Maiden, The, an instrument of execution, resembling the guillotine, that appears to have been in use in Scotland during the 15th and 16th Centuries; one is preserved in the Antiquarian Museum, Edinburgh.

Maiden Castle, a prehistoric hill-top earthwork in Dorsetshire, England, near Dorchester. It was inhabited from neolithic times and was finally captured and destroyed by the Romans.

Maidenhair Fern, the common name of the ferns of the genus *Adiantum* of the order Polypodiaceae, comprising 190 species of world-wide distribution but especially abundant in tropical America, *Adiantum Capillus-veneris*, a small, delicate European fern with many spreading capillary branches, used for ornament, is occasionally found in Britain.



MAIDENHAIR-FERN

Maidenhead, market town of Berkshire, shire, on the right bank of the Thames, 25 m. W. of London. It is a popular river resort, famous for the beautiful woods in the neighbourhood; regattas are held annually. Pop. 24,000.

Maid of Norway, daughter of Eric way, and through her mother heiress to the Scottish crown; died on her passage to Scotland in 1240.

Maid of Orleans, Joan of Arc, so called from her defence of Orleans against the English. See *Joan of Arc*.

Maidstone, county town of Kent, on the Medway, 30 m. S.E. of London; has several fine old churches and historical buildings, a grammar school and a school of art and music, numerous paper-mills and breweries, and does a large trade in hops. Pop. 47,000.

Maimonides, Moses, Spanish-Jewish born at Cordova; was a man of immense learning, and physician to the Sultan of Egypt; codified the principles of the Jewish faith, and drew up the "thirteen principles" which became its recognised summary; his best-known work is *Moreh Nebuchim*, or *The Guide of the Perplexed*. (1135-1204).

Main, the largest of the right-bank tributaries of the river Rhine, Germany, 310 m. in length and navigable for about 200 m.; it flows by Würzburg and Frankfurt to meet the Rhine at Mainz.

Maine, the most N.E. State in the American Union, lies between Quebec and New Hampshire on the W. and New Brunswick and the Atlantic on the E., and is a little larger than Ireland; a picturesque State, with high mountains in the W. (Katahdin 5,000 ft.), many large lakes, including Moosehead, numerous rivers, and a much indented rocky coast. The climate is severe but healthy, the soil only in some places fertile. The rainfall is abundant; hunting and shooting are good. Dense forests cover the N.; potatoes, oats, hay and apples are the chief crops. The principal industries are the making of paper, boots and shoes, and textiles; the fisheries are valuable; timber, building stone, cattle, wool, and ice are exported. Early Dutch, English and French settlements were unsuccessful till 1630. From 1651 Maine was part of Massachusetts, till made a separate State in 1820. The population is English-Puritan and French-Canadian in origin. The capital is Augusta; Portland is the largest city and chief seaport; Lewiston has cotton manufactures. Area, 32,560 sq. m. Pop. 707,000.

Maine, former French province, S. of Normandy, its chief town being Le Mans. It was captured by William the Conqueror from the French King in 1078; Henry II. inherited it from his mother, Matilda, wife of Geoffrey of Anjou. In 1446 the English ceded the province to René, Count of Anjou, and in 1481 it was annexed to France. It is now represented by the depts. of Sarthe and Mayenne.

Maine, Sir Henry, English jurist, legal member of the Council in India, and Professor of Jurisprudence at Oxford; wrote on *Ancient Law*, and important works on ancient institutions generally. His *Ancient Law* is chiefly notable for its brilliant identification of modern with ancient institutions through the (then) new method of evolution and it was really this work which earned for him his knighthood. (1822-1888).

Maine-et-Loire, dept. of N.W. France, watered by the rivers Loire and Maine; mainly agricultural, producing cereals, fruits, flax and hemp, with textile manufactures. Capital, Angers. Area, 2,810 sq. m. Pop. 477,700.

Maintenance, Cap. of, an ermine-lined, crimson velvet cap used in the Coronation ceremony of British monarchs.

Maintenon, Françoise d'Aubigné, Marquise de, born in the prison of Niort, where her father was incarcerated as a Protestant; became a Catholic, married the poet Scarron in 1652, but was widowed in 1660; was entrusted with the education of the children of Louis XIV. and was secretly married to him in 1684. She exercised a great influence over him, and on his death in 1715 retired into the Convent of St. Cyr, which she had herself founded. (1635-1719).

Mainz, or *Mayence*, in Hesse, on the Rhine, opposite the mouth of the Main, one of the oldest cities in Germany, and the centre from which Christianity spread over that country; it has a magnificent cathedral, restored in 1878; a large transit trade is done, and the making of furniture, leather goods, and machinery are important industries; Gutenberg (q.v.) was a native. Pop. 143,000.

Maistre, Joseph, Comte de, French ambassador at St. Petersburg from 1803 to 1817; wrote numerous works, especially in defence of Catholicism, the chief *Du Pape* and *Soirées de St. Petersburg*. (1754-1821).

Maitland, Frederic William, English legal historian, born in London; educated at Eton, and Trinity College, Cambridge; Reader of English Law, Cambridge, 1884; Downing Professor, 1888; founded, 1887, the Selden Society, for the study of the history of English law; edited many of its publications, and threw a new light on many ancient legal institutions, by applying the evolutionary principle. (1850-1906).

Maize, a cereal grass, *Zea Mays*, also called mealies and Indian corn; in America it is called simply corn. It appears to have originated from Mexico but is now extensively cultivated in other tropical and sub-tropical parts of the world. There are wide variations in the colour and shape of the grain of different varieties, the colour ranging from yellow to white and the shape from spherical to almost flat. The type chiefly grown in Kenya and other E. African territories and in S. Rhodesia is a flat white "dent" maize. The seeds and stems yield respectively animal food and ensilage. The hulled corn for human consumption is known as *frumentum*. Dextrine, glucose, maltose and dextrose are other products from the plant.



MAIZE

Majolica, a kind of enameled pottery from Majorca, known also as *faience* from its manufacture at Faenza, and applied also to vessels made of coloured clay in imitation.

Major, a commissioned army officer ranking next above captain and below lieutenant-colonel; in rank he is the lowest of the field officers. In the British infantry one major is second-in-command of the regiment while two hold company commands. His badge is a crown.

Majorca, the largest of the Balearic Is., in Spain, is 130 m. N.E. of Cape San Antonio; in the N. rise to 5,000 ft., their slopes covered with olives, oranges, and vines; the plains are extremely fertile, and the climate mild and equable; manufactures of cotton, silk, and shoes are the industries; the capital, Palma, is on the S. coast, at the head of a large bay of the same name. The island was a stronghold of the insurgents during the Spanish Civil War which broke out in 1936. Pop. c. 940,000.

Major-General, in the British army, an officer next below a lieutenant-general in rank; holds a divisional command and his badge is a crossed sword and baton surmounted by a star.

Majuba Hill, a spur of the Drakensberg in Natal, famous as the scene of a defeat of a small British force under Sir G. Colley in a night attack in the first Anglo-Boer War, 1881.

Malabar, district of India, in the W. of Madras, sloping from the Ghats down to the Indian Ocean, and extending along the coast for 145 m.; very rainy; covered with vast forests of teak; produces rice, coffee, and pepper. Calicut is the chief town. Pop. c. 2,500,000.

Malacca, one of the British Straits Settlements in the S. of the Malay Peninsula, a Portuguese possession from 1511 until 1641, when the Dutch captured it, being driven out by the British in 1795; restored to the Dutch in 1818, it finally became British in 1824. Rice, tapioca, rubber, and fruit are produced, and tin mined. Area, 640 sq. m. Pop. 212,000. The capital of the same name, about 100 m. NW. of Singapore, has a pop. of 38,000.

Malachi, the last of the "Twelve Minor Prophets" of the Old Testament, a book of unknown authorship, the name meaning "My Messenger." It is an appeal for greater sincerity in devotion to Jehovah, and was written after the Temple had been rebuilt.

Malachite, a copper ore, found chiefly in Russia, in the Ural mountains in Russia, consisting chemically of the basic carbonate of copper. Good specimens are used for decorative jewellery, etc., since the substance is of a fine green colour and can easily be cut and polished.

Malachy, St., archbishop of Armagh in the 12th Century; full name Malachy O'Morgair; was a friend of St. Bernard, who wrote his life and in whose arms he died at Clairvaux; a famous series of prophecies relating to future popes goes by his name, but is a forgery. (1094-1148).

Malaga, Spanish seaport, 65 m. N.E. of Gibraltar, an ancient Phœnician town; it exports olive-oil, wine, raisins, lead, etc., and manufactures cotton, linen, machinery, pottery, etc.; its magnificent climate makes it an excellent health resort. Pop. 264,000.

Malaria, a morbid condition, also known as marsh or jungle fever, common in tropical swampy regions, such as the Gold Coast, Honduras and Ceylon, but also well known in Palestine, Italy and parts of America, and carried by certain mosquitoes—particularly *Anopheles*—and gnats. It affects the system through the blood often as long as 12 months after the subject has been exposed to it, and may exert its influence throughout life. It inducesague, intermittent fevers and some kinds of yellow fever, while certain forms are characterised by particular

kinds of periodicity. Preventive measures include the installation of tanks with fish to devour the larvae of the mosquito, the reclamation of swampy land, and so forth. The sole known effective remedy for the disease is quinine. As a prophylactic, doses up to 3 or 4 grains are taken regularly by persons living in regions, such as Ceylon, where malaria is endemic.

Malaya, or British Malaya, the southern portion of the Malay Peninsula, comprising (1) the colony of the Straits Settlements, viz., Singapore, Penang, Malacca, Labuan, Wellesley Province, Christmas and Cocos Islands; (2) the Federated Malay States, viz., Perak, Selangor, Negri Sembilan and Pahang; (3) the Unfederated Malay States, viz., Johore, Kedah, Perlis, Kelantan, and Trengganu. The total area is about 51,000 sq. m. Trading is chiefly in the hands of Chinese. Crops include rubber, coconuts, areca nuts, coffee, tea, spices and tobacco, and the minerals gold, tin, coal, tungsten ore, iron ore, and phosphates. Pop. c. 4,800,000.

Malay Archipelago, the group of hundreds of islands stretching from the Malay Peninsula S.E. to Australia between the North Pacific and the Indian Ocean, of which Borneo, Sumatra, Java, and Celebes are the largest. They are divided between Great Britain and the Netherlands.

Malay Peninsula, the easternmost peninsula of S. Asia, comprising British Malaya and the portion of Siam immediately to the N. as far as the Kra Isthmus. The total length is about 700 m. The chief products are rubber, rice, tea and tin.

Malays, the native inhabitants of the Malay Peninsula, and the neighbouring islands, a mixed people of Mongolian, Negro and Australoid elements. They are of a dark-brown or tawny complexion, short of stature, having flat faces, black coarse hair, and high cheek-bones; the more civilised of them are Mohammedans.

Malcolm Canmore, Scottish king, son of Duncan whom Macbeth slew, succeeded his father in 1040 as King of Cumbria and Lothian, and in 1057, on Macbeth's death, became King of Scotland. After 1066 his reign was one long conflict with the Normans in England; in 1093 he was slain in battle at Alnwick. His second wife was the saintly Margaret, whose influence did much to bring Scotland into touch with European civilisation. There were other Malcolms, Kings in Scotland, ruling over the Southern part of the country.

Maldiv Islands, a chain of several islands in the Indian Ocean stretching 550 m. southward from a point 300 in. SW. of Cape Comorin, a dependency of Ceylon; grain and fruits are produced; the people are Mohammedans. Pop. 80,000.

Maldon, a municipal borough and ancient market town of Essex, on the R. Blackwater. Malting, flour-milling, boat-building and fisheries are carried on. It is a favourite yachting centre. Pop. 8,900.

Malebranche, Nicholas, French philosopher, born in Paris; in early life a priest of the Oratorian congregation. His famous work, *De la Recherche de la Vérité*, published in 1675, seeks to bridge over the gulf which separates mind from matter by establishing that the mind immediately perceives God, and sees all things in Him. (1638-1715).

Male Fern, a common hardy fern (*Nephrodium Filix-Mas*) of the order Polypodiaceae, found wild in Britain and elsewhere in the northern hemisphere. It has light green lance-shaped fronds that may reach a length of 4 ft.

Malesherbes, *Lamignon de*, French statesman, born in Paris; adviser of Louis XVI, and his defender at his trial, for performing which office he was afterwards guillotined. He had been censor of the press, and to his liberal-minded censorship the world owes the publication of the *Encyclopédie*. (1721-1794).

Malherbe, *François de*, a French lyric writer, born in Caen; is from his correct though affected style regarded as one of the reformers of the French language. (1555-1628).

Malic Acid, an acid, discovered by Scheele in 1785, which occurs in the juice of many unripe fruits, e.g., apples (whence the name, from the Latin *malum*) and gooseberries. It is a white crystalline solid, readily soluble in water.

Malice, in law, indicates not merely evil will but criminal intention. Sometimes the mere doing of a thing is made a crime by statute and intention is immaterial—e.g., abducting a girl under 16 years of age; but where a vicious will (*mens rea*) is essential, it may be manifested by criminal intention or criminal negligence. Criminal intention or malice in the technical sense is simply the design of doing an act forbidden by the criminal law without just cause or excuse. Malice in this sense is thus found not only where the mind is actively in fault but also where there is culpable inattention or negligence. Malice may be "express" or "in fact" as where a person deliberately and with formed design kills another; or "implied" or "in law" as where one wilfully poisons another though no enmity can be proved. Malice is "presumed" in homicide, and therefore it lies on the accused to prove that the killing was justifiable or excusable.

Malines, or *Mechlin*, a Belgian City on manufactures lace and tapestry; has an ancient cathedral and various art treasures. Pop. 62,000.

Malines Conversations, unofficial negotiations between Roman Catholic and Anglican ecclesiastics to explore the possibilities of a reunion of the churches, opened at Malines in 1820 and lasting over several years. Lord Halifax (q.v.) was one of the chief negotiators on the Anglican side.

Mallard, the wild duck (*Anas boschas*), more especially the drake; the parent stock of our tame breed of duck. The male has a glossy green head and neck, and is grey or white underneath; the female is speckled, brown and buff. The bird migrates in large numbers in late autumn.



MALLARD

Mallarmé, *Stéphane*, French poet, leader of the Symbolist school, born in Paris; Professor of English at Tournon, and elsewhere from 1862 to 1892. His *Après-Midi d'un Faune* appeared 1876; French translation of Poe's poems, 1888; *Vers et Prose*, 1893; complete works, 1897. (1842-1896).

Mallee, a short, scrubby eucalyptus tree of Australia; eucalyptus oil is obtained from it.

Mallow, a town in the province of Cork, Eire (Ireland). There are mineral springs which are much visited in autumn. Pop. 4,500.

Mallow, the common name of plants of the genus *Malva*, natural order Malvaceae, comprising 36 species, 3 of which are found in Britain. They are some-

what weedy perennials. The common or Large Mallow (*Malva sylvestris*) bears a flower with a purple centre, five long and narrow petals, mauve streaked with purple; the sepals are green; it is much visited by insects for the honey it secretes. The Small Mallow (*M. rotundifolia*) also occurs, as well as the Musk Mallow (*M. moschata*) which bears rose-pink flowers. The Marsh-Mallow is the species *Althaea officinalis* of the same natural order. The Tree-Mallow (*Lavatera arborea*) bearing pink purple-veined flowers in summer and autumn also occurs in Britain on rocks by the coast.

Malmédy, a town of Belgium in the province of Liège. It was ceded by Germany to Belgium by the Treaty of Versailles, 1919. Pop. 5,400.

Malmesbury, a borough and market town in Wiltshire on the Lower Avon, 10 m. N. of Chippenham, famous for the remains of its Benedictine Abbey, said to have been founded in the 6th Century. The historian, William of Malmesbury, died here in 1142. Pop. 2,300.

Malmesbury, *William of*, English chronicler of the 12th Century, and one of the chief authorities for the history of his time; his chief works were *Gesta Regum Anglorum* and *Gesta Pontificum Anglorum*, followed by his *Historia Novella*. (c. 1093-1143).

Malmö, important seaport and third Copenhagen; town of Sweden, opposite Copenhagen; ships farm produce, cement, matches and timber; has cigar and sugar factories, and some shipbuilding. Pop. 144,000.

Malmsey, a strong sweet white wine, named from Malvasia in Greece, and afterwards made in Madeira, the Azores and Sicily, from grapes which have been left to shrivel on the vine.

Malory, *Sir Thomas*, English author, flourished in the latter part of the 15th Century; a Warwickshire knight; was the author of *Morte d'Arthur*, a prose translation and collection of Arthurian legends which was finished in the ninth year of Edward IV., and printed fifteen years after by Caxton.

Malpighi, *Marcello*, Italian anatomist and professor of Medicine; noted for his discovery of the corpuscles of the kidney and the spleen, named after him. (1628-1694).

Malplaquet, a hamlet in the dept. of Nord, France, where Marlborough and Prince Eugene were victorious in 1709 over the French, under Villars, in one of the most famous battles of the Seven Years War.

Malt, grain, usually of barley, steeped in water and fermented, by which the starch of the grain is converted into saccharine matter, dried on a kiln, and then used in brewing (q.v.) ale, stout, beer or porter, and in the distillation (q.v.) of whisky. Brown or amber malts are used to give colour to mild ales, while black or chocolate malts give the dark colour to porter and stout.

Malta, a small British island in the Mediterranean, 80 m. S. of Sicily; a strongly fortified and most important naval station, headquarters of the British Mediterranean fleet; was annexed to Britain in 1814. The island is treeless, and with few streams, but fertile, and has many wells. Wheat, potatoes, and fruit are largely cultivated, and flax and cotton are manufactured. The people, who are Roman Catholics, are said to be descended from the ancient Carthaginians. There is a university at Valletta, the capital. In 1921 a more liberal constitution was granted, but owing to defects in its working and to interference in politics by the clergy and later by pro-

Italian influences this has been twice suspended, in 1930 and in 1933, and legislative power vested exclusively in the Governor. In 1938 a measure of Crown Colony Government was granted, but the new Maltese Legislature will not have power to legislate on the language question. Maltese is the language of general intercourse, and with English is the official language, Italian having been deposed from parity with them. The small islands of Gozo and Comino are included in the colony. Area (of 3 islands), 122 sq. m. Pop. 262,000.

Malta Fever, a febrile disease which made its first appearance in Malta and the Mediterranean coasts generally, having probably been spread by Maltese goats. The symptoms are high temperature, rheumatic pains and debility. The cause is a micro-organism discovered by Sir David Bruce.

Maltese Terrier, properly Maltese dog; a breed of small lap-dogs of Maltese origin. The type has been preserved for more than two thousand years. It has a white, silky coat which naturally parts from head to tail, long drooping ears, head short and full, eyes dark, and legs short.

Malthus, Thomas Robert, an English economist, born near Dorking, in Surrey; is famous as the author of an *Essay on the Principle of Population*, of which the first edition appeared in 1798, and the final, greatly enlarged, in 1803. This work aimed at showing how the progress of the race was held in check by the limited supply of the means of subsistence and suggested that the human race increased more rapidly than its food supply. From him Malthusianism, or the conscious and deliberate limitation of the birth rate, takes its name. (1766-1834).

Malton, market town and urban district on an eminence on the N. bank of the river Derwent. In 1138 it was burned down by Thurstan, Archbishop of York, who besieged the town in order to drive out the Scots. Pop. 4,400.

Maltose, or Malt-Sugar, a disaccharide produced during the hydrolysis of starch, e.g., by the enzyme diastase in malt. It is a solid substance crystallizing in white needles, and is converted by the enzyme maltase (e.g., in yeast) into glucose or grape-sugar.

Malvern, Great, a watering-place in the Malvern Hills, much frequented by invalids; the first hydropathic establishment in the country was opened here in 1842. There is a famous public school, founded in 1865. Every year a festival of drama is held here. Pop. 16,700.

Mamelukes, originally slaves from the regions of the Caucasus, captured in war or bought in the market-place, who from being the bodyguard of the Sultan in Egypt in the 13th Century, rose to rule the country and choose the Sultans from their own number until 1517. They remained powerful thereafter, and resisted Bonaparte, who defeated them, at the battle of the Pyramids in 1798, but recovering their power after his withdrawal they were annihilated in 1805 and 1811 by Mehmet Ali, who became Viceroy of Egypt under the Porte.

Mammals, or Mammalia, the highest kingdom of animals; the females are characterized by the possession of mammae (teats) enabling them to suckle their young. They are usually marked by a peculiar cranial conformation, a highly developed brain, a hairy body, and by having two sets of teeth in their lifetime, the "milk teeth" and permanent teeth. The class, which is sometimes popu-

larly but erroneously called quadrupeds, includes some sea animals (whales, dolphins, etc.), and flying animals (bats). There are some 5,000 living species, and many more known only as fossils; and they are distributed over the whole globe. They are divided into Primates (monkeys, apes and man); Chiroptera (bats); Carnivora (cats, dogs, bears, etc.); Insectivora (insect-eaters); Rodentia (gnawing animals); Ungulata (hoofed animals); Edentata (sloths, etc.); Sirenia (dugongs and manatees); Cetacea (whales and porpoises); Marsupials (Kangaroos, etc.), and Monotremata (the echidna and ornithorhynchus).

Mammoth,

an extinct long-haired elephant-like mammal of enormous size found fossilised in Northern Europe and Asia in deposits together with human remains, and yielding a supply of fossil ivory; its tusks have a length sometimes exceeding 10 ft.



MAMMOTH

Mammoth Cave, a cave in Kentucky, U.S.A., the largest in the world, several miles in extent, and rising at one point to 300 ft. in height, with numerous side branches leading into grottoes traversed by rivers, which here and there collect into lakes.

Man, a quadruped of the order Primates, whose forelimbs have been specialised as tools and are not used for progression; he thus has an erect posture. He is also differentiated from other mammals by his exceptional mental development, his opposable thumb, and prominent chin. The use of articulate speech and the possession of a moral sense, and possibly the faculty of laughter, also appear to be peculiar to him. He is remarkable for his scanty growth of hair; his skin-colour ranges from pinkish-white through yellow and brown to black. His food covers a wide range of animal and vegetable substances; unlike any other animal he submits much of it to the action of heat before consuming it. He is found in all parts of the globe except the extreme Arctic and Antarctic regions. He lives in communities; the development of his hands and the possibility of communication of thoughts and ideas between individuals of the species consequent upon his faculty of speech have enabled him to exercise considerable mastery over his environment and to use the products and forces of Nature for his own ends. Man appears to have developed from a lemur-like ancestor, and the oldest fossil remains of a man-like creature so far known suggest that he has existed for at least a million years. All living men belong to a single species, *Homo sapiens*, but there have in the past been other species—*Homo neanderthalensis*, *Homo primigenius*, etc.—which are now extinct. See also *Races of Mankind*.

Man, Isle of, a small island in the Irish Sea, 35 m. W. of Cumberland, and about the same distance E. of Ireland; from its equable climate and picturesque scenery is a favourite holiday resort; it has lead mines at Laxey and Foxdale; fishing and cattle-grazing are profitable industries. The people are of mixed Celtic and Norse extraction, and until a century ago spoke a Celtic language, Manx. The island has its own government, the Court of Tynwald, comprising a Council composed of the Bishop, deans, etc., and an elected House of Keys, and a Lieutenant-Governor; and is not bound by acts of the British parliament. The capital is Douglas. Area, 220 sq. m. Pop. 49,500.

Managua, the capital of the state of Nicaragua and the chief town of the department of the same name. It is situated on Lake Nicaragua. The town was almost entirely destroyed by earthquake on March 31, 1931. It is being rebuilt and has a university and considerable commerce. Pop. about 80,000.

Manaos, the capital and river port of the state of Amazonas on the Rio Negro, Brazil. Its exports include rubber, Brazil nuts, cocoa and hides. Pop. 89,000.

Manasseh, Ben Israel, a Jewish scholar, author, born in Lisbon; settled at Amsterdam; wrote several works in the interest of Judaism, and induced Cromwell to permit the re-settlement of Jews in England, from which they had been excluded for several centuries. (1604-1657).

Manatee, or Sea-Cow, the three species of the genus *Manatus* of the order Sirenia. They are inoffensive animals and inhabit the shallow coastal waters of tropical America and Africa feeding on aquatic vegetation. The body is naked and stout, shaped like a whale's, and has a shovel-shaped tail. They have paddles as forelimbs and digits with flat nails; the eyes and ears are small. Manatees are valued for their skin, flesh and oil. The three species are the *Manatus senegalensis* of Africa, the *M. americanus* of America and the *M. inunguis* of the Amazon.



MANATEE

Manche, La, the French name for from its resemblance to a sleeve, which is the meaning of the French name.

Manchester, on the Irwell, in the SE. of Liverpool, the centre of the English cotton-manufacturing district, with many other textile and related industries, is the fourth largest city of England. It has many fine buildings, including a Gothic Town Hall and Assize Court House; there is a picture-gallery, several excellent schools, and the famous John Rylands library; Owens College was the nucleus of Manchester University. The city grew enormously during the Industrial Revolution, and its industrial struggles in the beginning of the 19th Century were severe, and included the famous "Peterloo massacre." The famous Ship Canal, which connects it with the Mersey estuary, makes it a port of first importance. The railway to Liverpool was one of the first in England. Pop. 744,000.

Manchester, a town in the county of Hillsborough, New Hampshire, U.S.A., on the Merrimac R. Its manufactures include paper, foundries, and weaving. Pop. 76,900.

Manchester Ship Canal, a ship canal between Liverpool and Manchester, the construction of which, sanctioned by Parliament in 1885, converted Manchester into a port. The course is via Eastham, Runcorn and Latchford, and it is linked with natural water-courses. Its length is 35½ m., depth 28-30 ft., and the narrowest width, apart from the locks, 120 ft. At Manchester the dock accommodation covers 100 acres, with a quay area of 150 acres. The quays have a total length of 6 m. It cost £16,500,000 to build.

Manchukuo. See Manchuria.

Manchuria, region of NE. Asia, lying between Mongolia and Korea, with the Amur R. on the N. and the Yellow Sea on the S., is five times the size of England and Wales. The N., central and E. parts are mountainous; the Sungari is the largest river; the soil is fertile, producing

large crops of millet, maize, hemp, etc., but the climate in winter is severe. Pine forests abound; the country is rich in gold, silver, coal, and iron; beans, silks, skins, and furs are exported; cotton and other manufactures are rapidly increasing. The chief towns are Hsinking (the capital), Mukden, Harbin, and Antung. Until the fall of the Chinese Empire in 1911, the country was part of China, Russian influence having been replaced by Japanese after the war of 1905.

In 1930 Japan alleged that her interests, especially in the S. Manchuria railway, were being jeopardised by Chinese action, and began the military occupation of the area, overcoming Chinese resistance, and setting up in 1932 a new Japanese-protected state of Manchukuo, consisting of the former provinces of Fengtien, Kirin, Heilungchiang, and Jehol, the former Chinese Emperor being set up as first, President, and in 1934, hereditary Emperor of the state. A League of Nations commission of enquiry under Lord Lytton was sent out, and reported unfavourably to Japan, but no action was taken. The state of Manchukuo has an area of 460,000 sq. m. and a pop. of 34,350,000; the population is mainly Chinese, but Japanese and Koreans are immigrating in large numbers.

Manchus, the original inhabitants of Manchuria (q.v.), only a fraction of the present population, which consists mainly of Chinese immigrants. The Manchus proper are a Tungusian race with Mongolian characteristics; they invaded China in the 17th Century, and a Manchu dynasty ruled there until the advent of the Chinese Republic in 1911.

Mandalay, capital of Upper Burma, on the country, 360 m. N. of Rangoon; was seized by the British in 1885. The Aracan Pagoda, with a brazen image of the Buddha, attracts many pilgrims, and Buddhist monasteries cluster outside the town. There are silk-weaving, gold, silver, ivory, and wood work, gong-casting and sword-making industries. Pop. 148,000.

Mandamus, in law, an order of the Crown requiring a person, corporation or inferior court to do something pertaining to their office; but generally used of a writ of mandamus from the High Court to test the legality of an inferior court's action in some case of a public nature in respect of which no other legal remedy exists.

Mandarin, the name given by foreigners to Chinese official functionaries, of which under the Empire there were some nine orders, distinguished by the buttons on their caps; the name is also applied to the standard form of the Chinese language used for official purposes. Also the name of a small sweet orange from which a liqueur is made.

Mandated Territories, these which as a result of the World War ceased to be under the sovereignty of the Central Powers and which by agreement of the Allied and Associated Powers were mandated to various countries, the mandates being formally submitted to the League of Nations for approval. Great Britain received mandates for Iraq, Palestine, Tanganyika Territory, part of the Cameroons and of Togoland, and Trans-Jordan; France received Syria, part of the Cameroons and of Togoland; German SW. Africa went to the Union of South Africa; all the former German possessions in the Pacific S. of the equator, excepting Nauru and Samoa, went to Australia; Samoa to New Zealand; Nauru to Great Britain; and all Pacific possessions N. of the equator were assigned to Japan. Under the provisions of the mandates, the Mandatory is enjoined to submit an annual report of progress to the Permanent Mandates Commission of the

League of Nations, thereby affording a guarantee of the equitableness of the system. Britain has relinquished the mandate for Iraq, which is now independent; and that for Syria is to be relinquished by France in 1938; Japan, having left the League of Nations, now looks upon the territories mandated to her as her own possessions.

Mandeville, *Bernard de*, Anglo-Dutch writer, born in Dordrecht, Netherlands, who came to London to practise medicine, and wrote the *Fable of the Bees*, a cynical treatise on vice and virtue directed against the ethics of Shaftesbury (q.v.). (1670-1733).

Mandeville, *Sir John*, English adventurer, who from his own account travelled over 30 years in the East and wrote a narrative of the marvels he experienced in a book of voyages and travels published in 1356. The authorship of this book has been questioned, it being affirmed that the actual author was Jean de Burgoyne, of Liège, while there is evidence that much of the matter has been borrowed from other narratives.

Mandoline, musical instrument of the string family, Italian in origin; it has a short finger-board and pear-shaped body, and is played with a plectrum.

Mandrake (*Mandragora*), a small genus of hardy herbaceous perennial plants of the order Solanaceae comprising 3 species native to the Mediterranean areas and the Himalayas. The Common Mandrake or Devil's Apples (*Mandragora officinalum*) bears blue or white flowers in May. All kinds of wonderful properties were formerly attributed to these plants and for long they were deemed typical of all manner of dreadful things; but there is some little doubt as to what plant the ancients really meant when they spoke of the mandragora, to which they ascribed marvellous virtues. Soporific qualities were attributed to it and it formed an ingredient in love-potions.

Mandrill (*Papio maimon*), a ferocious variety of baboon found in W. Africa. It has naked cheeks striped in blue and vermillion, a short tail and ischial callosities of a bright red colour. Mandrills associate in large numbers and often plunder villages and growing crops.

Manes, the general name given by the Romans to the departed spirits of good men who are conceived of as dwelling in the nether world, and as now and again ascending to the upper.



MANDRILL

Manet, *Edouard*, French artist. Son of a banker, Paris magistrate, he studied under Couture, travelled round Europe, settled down and produced paintings in a natural style, exhibiting at the Salon from 1861. (1832-1883).

Manganese, a metallic chemical element discovered by Gahn in 1774. Symbol Mn; atomic number 25; atomic weight 54.95. It finds little application except in the manufacture of alloys; but here its importance is considerable. Manganese steel is extremely hard and tough, and has proved invaluable for railway metals, protective helmets for military purposes, and many similar objects. Among the compounds of manganese, the chief are the permanganates of sodium and potassium. Both of these salts are powerful germicides, and a solution of the former is sold, under a trade name, for disinfection. Potassium permanganate is an almost black crystalline solid, the sodium salt—dissolves in

water to give a deep purple solution. Manganese dioxide is used in the laboratory as a catalyst in the preparation of oxygen by the action of heat on potassium chlorate, and also for preparing chlorine from hydrochloric acid.

Manganin, an alloy of 7 parts of copper and a small proportion of nickel; it is used for resistance coils in electricity, as the conductivity varies very little with change of temperature.

Mange, a disease of the skin occurring in dogs, cats, horses and cattle; it is similar to the itch in human beings. The disease is produced both by the carapotic mite and by a mite which infests the capillary follicles. It is very contagious and necessitates the burning of the patient's clothing and bedding.

Mangin, *Charles Marie Emmanuel*, French general, born at Sarrebourg; served in the Sudan (1895-1898), Tonking (1901-1904), West Africa (1907-1911) and Morocco (1912-1913); and in the World War organised the army of French colonial troops. In command of the 8th Infantry Brigade, he gained successes at Verdun in 1916; from the end of 1917 he commanded the 10th Army and after the armistice, the army of the Rhine. (1866-1925).

Mango, the fruit (a large drupe) of the *Mangifera indica*, a tree of the natural order Anacardiaceae, grown abundantly in the tropics though native to the East Indies. It is used as an ingredient of chutney.

Mangold-Wurzel, a coarse kind of beet, pale yellow in colour, larger than the garden beet, and grown as cattle feed. It is derived from the sea-beet (*Beta maritima*).

Mangosteen (*Garcinia mangostana*), a tropical evergreen fruit tree of the order Guttiferae, whose delicately-flavoured brown fruits, not unlike oranges, are eaten in the East.

Mangrove (*Rhizophora*), a tropical tree with thick leaves, large flowers and an edible fruit. Its bark is used in medicine and as a dyestuff. The netlike formation of the widely-spreading roots about which decaying vegetable matter easily collects, cause the tree to be planted in swampy regions as an aid to land reclamation.

Manhattan, a long island at the mouth of the Hudson, on which a great part of New York stands.

Mani, or *Manes*, the founder of Manichæism (q.v.), a native of Ecbatana in Persia at the court of whose king, Sapor I, he preached. He was crucified A.D. 274.

Mania, a term applied to insanity characterized by mental exaltation. In simple mania the brain over-functions and the patient is talkative and displays a marked absence of sustained purpose, though unweariness in mental activity. The degree of insanity is mild. In acute mania the motor functions of the brain are affected and the patient is increasingly active, incoherent in speech, and while seemingly untiring in both mind and body, gradually becomes exhausted with possibly fatal results.

Manichæism, a religious system founded by Mani, a Persian, which ascribes the created universe to two antagonistic principles, the one essentially good—God, spirit, light; the other essentially evil—the devil, matter, darkness. It was based in part on Zoroastrianism, and was for a time a serious rival to Christianity, especially in the E.; the Albigenses in Southern France were largely Manichæan in their belief. St. Augustine (q.v.) of Hippo was a Manichæe before his conversion to Christianity.

Manila, capital of the Philippine Is.; at the head of a great bay on the W. coast of Luzon; is hot, but not unhealthy; suffers severely from storms and earthquakes, and is largely built of wood. It has a cathedral, university, and observatory. Its main industry is cigar-making; the exports include manila hemp, sugar, and coffee. The population, chiefly Tagals, includes Chinese, Spaniards and Europeans. In the Spanish-American War of 1898 Admiral Dewey captured the city. Pop. 378,000.

Manila Hemp, a fibre from the leaf stalks of *Musa textilis*, a plant of the Philippine Is. It is mostly used for making ropes, twine, etc., but the finer qualities are woven for sails, scarves and other wearing apparel.

Manipur, a native state of India between Burma and Assam. It has an area of 8,400 sq. m. and a population of 445,000 of whom one-third are animistic tribes.

Manitoba, a "prairie" province of Canada, with the United States on its S. border, Saskatchewan on the W., and Ontario on the E.; the S. is a level prairie and arable country, scantily wooded but well watered, having three large lakes, Winnipeg, Winnipegosis, and Manitoba, and three large rivers, Assiniboine, Souris and Red R. The soil is very fertile, producing fine wheat; mixed farming, dairy, cattle, and sheep farming are carried on successfully. Coal is found in the S., and gold, copper and zinc in the N.; fishing is pursued on the lakes and rivers. Constituted a province in 1870, Manitoba was the scene of the Riel rebellion, quelled that same year. In 1912 its territory was greatly extended. The capital is Winnipeg, the seat of a university and of extensive flourmills. Area, 251,800 sq. m. Pop. 700,000.

Manlius, a Roman hero who, in 390 B.C., saved Rome from an attack of the Gauls, and was afterwards for treason thrown down the Tarpeian Rock.

Mann, Thomas, German novelist, born in 19; practised literature while engaged in an insurance office. After issuing several minor works became famous with *Buddenbrooks*, 1903—a long novel describing experiences of an old Lübeck family. Other works: *Der Tod in Venedig* (Death in Venice), *Der Zauberberg* (The Magic Mountain), 1924. Nobel prize winner, 1929. He left Germany after the rise of the Nazis. (1875—).

Mann, Tom, British labour leader; born at Foleshill, Warwickshire; in youth worked on a farm, in a mine, and as an engineering apprentice, joining in 1881 the Amalgamated Society of Engineers, of which he was Secretary from 1918 to 1921. Became a Socialist in 1885, and was one of the leaders of the 1889 Dock Strike, becoming president of the Dockers' Union in 1890. From 1894 to 1896 secretary of the Independent Labour Party; from 1899 to 1902 kept a London tavern. In 1902 went to Australia and later to South Africa, returning to England in 1910 to lead the Syndicalist movement; in 1912 was imprisoned for exhorting soldiers against action in labour disputes. In 1927, having become a Communist, visited the interior of China on a revolutionary mission. (1856—).

Manna, the food with which the Israelites in the wilderness, a term said to mean "What is this?" being the expression of surprise of the Israelites on first seeing it, but more credibly derived from the Hebrew *man*, a gift; identified with a species of tamarisk from the stem of which exudes a saccharine sap.

Mannheim, German city in Baden, on the Rhine, 55 m. above Mainz; has manufactures of tobacco, chemi-

cals, and iron goods, and a growing river trade. An old historical city, it was formerly capital of the Rhenish Palatinate, and a resort of Protestant refugees; later the capital of the Grand Dukes of Baden. Pop. 275,000.

Manning, Henry Edward, cardinal, born in Hertfordshire; Fellow of Merton, Oxford, and a leader in the Tractarian Movement there; became rector in Sussex; married, and became Archdeacon of Chichester; dissatisfied with the state of matters in the Church of England, in 1851 he joined the Church of Rome, became Archbishop of Westminster in 1865, and Cardinal in 1875; was a strong supporter of infallibility at the Vatican Council of 1870; interested in social questions. (1808-1892).

Manoel I. ("the Happy"), king of Portugal 1495-1521; sent Vasco da Gama round the Cape of Good Hope to India, 1497; Cabral on the voyage in which he discovered South America, 1500; Corte Real to Labrador, 1500; Almeida and Albuquerque to the East Indies, 1505. (1469-1521).

Manoel II., king of Portugal 1908-1910; son of King Carlos I., on whose assassination he succeeded to the throne, being expelled from the country two years later on the establishment of the Republic; afterwards resided in England at Twickenham, engaged in literature, and in 1913 married Princess Augusta Victoria of Hohenzollern. (1889-1932).

Manometer, an instrument for determining the pressure of gases or vapours. A common form is a bent glass tube open at both ends and containing mercury at the angle. When gas or vapour is applied to one end the mercury rises in the other. Manometers which measure gaseous pressure by the tension of a spring are used for steam-gauges.



Manor, under the feudal MANOMETER system of land

tenure, a piece of land held by a lord who occupied so much as was necessary for the use of his family and granted the remainder to tenants for stipulated rents or services. The manor was usually granted by the sovereign to the lord of the manor, who could hold a court of his tenants and impose fines for misdemeanours, and later exercised criminal jurisdiction. After the Norman Conquest the King's Courts absorbed much of the power of the manorial courts. In 1285 the granting of new manors ceased under the statute of *Quia Emptores*. Labourers on the manor were serfs who had no freedom.

Mans, capital of the French dept. of Le Mans, Sarthe, on the R. Sarthe, 170 m. SW. of Paris; has a magnificent cathedral; is an important railway centre, and has tobacco and textile factories. It was the scene of a great French defeat by the Germans in January, 1871. It is the scene of an annual motor race. Pop. 85,000.

Mansard, the name of two French architects, born in Paris—François, who constructed the Bank of France (1598-1666), and Jules Hardouin, his grand-nephew, architect of the dome of the Invalides and of the palace and chapel of Versailles. (c. 1645-1708). François was the designer of a type of roof, consisting of 4 planes inclined to one another and hinging on one another and usually provided with dormer windows (q.v.); popular in France in the 17th Century.

Mansfield, market-town of Nottinghamshire, England, 14 m. N. of Nottingham, in the centre of a mining district, with iron and lace-thread manufactures. Pop. 45,000.

Mansfield, Katherine, English writer, born in New Zealand; her several collections of short stories include *Rhiss*, *The Garden Party*, *Something Childish*. She was the wife of John Middleton Murry (1889-1923).

Mansfield, William Murray, Earl of, Lord Chief Justice of England, born in Perth, called to the bar in 1730; distinguished himself as a lawyer, entered Parliament in 1743, and became Solicitor-General; accepted the chief-justiceship in 1756; was impartial as a judge, and is acknowledged as the founder of present-day commercial law; raised to the peerage in 1776, and resigned his judgeship in 1789. (1705-1793).

Mansion House, in the Poultry, London, the official residence of the Lord Mayor of London, erected in 1739 at a cost of £42,638, with a banqueting-room accommodating 400 guests.

Manslaughter, is the unlawful killing of another without malice (*q.v.*) aforethought, express or implied; and is said to be voluntary or involuntary. Voluntary manslaughter is where death is caused by a sudden act of revenge whilst the accused is still under provocation; and it differs from excusable homicide in self-defence, because there has been no attempt to get away before killing in self-preservation the person who gives the provocation. Killing through culpable negligence is also manslaughter. In Scots law, the term is not used; the cardinal division of criminal homicide is into murder and culpable homicide. The punishment for manslaughter is up to penal servitude for life.

Mansurah, a city of Lower Egypt and capital of the province of Dakhla on the Nile about 25 m. from Damietta. It is a centre of trade in cereals, grain and cotton. Pop. 68,700.

Mantegna, Andrea, an Italian painter and engraver, born in Padua. His works were numerous, many of them altar pieces and frescoes, his greatest "The Triumph of Caesar." He was a man of versatile genius, was sculptor and poet as well as painter, and his influence on Italian art was great. (1431-1506).

Mantes, town in dept. Seine-et-Oise, France, with manufactures of brushes, baskets, etc. It was here that William the Conqueror received his death wound. Pop. c. 11,000.

Mantilla, a head-covering, commonly of lace, worn by women in Spain. It is used as a veil, and is draped around the shoulders. The term is also used to denote a woman's light shoulder cloak.

Mantis (Mantidae), a family of carnivorous orthopterous insects. The European Praying Mantis (*Mantis religiosa*) is so called from the attitude of its forelegs, as of a person at prayer, while lying in wait for its prey.

Mantling, or Lambrequin, in heraldry, the ornamental drapery flowing from the helm or crest in a coat-of-arms.

Mantra, the Hindu name for a religious poetical incantation or charm, especially a verse from the Vedas used for that purpose.

Mantua, city in Italy, in SE. Lombardy, on two islands in the R. Minco, 83 m. E. of Milan, has a fine cathedral, and many other medieval buildings; there are silk-reederies, weaving and tanning industries. Mantua was born here in 79 B.C. Pop. 40,500.



PRAYING
MANTIS

Manu, Code of, a Hindu book, containing a code of religious and social legislation, dating in its present form from about the 1st Century B.C. It expounds the doctrines of Brahminism, inculcating "sound, solid, and practical morality," and contains evidence of the progress of civilisation among the Aryans from their first establishment in the valley of the Ganges. Manu, the alleged author, appears to have been a primitive mythological personage, conceived of as the ancestor and legislator of the human race.

Manure, any material used for treating the soil in order to increase the productivity of plants. Manure is necessary to replace the ash-constituents and air-food of exhausted soil, though to some extent this replacement proceeds naturally through decomposition of mineral matter, the absorption of carbonic acid, etc. The natural supply of plant food in soils has long been supplemented by the application of manures and by waste products of the farm or of industrial processes; but modern scientific research has revealed the nature of the principal plant foods and shown that such foods could be added to the soil in the form of simple chemical compounds almost equally beneficially.

Manzoni, Alessandro, Italian poet and novelist. Born in Milan; converted in early life from scepticism to Catholicism; wrote a volume of hymns entitled *Inni Sacri*, and a tragedy, *Adelchi*, his masterpiece, as also a novel, *I Promessi Sposi*, which gave him a European reputation. In 1860 was made a senator of the kingdom of Italy. (1785-1873).

Maoris, the natives of New Zealand, a Polynesian race, who appear to have reached that country from Hawaii; a well-developed, intelligent and brave people, now numbering about 80,000, and completely civilised. They are said to have been cannibals before their Europeanization; they were formerly famous for their custom of elaborately tattooing their faces and bodies.

Maori Wars, conflicts between the settlers of New Zealand and the aborigines over boundaries. They were fought from 1843-1847, 1863-1864, and 1869-1870.

Map, a plane diagram depicting the physical or other features of the whole, or any part, of the earth's surface. The system on which the meridians and parallels (see *Latitude and Longitude*) of a map are drawn is called the projection. One of the most common is Mercator's Projection, in which meridians and parallels are depicted as straight lines at right angles to each other. This scale is exaggerated in high latitudes, but is universally used at sea, since a ship keeping a constant course follows a straight line on the map or chart. A conical projection has the meridians represented by straight lines converging on a centre and parallels by concentric circles at right angles to these lines. A modified conical projection is the orthomorphic, with two standard parallels, usually called Lambert's second Projection. In the later stages of the World War such maps were used by the Allies. The choice of projection depends upon the purpose of the map. Modern survey maps are now made by a system of aerial photography, a series of photographs, one overlapping another, being taken and the prints assembled.

Mapes, Walter, Welsh author, born or Mapes, probably in Herefordshire. He was a Canon of Lincoln and Archdeacon of Oxford from 1198. His one undoubted literary work is *De Nugis Curialium*, consisting of rough notes and reminiscences, with gibes at monastic orders and the Roman court. Parts of the Arthurian legend, much satirical verse, and a famous drinking-song, are ascribed to him. (c. 1140-c. 1309.)

Maple, the common name of the trees *Aceraceae*. *Acer campestre* is indigenous in Britain. Other species are Silver, Oregon, Red swamp, Box elder and Sugar Maple. Maple sugar, a coarse sugar used in Canada and in Western states of U.S.A., is obtained by making incisions in the stem of the sugar maple (*A. saccharinum*) and evaporating and crystallizing the sap which flows therefrom. Good timber is obtained from the Oregon, Box elder and other kinds.



MAPLE

Marabou, a stork of the genus *Leptoptilus*. There are two species: *Leptoptilus marabou*, a native of Western Africa and *Leptoptilus dubius* the adjutant bird (q.v.) of India. The tail-covert feathers of both are used by milliners.

Marabouts, a sect of Mohammedan Marabouts, religious devotees, much venerated in N. Africa, believed to possess supernatural power, particularly in curing diseases, and exercising at times considerable political influence.

Maracaibo, a Venezuelan city on the W. shore of the outlet of Lake Maracaibo; has handsome streets and buildings, and exports coffee and valuable woods. The lake of Maracaibo is a large freshwater lake in the W. of Venezuela, connected with the Gulf of Maracaibo by a wide strait, across which stretches an effective bar. Pop. 110,000.

Marañon, one of the head-waters of the Amazon, rising in Lake Lauricocha, Peru, and flowing N. and E. till it joins the Ucayali and forms the Amazon; the name is sometimes given to the whole river.

Maraschino, the fermented juice of the marasca cherry which was originally distilled as a cordial in Dalmatia. It is flavoured with broken kernels. It is now produced in other countries.

Marat, Jean Paul, French revolutionary leader, born in Neuchâtel, his father an Italian, his mother a Genovese; studied medicine at Bordeaux, and afterwards practised in London and Paris, was arrested and imprisoned in 1789, and while subsequently hiding in Paris sewers contracted a skin disease; was prominent in demanding the death of Louis XVI, and a popular hero, but was assassinated by Charlotte Corday (q.v.) one evening as he sat in his bath. (1743-1793).

Marathon, a village, 22 m. N.E. of Athens, on the sea border of a plain where the Greeks under Miltiades defeated the Persians under Darius in 490 B.C. The plain on which the battle was fought extends between mountains on the W. and the sea on the E.

Marathon Race, an event in the held every fourth year in various parts of the world. It is also the name for similar races wherever held, generally over a course of 21 m. The name is derived from the classical story of Pheidippides, who ran from Marathon (q.v.) to Athens with news of the battle.

Marazion, or **Market Jew**, small town facing St. Michael's Mount, 3 m. from Penzance. It was burnt by the French in 1513, and again in 1549 during the Arundel rebellion in the reign of Henry VIII. Its name has been thought to commemorate the site of an ancient Jewish settlement. Pop. c. 1,000.

Marble, a calcareous stone of compact texture which can be highly polished. It consists of granules of uniform size which, in severance, split along the

rhomboidal cleavage plane presenting glistening facets. Marbles are metamorphosed limestones. They are of great economic value on account of their durability and many records on marble are of great antiquity. Marble is used for statuary and in ornamental architecture. Its distribution is very wide.

Marble Arch, a London landmark as a gateway to Buckingham Palace, and in 1850 removed to its present position by the N.E. corner of Hyde Park, London.

Marburg, German university town in Hesse-Nassau, on the Lahn, 40 m. N.E. of Limburg; has many old buildings; its Gothic church contains St. Elizabeth's tomb; Luther and Zwingli held a conference in the castle, 1529; William Tyndale and Patrick Hamilton were students at its university, which has a fine library. Pop. c. 20,000.

Marcellus, Claudius, Roman general; killed their chief, Viridomarus, with his own hands, whose spoils he dedicated as *spolia opima* to Jupiter; took Syracuse, which long baffled him through the skill of Archimedes, and fell fighting against Hannibal, 208 B.C.; he was five times consul.

March, the third month of our year; was before 1752 reckoned first month as in the Roman calendar, the legal year beginning on the 25th. It is proverbially stormy, and is the season of the spring equinox. It was dedicated to the Roman god Mars, whence the name.

March, market town and urban district of the Isle of Ely, Cambridgeshire, 29 m. N. of Cambridge, on the R. Nene. It is the centre of a corn and fruit growing district. Pop. 11,300.

March, a boundary, used especially of the *Welsh Marches*, and *Scottish Marches*, the border countries between England and Wales and Scotland respectively. The Earl of March (q.v.) took his title from the Welsh Marches, and in the Middle Ages the governors of the border districts were known as Wardens of the Marches. The name is alluded to the German "Mark," with a similar meaning, as in the "Mark of Brandenburg." A Marquis was originally the ruler of such a "March."

March, Roger Mortimer, first Earl of Wignore, Herefordshire; as Viceroy of Ireland in 1316, defeated the rebellion of the Lacys and repulsed Edward Bruce. Antagonised by encroachments of the Despencers in Wales, he rebelled; was imprisoned two years in Tower; escaped to the Continent; became paramour of Edward II.'s queen, Isabella; returned in 1326 and led the movement that deposed the king (soon afterwards murdered). He was made an Earl in 1328, and exercised kingly authority. Captured at Nottingham Castle by Edward III., he was carried to London and hanged. (1287-1330).

Marchand, Jean Baptiste, a French emissary in Africa; was sent in 1890 to explore the sources of the Niger and other districts, and was afterwards appointed to push on to the Nile, where he arrived in 1898, hoisting the French flag at Fashoda, an incident which gave rise to tension with England. He was obliged to retire and find his way back to France. (1863-1934).

Marchesi, Blanche, Baroness Caccamidi, French singer, born in Paris; appeared in Wagnerian and other operas in Berlin, Prague, Paris, and London with great success; afterwards taught singing. (1826-1913).

Marcion, a heretic of the 2nd Century, born in Sinope, in Pontus, who rejected the Jewish elements in Christianity.

refused to acknowledge the Old Testament, and took his stand on the words of Christ and the interpretation of St. Paul. He held that an ascetic life was of the essence of Christianity; his followers were called Marconites.

Marconi, *Guglielmo*, *Marchese*, Italian telegraphist, scientist, inventor of wireless telegraphy; born at Bologna of an Irish mother. Studied in Florence and Leghorn, and at Bologna university. He came to England in 1896, and took out the first patent for radiotelegraphy. A company to exploit it was formed in London, 1897. Communication between England and France was established, 1898, and between Cornwall and Newfoundland in 1901. Marconi shared the Nobel Prize for physics in 1909. During the World War, he had charge of the Italian radio system. He was Italian plenipotentiary at the Peace Conference, 1919, and was created a *Marchese*, 1929. (1874-1937).

Marcus Aurelius, *Antoninus*, Roman emperor, was adopted by Antoninus Pius, when the latter was adopted

by Hadrian, and married Faustina, daughter of the licentious wife of Antoninus. On the death of Antoninus in 161, he succeeded to the throne, but most of his reign was spent in warring with the Marcomanni and Quadi. He is chiefly famous for his devotion to the Stoic philosophy, and is commonly called "the philosopher."

His *Meditations* is a record of his religious and moral principles, and is a most famous classic. (121-180 A.D.)



MARCUS AURELIUS

Mardi Gras, Shrove Tuesday, the eve of Lent and concluding day of the carnival, marked by a procession through the streets of a prize ox, a burlesque of an old Roman sacrificial custom, together with mock priests, a band, and other merry-makers.

Maremma, a malarial coast district of Italy, N. of the Campagna, stretching from Orbitello to Guardistallo, with few villages or roads. Part of it was improved by draining and planting (1824-1844), and is cultivated in summer by the Apennine farmers; in winter it is used for pasturage.

Marengo, a village of N. Italy, SE. of Alessandria, where Napoleon defeated the Austrians under Baron Melas on June 14, 1800.

Mareotis, Lake, a lagoon in the N. of Egypt, 40 m. long by 18 m. broad, separated from the Mediterranean by a tongue of land on which part of Alexandria is situated.

Mare's Tail (*Hippuris vulgaris*), a water plant of almost cosmopolitan distribution, growing in ponds. The leaves are narrow and pointed, growing in clumps up the stem at short distances, the upper ones projecting above the water. The flowers grow from the joint of the leaf and are without petals.

Margaret, Queen of Denmark, Norway, and Sweden, was the daughter of Waldemar IV. of Denmark, whose crown, on his death in 1375, she received in trust for her son Olaf. Her husband, Haakon VII. of Norway, died in 1380, and left her queen; the Swedes deposed their king next year, and offered Margaret the throne, which she accepted, and ultimately brought about the Union of Calmar (1397), which provided for the perpetual union of the three crowns. (1325-1412).

Margaret, the "Maid of Norway," daughter of Eric II. of Norway and Margaret, daughter of Alexander III. of Scotland, affianced to Edward later Edward II. of England, but died at sea on her way from Norway. (1283-1290), a Christian martyr

Margaret, Antioch, the type of feminine innocence, represented as a maiden bearing the palm and crown of a martyr and attended by a dragon. Festival, July 30.

Margaret, St. Queen of Scotland, and sister of Edgar Atheling, born in Hungary; brought up at the court of Edward the Confessor; after the conquest sought refuge in Scotland, and married its king, Malcolm Canmore; was a woman of beautiful character and great piety and did much to civilise the country by her devotion and example. She was canonised by Innocent IV. in 1250. Festival, June 10 or November 16. (1047-1093).

Margaret of Anjou, queen of England, and daughter of the good King René of Anjou; was distinguished for the courage she displayed during the Wars of the Roses, though, after a struggle of nearly twenty years, she was defeated at Tewkesbury and committed to the Tower, from which, after four years of incarceration, she was afterwards released by ransom. (1430-1482).

Margaret of Navarre, Queen of Navarre, sister of Francis I., married in 1527 Henri d'Albret, king of Navarre, by whom she became the mother of Jeanne d'Albret; protected the Protestants, and encouraged learning and the arts. She left a collection of novels, under the name of *Heptameron*, and a number of interesting letters, as well as some poems. (1492-1549).

Margaret of Valois, third daughter of France and Catherine de' Medici; married Henry IV., by whom she was divorced for her immoral conduct. (1563-1615).

Margaret Rose, Princess, second daughter of King George VI. and Queen Elizabeth of England; born at Glamis Castle, Angus, Scotland, Aug. 21, 1930.

Margarine, a butter substitute made from vegetable oils and fats, frequently with the addition of milk or milk substitutes. Its manufacture and sale are carefully regulated by law, and all butter substitutes exposed for sale must be clearly labelled as margarine.

Margarita, Venezuelan island in the Caribbean Sea, 45 m. long by 30 m. at its greatest breadth. It is mountainous, fertile in the interior, produces maize, cotton and bananas, and there are magnetite deposits. Pearl fishing is a government industry. Capital, Asuncion. The main port and chief commercial centre is Porlamar (pop. 4,900). Pop. c. 50,000.

Margate, seaport and watering-place, 3 m. W. of the North Foreland, Kent, England, is with its firm sands, bathing facilities, and various attractions a favourite resort of London holiday-makers. It is particularly famous for its beautiful sunsets. There are large almshouses and orphanages, and other charitable institutions. Pop. 40,040.

Margay (*Felis tigrina*), a spotted and striped tiger-cat of South America. It is about the size of a house-cat and can be domesticated. It is useful as a destroyer of rats and mice.

Margrave, an ancient German title of a frontier or "mark." The title in its territorial sense went out of use in 1806, but was retained as a courtesy title.

Marguerite, name for large species of *Chrysanthemum* of the order Compositae, generally bearing white flowers; especially for the *Chrysanthemum frutescens*, with yellow or white flowers, the best known garden variety.

Mariana, Spanish historian and political philosopher, born in Talavera; joined the Jesuits in 1554, and taught in their colleges in Rome, Sicily, and Paris; returning to Toledo, he gave himself to literature. His *History of Spain* appeared in 1592 and 1601. For certain theological writings he incurred persecution, and his greatest work *De Rege et Regis Institutione* in which he defended the right of the people to cast out a tyrant, was condemned by the general of his order. (1536-1624).

Maria Theresa, Empress of Austria, daughter of the Emperor Charles VI., whom on his death in 1740 she succeeded on the throne, associating her husband, Francis of Lorraine, with her in the government as Francis I.; despite the Pragmatic Sanction, which assured her of her dominions in their integrity, she was assailed by competing claimants, in particular by Frederick the Great, who wrenched Silesia from her. The war thus occasioned, known as the war of the Austrian Succession, lasted seven years, and was concluded by the Peace of Aix-la-Chapelle in 1748. Backed by France, she soon renewed hostilities in the hope of compelling Frederick to restore what he had taken, but the Seven Years War left things in this respect as they were though she gained some territory, including Galicia and Lodomeria, as a result of the first Partition of Poland. She also secured Bukovina from the Porte and some territory from Bavaria. In the intervals of the wars Maria Theresa introduced many internal reforms including the curbing of abuses of the Church. (1717-1780).

Marie Antoinette, Queen of France, fourth daughter of Maria Theresa; was married in 1770 to the Dauphin, later Louis XVI. Beautiful, haughty, indiscreet and extravagant, she grew in unpopularity until the outbreak of the Revolution. She was guillotined nine months after her husband. (1753-1793).

Marie de' Medici, daughter of the Grand-Duke of Tuscany, born in Florence; was married to Henry IV. of France in 1600, with whom she lived unhappily till his murder in 1610; she was then Regent for seven years. In 1617 her son assumed power as Louis XIII. She was for two years banished from the court, and on her return so intrigued as to bring about her imprisonment in 1631. Though a lover of art she was neither good wife nor good queen. Escaping from confinement, she died in destitution at Cologne. (1573-1642).

Marie Louise (Léopoldine Françoise Thérèse Joséphine Lucie), second Empress of Napoleon I.; eldest daughter of the Austrian emperor Francis I.; born at Vienna. Napoleon obtained her in marriage, after divorcing Josephine in 1810. In 1811 she bore him "Napoleon II.," the "King of Rome" and "Duke of Reichstadt" (d. 1832). In 1812 she accompanied her husband to Dresden and was nominal regent during his absence in the field, 1814. On his exile to Elba, she returned to Vienna. The Duchies of Parma, Piacenza, and Guastalla, were reserved for her son; she was ably assisted in their government by Count Neipperg, who married her in 1822. She died in Vienna. (1791-1847).



MARGUERITE

Marienbad, or Mariánské Lázně, a high-lying Czechoslovakian watering-place 18 m. S. of Carlsbad; it is much frequented for its saline springs. Pop. c. 5,000.

Marigold, a name covering varieties of composite garden flowers. *Calendula officinalis* (or Pot Marigold), indigenous in S. Europe, is common in British gardens. It has orange or lemon-coloured flowers, used to impart a yellow colour to cheese. Other kinds are African (*Tagetes erecta*); Field (*Calendula arvensis*); Marsh (*Callitha palustris*); French (*Tagetes pabula*).



POT MARIGOLD

Mariner's Compass. See Compass.

Marines, Royal, the name used to designate, at certain bodies of troops raised and organised for the dual purpose of serving either on shore or afloat in ships. The first record of such a body is in 1664 when Charles II. embodied the Duke of York and Albany's Maritime Regiment to consist of 1,200 "land soldiers." The present 1st East Lancs., 1st East Surrey, and 1st Duke of Cornwall's Light Infantry all started as marine units. In 1802 marines were designated Royal and their facings altered from white to blue.

Formerly there were two distinct divisions, the Royal Marine Artillery and the Royal Marine Light Infantry, but they were amalgamated in 1923. When serving ashore the Royal Marines are subject to the Army Act and when afloat to the Naval Discipline Act. In the World War the Royal Marines were conspicuous in various places, particularly Gallipoli and the Belgian Coast. They rendered valuable service in the third Battle of Ypres and took part in the famous exploit at Zeebrugge (q.v.).

Mariolatry, worship of the Virgin Mary; a term used by Protestants, usually in a derogatory sense, to censure what in their view is the undue honour paid to the Virgin Mary by the Greek and Roman communions since the 5th Century, and in recent years imitated by some Anglicans.

Marionette, a jointed puppet, representing a human being or animal, and operated by concealed controls for the purpose of entertainment.

Mariotte, Edmé, a French physicist, born in Dijon; discoverer of the law that the volume of a gas varies inversely as the pressure; it bears the name of Mariotte's law on the Continent and Boyle's law in England. (1630-1684).

Marius, Gaius, a celebrated Roman uncle by marriage to Julius Caesar, head of the popular party, and the rival of Sulla; conquered the Teutons and the Cimbrs in Gaul, and made a triumphal entry into Rome. Having obtained command of the war against Mithridates, Sulla marched upon the city and drove his rival beyond the walls. Marius fled the city, and was condemned to die, but his executioner allowed him to escape to Carthage, whence he later returned to Rome, and with Cinna organised a general slaughter of the partisans of Sulla. He reorganised the Roman army and made it a power in the field. (155-86 B.C.).

Marjoram (*Origanum*), a genus of small hardy shrubs and perennial herbs of the order Labiateae, native of Europe and Mediterranean regions. The Sweet Marjoram, *Origanum Marjorana*, yields an aromatic oil on distillation, used in cookery for flavouring. The Wild or Common Marjoram, *Origanum vulgare*, a native of Europe (including

Britain), bears purple flowers and is commonly grown in old-world gardens, especially the golden-leaved variety, *azureum*.

Mark, a German silver coin, with a pre-war value of 11½d. After the World War the Mark completely lost its value, and eventually was replaced by the Rentenmark, converted at the rate of one trillion marks to one Rentenmark. In 1923 the Rentenmark was established on a gold basis, which after depreciation in the currency crisis of 1931 was replaced by the Reichsmark, with a par value of 11½d., but exchanging in 1938 at about 1s. 7d.

Mark, Gospel according to, probably the earliest of the Gospels to assume its present form. It was used as a source by the authors of the first and third gospels. There seems no reason to question its traditional attribution to Christ's disciple Mark, "the interpreter of Peter." It was written primarily for Gentile readers, and is a vivid but unadorned account of the life of Christ, for the events of whose career it is the principal authority.

Mark, John, the traditional author of the Gospel, second Gospel, the son of Mary, Barnabas' sister, who ministered to Christ, and whose house in Jerusalem was a place of resort for the disciples of Christ after the resurrection; accompanied Paul and his uncle on their first missionary journey and afterwards accompanied Peter. He is regarded as the founder of the Coptic Church, and his body is said to have been buried in Venice, of which he is the patron saint, the cathedral of that city being named St. Mark's after him. He is represented in Christian art as a man in the prime of life accompanied by a winged lion, with his Gospel in his left hand and a pen in his right. Feast, April 25.

Mark Antony. See Antonius, Marcus.

Market, a public place to which by custom, goods are brought to be exposed for retail sale. Such institutions were of great importance before the rise of modern methods of rapid and easy communication, and could only be established by licence of the Crown. They were generally held at fixed intervals; such names as Newmarket and Stowmarket still commemorate important markets of an earlier day. An annual market, or fair, is still held at many centres in Europe. The name is now most generally used of a place where agricultural and dairy produce is exchanged between the producers or wholesalers and the retail sellers; as Covent Garden (for fruit and vegetables) and Smithfield (for meat) in London.

Market Drayton, a market town of Shropshire, England, with manufactures of agricultural implements, a foundry and cattle market. Blore Heath in the vicinity, was the scene of a battle in the Wars of the Roses. Pop. 4,700.

Market Garden, a piece of land where fruit, vegetables and flowers are grown for sale at a market. Such gardens are usually near large towns, to minimise costs of transport. Success depends upon the right choice of produce for the particular soil, having regard both to quality and quantity. Flower cultivation under present conditions is the most profitable form of market gardening. In fruit gardening apples yield the most permanent results. Vegetable market gardens can be made to yield, given the right conditions, potatoes, cabbages, carrots, turnips, onions, and salads without difficulty.

Market Harborough, manufacturing and market town in Leicestershire, England, 5½ m. from London, in the centre of a hunting country. There is a cattle market, and manufactures of corsets and brushes. Pop. 9,300.

Markham, Mrs., pseudonym of Elizabeth Fearson, author of children's books, second daughter of Rev. Edmund Cartwright (reputed inventor of the power-loom), born in Leicestershire. In 1823 her *History of England*, partly in conversational form, appeared; in 1828, her *History of France*. She died of cancer. (1780-1837).

Markievicz, Constance Georgina, Countess, Irish politician, daughter of Sir Henry Gore-Booth, and wife from 1900 of a Polish count; was active first in the Labour and later in the Sinn Féin movement, and was sentenced to death for her part in the 1916 rebellion, the sentence being commuted to imprisonment. In De Valera's revolutionary government she was Labour Minister. She was the first woman to be elected to the British House of Commons, being returned for St. Patrick's, Dublin, in December, 1918, but she never took the oath or her seat. (1884-1927).

Mark Twain. See Clemens.

Marl, in geology, a sedimentary rock, intermediate in composition between the calcareous and the argillaceous rocks, and sometimes called clayey limestone; generally laid down in freshwater lakes, and contains plentiful remains of fresh-water crustacea, gastropods and algae. Red and green marls exist in the trias of England just below the bone-bed. In agriculture, marl means any soil which readily falls to pieces on exposure to the air, even though it has no lime in its composition.

Marlborough, market town in Wiltshire, England, on the Kennet, 38 m. E. of Bristol, with sack and rope making, brewing, and tanning industries, and a famous public school founded in 1843. The Marlborough Downs, near the town, are used for racehorse training. Pop. 3,900.

Marlborough, John Churchill, first Duke of, soldier and statesman, born in Devonshire, and served in

Tangier in 1667; sent to help Louis XIV. in his Dutch wars, his courage and ability won him a colonelcy. He married Sarah Jennings in 1678, and 7 years later became Baron Churchill on James II.'s succession. As general he was employed in putting down Monmouth's rebellion; he succeeded to William of Orange in 1688, and received from him the earldom of Marlborough. He was in dis-favour from 1694 till the outbreak of the Spanish Succession War, in which he gained his great renown. Beginning by driving the Spaniards from the Netherlands in 1702, he won a series of important victories—Blenheim 1704, Ramillies 1706, Oudenarde 1708, and Malplaquet 1709—and contributed to enhance the military glory of England. Queen Anne loaded him with honours; large sums of money, Woodstock estate, Blenheim Palace, and a dukedom were bestowed on him. His wife was the Queen's closest friend, and the duke and duchess virtually governed the country, till in 1711 the Queen threw off their influence, and charges of misappropriation of funds forced the duke into retirement. He was restored to many of his offices by George I. in 1714, but for the last 6 years of his life he sank into imbecility. (1650-1722).



DUKE OF
MARLBOROUGH

Marlborough House, mansion in London, built by Wren for the great Duke of Marlborough c. 1710, and since 1817 Government property. It has been used as a

residence by Edward VII. when Prince of Wales, Queen Alexandra, and Queen Mary, widow of George V.

Marlow, town of Buckinghamshire, England, on the Thames, 32 m. from London. Marlow Lock, one of the oldest on the Thames, was reconstructed in 1927. There are extensive beech woods and the surrounding scenery is remarkably beautiful. There are paper mills, a brewery, a cabinet factory and annual cattle show. Pop. 5,300.

Marlowe, Christopher, English dramatist and poet; son of a shoemaker at Canterbury. Besides a love poem entitled *Hero and Leander*, he was the author of 7 plays, the most famous being *Tamburlaine*, *Doctor Faustus*, *The Jew of Malta*, and *Edward the Second*. He made no attempt at comedy. Was killed at Deptford in a brawl. (1564-1593).

Marmalade, a general name for various fruits, especially citrus or those which have an acid taste, such as oranges, lemons, or barberries. The name is derived from Portuguese "marmelo," the quince, from which fruit marmalade was originally prepared. *Vitellaria mammosa* (the marmalade tree) is a West Indian tree of the family Sapotaceae, a milky tree with leathery leaves and large pulpy fruits.

Marmont, Auguste Frédéric, Duke of France, served under Napoleon; received the title of duke for his successful defence of Ragusa against the Russians in 1805; was present at Wagram, Lützen, Bautzen, and Dresden, but came to terms with the allies after the taking of Paris, which led to Napoleon's abdication in 1814; obliged to flee on Napoleon's return, he came back to France and gave his support to the Bourbons. (1774-1852).

Marmora, Sea of, 175 m. long and 50 m. broad, lies between Europe and Asia Minor, opening into the Aegean through the Dardanelles and into the Baltic through the Bosphorus; the Gulf of Ismid indents the eastern coast. Marmora, the largest island, has marble and alabaster quarries.

Marmoset (Hapalidae or Callithriidae), a family of small

Anthropoid monkeys found almost exclusively in forest-areas of tropical S. America. The size of the different species varies from a few inches in length to one foot. The tails are long, bushy, and non-prehensile. The fur is thick and soft and of varying colours; the face short, with tufts of fur over the ears. Marmosets live on insects; they are sometimes kept as domestic pets.



MARMOSET

Marmot, the common name of the marmot, mals of the genus *Arctomys* in the squirrel tribe of Rodents, one species the common Marmot (*Arctomys marmota*), being found in the Alpine regions of Europe. They have short bushy tails and the body is about 14 in. long. In colour they are greyish-brown. They commonly live in communities, burrow, and in winter often remain in a torpid state. Insects, roots and other vegetation form their diet. Prairie-Marmots or Prairie-Dogs (q.v.), are rodents of the genus *Cynomys*.

Marne, and Haute-Marne, contiguous departments in the N.E. of France, in the upper basin of the Marne R.; in both cereals, potatoes, and wine are the chief

products, the best champagne coming from the N. In the former, capital Châlons-sur-Marne, building stone is quarried; there are metal works and tanneries; in the latter, capital Chaumont, are valuable iron mines and manufactures of cutlery and gloves. It was the scene of two important battles in the World War. (See *Marne, Battles of the*.) Area (Marne), 3,170 sq. m.; (Haute-Marne), 2,420 sq. m. Pop. (Marne) 410,000; (Haute-Marne), 188,500.

Marne, Battles of the. The first Battle of the Marne in the World War began on Sept. 6, 1914, during the retreat of the Allies from the Sambre-Meuse line. It lasted seven days, and was really won on the extreme left by the British forces and the 5th French Army. The crisis was reached on Sept. 9. Von Kluck had aimed at dividing the British from the French Army, but British troops moving N.E. caused him to draw back on Château-Thierry. In the centre Foch successfully resisted attacks by Von Bülow, but his wings being driven back, eventually decided to push his centre forward, attacking the famous Prussian Guard. The German retreat now began. The German Army was forced to assume the defensive on the Aisne heights, and German hopes of a speedy victory were destroyed.

The second battle began with a great German attack on May 27, 1918. The line extended from Flanders to the R. Oise. After Ludendorff's successful attack, the French Army retreated to a line from Château-Thierry to Dormans. The 2nd American Division, with U.S.A. marines, counter-attacked and secured the SW. angle of the Salient. Ludendorff's last attempt began on July 15, but Foch's great counter-attack from Château-Thierry to the Aisne drove the German Army back. With their retreat across the Vesle the battle ended.

Maronites, a sect of Syrian Christians, originally Monothelite heretics, dwelling on the eastern slopes of Lebanon, where they settled in the 17th Century, and who joined the Roman Catholic Church in 1445; they maintained a long sanguinary rivalry with their neighbours the Druses (q.v.). A few are now settled in Cyprus. They number at present about 200,000.

Marot, Clément, French poet, born in Cahors; was valet-de-chambre to Margaret of Navarre; his satirical wit often brought him into trouble. His poems have left their impress on both the language and the literature of France, but in his own day he was best known for his metrical versions of the Psalms, which were commonly sung by the Huguenots. (1496-1544).

Marprelate Tracts, a series of scurrilous tracts published under the name of Martin Marprelate, but the work of different writers in the time of Elizabeth, aimed against prelate. They gave rise to great excitement and some inquisition as to their authorship.

Marque. See Letter of Marque.

Marquesas Islands, a group of volcanic mountainous islands in the S. Pacific, 3,600 m. W. of Peru, under French protection since 1842; are peopled by a handsome but savage race, which is rapidly dying out; Chinese immigrants grow cotton. Area, 480 sq. m. Pop. 2,400.

Marquess (Marquis), a title of nobility in Great Britain and other European countries, derived from *marquis*, a name given to rulers of the border counties adjoining Wales and Scotland. The first English creations were those of Robert de Vere, Earl of Oxford, as Marquess of Dublin in 1386, and that of the Earl of Somerset as Marquess of Dorset in the following year. A Marquess

ranks below a Duke and above an Earl. At present (1938) there are 27 Imperial, 4 Scottish and 9 Irish marquesses.

Marquetry, the inlaying of pieces of the surface of another. It includes buhl, mosaic, parquetry, etc., and the work is done by cutting designs in low relief in pieces of wood or plates of metal and inserting portions of the second material, which may be ivory, stone, mother-of-pearl, coloured marble, or wood.

Marquette, Jacques (Père), French missionary and explorer, born in Laon; a Jesuit, he went to Canada in 1666; in 1673 accompanied Joliet in the exploration of the Mississippi, re-discovering the river; died while on a missionary journey to the Indians of the Illinois region. (1637-1675).

Marrakesh, town in Morocco, former capital of the Moorish empire, in the French zone, about 125 m. E. of Mogador and to the N. of the Great Atlas Mts. It is a residence of the Sultan of Morocco and an important trade centre, with manufactures of carpets. Pop. 190,300.

Marriage, in law, the voluntary union to the exclusion of all others. It is a contract, and during its subsistence the personal rights and duties of the spouses are regulated by law. Varied forms of marriage are found among different peoples: polygamy, or plurality of wives; polyandry, where a woman has several husbands, usually brothers, at the same time, and cross-cousin marriage where the orthodox union is for a man to marry the daughter of his mother's brother, or of his father's sister.

To-day the monogamous marriage forms the basis of civilised society. In English law marriage cannot now be contracted by a person of either sex under the age of 16. Neither party may be bound by a subsisting legal marriage, be physically incapable of consummating the marriage, or be insane, but a marriage entered into during a lucid interval is not invalid. The parties to a marriage must not be within the prohibited relationships, namely brothers and sisters, uncles and nieces, aunts and nephews, half-blood relationships by affinity. A marriage may be invalidated by fraud or duress. Damages may be awarded for breach of promise.

Before a marriage can take place banns must be published for three successive Sundays in the parish or parishes, in which the two parties have resided for the preceding 15 days, the marriage taking place within 3 months of the last publication. As an alternative, notice may be given to a registrar of the district in which each party has resided for the preceding 7 days. A third necessary preliminary is the issue of a licence by the bishop or local incumbent.

Marriage at a church may take place only between the hours of 8 a.m. and 6 p.m. As soon as the registrar's certificate has been granted, a marriage may take place in any registered place of worship in the presence of the registrar or authorised representative. In Scotland marriages are regular or irregular. The former may be celebrated by a clergyman after the publication of banns, or a notice under the Notices Act of 1878. The latter is a form of marriage consisting of any acknowledgement followed by consummation: it may be registered before a sheriff.

Marrow (tissue), the medulla or soft filling the large interstitial cavities of the bones, especially the longer ones, the spongy tissue, and the articular extremities of these and the short rounded bones. It is an oily fluid contained in vessels. That which is contained in the tissues is reddish and contains cells from which the red corpuscles of the blood are derived.

Marryat, Frederick, novelist, born in Westminster; after service in the royal navy, which he entered in 1806, and in which he attained the rank of commander, he retired in 1830, and commenced a series of novels, *Peter Simple* and *Midasman Easy* being reckoned the best. (1792-1848).

Mars, the Roman god of war, the reputed father of Romulus, and the recognised protector of the Roman State, identified at length with the Greek Ares.

Mars, the exterior planet of the Solar system nearest the earth, of one-half its diameter, with a mean distance from the sun of 141,500,000 m., round which it takes 686 days to revolve, in a somewhat eccentric orbit, and 24½ hours to revolve on its own axis, which inclines to its equator at an angle of 29°. Examination of it shows that there is 4 times as much land as water on it, the so-called "seas" being now accepted as tracts of vegetation, apparently linked by a series of canals, the latter not actually defined as of objective existence. It is accompanied by 2 satellites, an outer making a revolution round it in 30 hours 18 minutes, and an inner in 7 hours and 38 minutes; they are the smallest heavenly bodies known to science.

Marsala, a seaport of Trapani province of Sicily, 70 m. from Palermo. It is renowned for the wines which take its name. It has also manufactures of soap, cement, and bricks. The district is largely devoted to fruit growing. Pop. 57,000.

Marseillaise, the hymn or march of the French republicans, composed, both words and music, at Strasbourg by Rouget de Lisle one night in April, 1792, and sung by the 600 volunteers from Marseilles who entered Paris on July 30 following. Prohibited during the monarchy and empire, it became eventually the national anthem of France.

Marseilles, second city and first seaport of France, on the shore of the Gulf of Lyons, 27 m. E. of the mouth of the Rhône; has extensive dock accommodation; does great trade in wheat, oil, wine, sugar, textiles, and coal, and manufactures soap, soda, macaroni, and iron. There is a cathedral, picture-gallery, museum, and library, schools of science and art. Founded by colonists from Asia Minor in 600 B.C., it was a Greek city till 300 B.C. After the days of Rome it had many vicissitudes, falling finally to France in 1575, and losing its privilege as a free port in 1860. Always a Radical city, it proclaimed the Commune in 1871. A cholera plague devastated it in 1885. Pop. 214,000.

Marshal, historically, an official who regulated combats in tournaments, or rank and precedence at feasts or processions. This latter function has devolved to some extent on the Earl Marshal of England, who is an hereditary officer of State, the Chief of the College of Arms, and performs important ceremonial functions at the Accession and Coronation of the Monarch. The Earl Marshal or Marshal of Scotland was a State officer who commanded the cavalry under the Constable. There were also law court Marshals, such as the Marshal of the King's Bench who had charge of old King's Bench prison in Southwark, and the Marshal of the Royal Household who heard pleas of the Crown. Field Marshal is the highest title of rank in the British Army; it was instituted in 1736, and the sign of rank is the bâton. Marshal is also the highest title in the French, German and Italian Armies.

Marshall Islands, a group of islands under Japanese mandate, of the Pacific under Japanese mandate. There are two groups, of which several islands are uninhabited: Ratak (13 islands) and Ralik (11 islands). Copra is exported. They belonged

to Germany from 1885 until the Treaty of Versailles, 1919. Pop. 10,000.

Marshal of the Air Force,

the highest rank in the Royal Air Force, corresponding to Admiral of the Fleet and Field-Marshal in the Navy and Army, respectively. In the same force the titles Air Chief Marshal, Air Marshal and Air Vice-Marshal correspond to Vice- and Rear-Admirals and Commodores in the Navy and to the various grades of general in the Army.

Marshalsea, former prison in Southwark, London, under the jurisdiction of the Royal Household. It was later a debtors' prison. In 1842 its prisoners and those of the Fleet prison were transferred to the Queen's Bench Prison.

Marsh Gas. See Methane.

Marsh-Mallow (*Althaea officinalis*), a shrubby biennial or perennial herb of the order Malvaceae. It grows in marshes near the sea in temperate parts. The flowering stalks are about 3 ft. high and the flowers pale-rose. A demulcent derived from the root is used in making confectionery.



MARSH-MALLOW

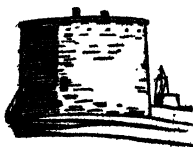
Marsh's Test, a test for arsenic, which depends upon the fact that when a substance containing arsenic is added to a mixture of zinc and dilute sulphuric acid, the hydrogen coming off from the mixture will carry away the arsenic in the form of the gaseous compound arsine or arsenuretted hydrogen. On passing the issuing gas through a heated glass tube, the arsenic is completely deposited as a black lustrous mirror. By comparing this mirror with standard mirrors made under known conditions, the weight of arsenic in the specimen under examination may be determined with extreme accuracy and reliability. Antimony gives a similar reaction, but the arsenic mirror is soluble in a solution of bleaching-powder ("chloride of lime") whereas the antimony mirror is unaffected.

Marston, John, English dramatist, whose dramas are remembered chiefly for the poetic passages they contain. His masterpiece is a comedy entitled *What You Will*. (1575-1634).

Marston, Philip Bourke, poet, son of a dramatist; wrote three volumes of verse, admired by Rossetti and Swinburne; was blind from boyhood. (1850-1887).

Marsupials, an order of mammals, with the exception of the American opossums restricted to Australasia, and including kangaroos, wallabies, wombats, bandicoots, dasyures, etc., called marsupials because the female of most species has a pouch or fold of skin (*marsupium*) on the belly, in which the young are carried after birth.

Martello Towers, round towers of strong build, erected as a defence at one time off the low shores of Sussex, Suffolk, and Kent. They are of Italian origin, being named after a tower on Cape Mortello, in Corsica.



MARTELLO TOWER

Marten, a quadruped of the weasel family, and genus *Mustela*, of which there are several species. All inhabit the N. Hemisphere. The name applies especially to the common

pine-marten (*Mustela martes*) about 18 in. long with short legs, and dark brown fur, those in the N. of England and Scotland being yellow at the throat. The continental marten has a white throat. The skins are much valued as furs.

Martha, St., the traditional sister of Mary and Lazarus, the patron saint of good housewives, represented in art in homely costume, with a bunch of keys at her girdle and a pot in her hand. Festival, July 30.

Martial (Marcus Valerius Martialis), a Latin poet, born in Bilbilis, in Spain. His epigrams are distinguished for their wit, diction, and indecency, but are valuable for the light they shed on the manners of Rome at the period. (43-104).

Martial Law, law enforced by a military court. It was originally administered by the medieval Court of Chivalry or Court of the Marshal and Constable, the jurisdiction of which was laid down by a statute of 13 Richard II. It fell into abeyance under the Tudors and discipline was thereafter enforced by Articles of War issued by the Crown through its prerogative. These articles, valid only in time of war or rebellion, were frequently abused, and ultimately the enforcement of martial law against rioters or rebels was condemned by the Petition of Right (1628). But on the establishment of a standing army provision for discipline was made by the Mutiny Act, 1689, and courts martial were empowered to deal with mutiny and desertion in time of peace. Ultimately the provisions of the Mutiny Act and of the Articles of War were consolidated in the annually passed Army Act. In this sense martial law is merely a synonym for military law, a code by which only persons "subject to military law" under the Army Act are triable. For ordinary civil offences even a soldier is amenable to the civil courts. In another sense martial law is merely a popular expression denoting the authority exercised by military forces in occupation of a territory during civil or international disturbances, superseding the ordinary civil law. It is based on military expediency rather than any written code, and is not recognised by English law. Indeed, any act done by a military court after a so-called "declaration of martial law" can be inquired into by the ordinary civil courts after their restoration. Hence the necessity for duly regularising their procedure before they take over the duties of the ordinary civil courts.

Martin, the popular name of certain birds of the swallow (*Hirundinidae*) family, especially applied in England to the House-Martin (*Chelidon urbica*), which nests under the eaves of houses and is distinguished from the swallow chiefly by its white rump and underparts; and to the Sand-Martin (*Cottia riparia*) which nests in a tunnel in a bank. Both are summer visitors to the British Isles.



HOUSE MARTIN

Martin, the name of five Popes: M. I., M. II., Pope from 882 to 884; M. III., Pope from 942 to 946; M. IV., Pope from 1281 to 1285; M. V., Pope from 1417 to 1431, chosen to reunite the contending parties after the Great Schism, and distinguished for having condemned Huss to be burned.

Martin, Sir Theodore, Scottish man of letters, born in Edinburgh; acquired his first fame under the pseudonym of Ben Gaultier; is author of the *Life of the late Prince Consort*; with Argyson wrote a *Book of Ballads*, and translated the *Odes of Horace*.

Dante's *Vita Nuova* and Goethe's *Faust*. (1816-1909).

Martin, St., bishop of Tours, born in Hungary, was in early life a soldier, and meeting with a naked beggar one cold day in winter divided his military cloak in two, and gave him the half of it; was conspicuous both as monk and bishop for his compassion on the poor; was largely responsible for the spread of Christianity in France. d. 397. Festival, Nov. 11.

Martineau, Harriet, English authoress and economist, born in Norwich; she was an "advanced" thinker, and a disciple of Auguste Comte; wrote a number of successful stories bearing on social questions; her best-remembered book is *Faets on the Fjord*. (1802-1870).

Martineau, James, rationalistic theologian, born in Norwich, brother of the preceding; began life as an engineer; was at first a follower of Bentham and then a disciple of Kant. At one time a materialist, he became a theist, and eventually a Unitarian minister. He was a thinker of great power, and did much both to elevate and liberate the philosophy of religion. Author of the *Endeavours after the Christian Life*, *Hours of Thought on Sacred Things*, and *The Seat of Authority in Religion*. (1805-1900).

Martini, Friedrich, Hungarian inventor, born at Mehadia; as an engineer officer in the Austrian Army, fought against Italy in 1859, later becoming a gun manufacturer in Switzerland; won a competition opened by British Government, 1871, for the best rifle; with adaptations it became the Martini-Henry, used till 1889. (1832-1897).

Martinique, a West Indian French possession, one of the Lesser Antilles; has a much-indented, precipitous coast. A mountain range in the centre is densely wooded; the plains are fertile, and produce sugar, coffee, and cotton which with fruit and rum are the exports. The climate is hot and unhealthy. The island has been French, with three short intervals, since 1635; St. Pierre, the chief town, was destroyed in an eruption of the volcano Mont Pelée in 1902. The capital is Fort de France. Area, 385 sq. m. Pop. 247,000.

Martinmas, the feast of St. Martin (q.v.) on Nov. 11; a quarter day in Scotland.

Martyr, from the Greek word for suffer ignominy and death for the Christian religion. Festivals and prayers were offered at their tombs. The cultus of the martyrs rapidly spread, and became the basis of the honour paid to saints and holy men in general by the Roman Catholic and Eastern churches. A collection of the lives of martyrs and other saints is known as a martyrology. By extension the word is now used of any person who suffers or dies for his beliefs or opinions.

Marvell, Andrew, English poet and politician, born in Yorkshire; was first a lyric poet, and in politics much of a Royalist, at last a violent politician on the Puritan side, having become connected with Milton and Cromwell. He wrote a tract *On the Growth of Popery and Arbitrary Government in England* after the Restoration, which brought him into trouble. Being a favourite with the king, the king sought to bribe him, but in vain. He died suddenly, and an unfounded rumour was circulated that he had been poisoned. (1621-1678).

Marx, (Heinrich) Karl, a German Socialist Jewish descent; was at first a student of philosophy and a disciple of Hegel, but soon abandoned philosophy for social economy on a democratic basis and in a materialistic interest; early adopted socialistic opinions, for

his zeal in which he was driven from Germany, France, and finally Belgium, to settle in London, where he spent the last 30 years of his life; founded the "International" (q.v.), and wrote a work *Das Kapital*, which laid the foundations of modern Communist theory. He is buried at Highgate. (1818-1883).

Mary I., Queen of England, was born at Greenwich, daughter of Henry VIII. and Catharine of Aragon. After her mother's divorce she was treated with aversion. During Edward VI.'s reign she lived in retirement, clinging to her Catholic faith. On her accession in 1553 a Protestant plot to put Lady Jane Grey on the throne failed; she began cautiously to restore Catholicism, imprisoning reformers and reinstating the old bishops. On her choosing Philip of Spain for her husband a revolt broke out under Sir Thomas Wyatt, and though easily put down was the occasion for the execution of Lady Jane Grey and the imprisonment of Elizabeth. After her marriage in 1554 the religious reaction gained strength, submission was made to Rome, and a persecution began in which 300 persons, including Latimer, Ridley, and Cranmer, perished in three years. Ill-health, Philip's cruelty, and her childlessness drove her to melancholy; a war with France led to the loss of Calais in 1558, and she died broken-hearted, a virtuous and pious, but bigoted and relentless woman. (1516-1558).

Mary II., Queen of England, daughter of James II. and Anne Hyde; was married to her cousin William of Orange in 1677, ascended the English throne with him on her father's abdication in 1688, and till her death was his much loved, good, and gentle queen. Greenwich Hospital for disabled sailors, which she built, is her memorial. (1662-1694).

Mary, Olga Pauline Claudine Agnes, consort of King George V. of Great Britain; daughter of the Duke of Teck; born at Kensington Palace on May 26, 1867. She was betrothed to the Duke of Clarence, eldest son of King Edward VII., but after his death, which occurred a month after the engagement was announced, married his younger brother, then Duke of York, and later King George V., on July 6, 1893; to him she bore five sons (the eldest being Edward, Duke of Windsor, the second King George VI.) and one daughter. After the death of her husband she made her home at Marlborough House, London. (1867-).

Mary, Queen of Scots, daughter of James V. of Scotland, and Mary of Guise, born in Linlithgow, became queen ere she was a week old. She was

sent to France in 1548, and married to the dauphin in 1558, who for a year, 1559-1560, was King Francis II. On his death she returned to assume the government in Scotland, now in the throes of the Reformation. She retained her own Catholic faith, but chose Protestant advisers. Against all advice she married her cousin Darnley 1565, who tried to force her to settle the succession on him and his heirs, and had her favourite Rizzio murdered, with Mary's connivance. Her only son, afterwards James VI., was born in 1566. The murder of Darnley took place in February, 1567, being accomplished by Hepburn, Earl of Bothwell, her marriage with whom in May alienated the nobles. They rose, took the queen prisoner, and forced her to abdicate. Next year, escaping, she fled to England, and



MARY
QUEEN OF SCOTS

was there for many years a prisoner. Catholic plots were formed to liberate her and put her in place of Elizabeth on the English throne; at last she was accused of complicity in Babington's conspiracy, tried, found guilty, and executed in Fotheringhay Castle, Feb. 8, 1587. (1542-1587).

Mary, the Princess Royal, third child and only daughter of King George V. and Queen Mary, born April 25, 1897. She married, on Feb. 26, 1922, Viscount Lascelles, afterwards 6th Earl of Harewood, to whom she has borne two sons, George, Viscount Lascelles (b. Feb. 7, 1923) and the Hon. Gerald Lascelles (b. Aug. 21, 1924).

Mary, The Virgin, mother of Jesus Christ. All that is known of her life is what is recorded in the New Testament, principally the gospel of St. Luke. According to tradition she lived at Ephesus with St. John after the crucifixion, and died there. In Roman Catholic theology her part in the plan of redemption has made her an object of worship next after the Divine Persons.

Maryborough, (1) county town of Co. Leix, Eire (Ireland), on a tributary of the Barrow, 50 m. SW. of Dublin. Pop. 3,200. (2) A town in March county, Queensland, Australia, 178 m. from Brisbane. It is on the R. Mary, 25 m. from its mouth, and in railway connection with mining, pastoral, and sugar-growing districts. Pop. 11,800. (3) A town of Talbot county, Victoria, Australia, 112 m. from Melbourne, a busy railway junction, with railway workshops. Pop. 5,700.

Maryland, an Atlantic State of the states, occupying the basin of the Potomac and of Chesapeake Bay, with Pennsylvania on the N., Delaware on the E., and the Virginias on the W. and S.; has a much indented coast-line, affording great facilities for navigation. The soil is throughout fertile; on the level coast plains tobacco and fruit, chiefly peaches, are grown; in the undulating central land wheat and maize. The mountains in the W. are well wooded with pine; there are coal-mines in the W., copper and chrome in the midland, and extensive marble quarries; the shed and herring fisheries are valuable. The manufacture of clothing stuffs, meat packing, and metal goods is extensive. The climate of Maryland is temperate. The Johns Hopkins University is in Baltimore. Colonisation began in 1634, and a policy of religious toleration and peace with the Indians led to prosperity; the State was active in the War of Independence, and remained with the North in the Civil War. The capital is Annapolis, but the largest city is Baltimore, a great wheat-shipping port and centre of industry. Cumberland has brick and cement works, and Hagerstown has machine, farm implement, and furniture factories. Area, 12,300 sq. m. Pop. 1,632,000.

Marylebone Cricket Club.

See M.C.C.

Maryport, a market town and seaport of Cumberland, England, at the mouth of the R. Ellen. It has a harbour, docks, a prawn-fishing industry and an iron foundry. There are coal mines near. Pop. 12,400.

Masaccio, or Tommaso Gaudi, an Italian painter, born in Florence; went when very young to Rome, where he painted in the church of St. Clement a series of frescoes, his greatest work being the frescoes in the Brancacci chapel of the Carmine Church. He was a great master of perspective and colour. (1401-1428).

Masai, a warlike Negro tribe in Africa, between the coast of Zanzibar and Victoria Nyanza, of powerful physique. From about 1850 to 1885 they were a formidable power in N. Africa, asserting themselves

with success against the Arab slave-raiders, but their power declined, largely through internal wars, and they later settled in reserves under British rule and engaged in stock-raising.

Masaryk, Thomas, Czechoslovakian statesman, son of a coach builder; trained for the teaching profession. During the World War he worked with Dr. Benč (q.v.) for the liberation of his country from Austria-Hungary, and on the declaration of its independence he became first President in Nov. 1918, retaining that office till 1935, and being admired by all Europe for his skill in managing its international relations. (1850-1937).

Mascagni, Pietro, Italian composer, born at Leghorn; wrote his most famous opera *Cavalleria Rusticana* in 1890, since when numerous others have been produced, with less success. (1863-).

Masefield, John, British poet, author, Poet Laureate, and playwright; on the death of Robert Bridges in 1936 he became Poet Laureate. His early days were spent in wandering around the world, many of them as an ordinary sailor, and in 1902 he published *Salt Water Ballads*, which caused a stir by their freshness. His poems are marked by great power and originality. *The Everlasting Mercy*, published in 1911, is his most celebrated poem; among his novels are *Captain Margaret* and *Sard Harker*. (1875-).

Mashonaland, district of central 4,000 ft. high crossed by the Uniwukwe Mts., lying to the NE. of Matabeleland and S. of the Zambesi R., of which its streams are tributaries. It is now a part of the British Colony of Southern Rhodesia, having been under British protection since 1888. The natives are of Bantu stock; the country is very rich in iron, copper, and gold, and has traces of ancient scientific gold-mining.

Mask, Lough, lake in Eire (Ireland), about 11 m. long by 3 m. broad, forming a portion of the boundary of Mayo and Galway counties, and remarkable for its beautiful scenery.

Mason, Alfred Edward Woodley, novelist, born at Dulwich, London; educated at Dulwich College, and Trinity College, Oxford. Liberal M.P. for Coventry, 1906-1910. His best-known novels are *The Courtship of Morris Buckler* (1896); *The Four Feathers* (1902); *At the Villa Rose* (1910); *The House of the Arrow* (1924). (1865-).

Mason and Dixon's Line, so-called after two English engineers who surveyed it, 1764-1767, is the boundary separating Maryland from Pennsylvania and Delaware. During the Civil War the name was used of the boundary (not coincident with the real Mason and Dixon's line) dividing the free from the slave-holding states.

Masonry, the art of building in natural stone or artificial stone (concrete), and by extension, in brick, moulded earth (adobe, pisé), etc. The term also refers to the building itself. Stones vary in durability, hardness, etc.; those most commonly used are granite, gneiss, porphyry, marble, limestone, and sandstone. Cut stones are often backed with brick or with rubble masonry, the latter being composed of irregular stone, smaller in size than that used for dressed stone masonry. Rubble masonry may be given a squared facing, but the finest facing given to dressed stone masonry is called ashlar, this being a cut-stone masonry composed of large regular stones, carefully finished with cutting tools. At the present time the use of real stone in masonry has largely given way to that of artificial stone, or reinforced concrete, which can be moulded into any form for decorative work, arches, etc. In masonry

it is all-important that the blocks should be laid truly horizontally, with the joints truly vertical.

Maspero, Gaston Camille Charles, French Egyptologist, born at Paris; made extensive explorations and important discoveries in Egypt; wrote, among works bearing on Egypt, *Histoire Ancienne des Peuples de l'Orient*. (1846-1916).

Masque, a species of dramatic entertainment in which originally the performers wore masks of peculiar forms suggestive of the allegorical character assumed. Its essential feature was the presence of a group of dancers called masquers, who were frequently noblemen or courtiers. They neither spoke nor sang, their function being the creation of "an inspiring show" by their gorgeous costumes and fine presence, enhanced by artistic grouping and decoration. The speech and songs of the masque were always in the hands of a professional entertainer. The poetical background supplied by the genius of such writers as Ben Jonson and Fletcher enhanced the success of the 17th Century Court masques in England. Milton's *Comus* is commonly reputed the finest example of a masque.

Mass, the name given by Roman Catholics (and some Anglicans) to the Christian service commemorating Christ's last Supper. *High Mass* or *Solemn Mass* is the most elaborate form of celebration, with music and incense; *Low Mass* dispenses with these ceremonial accessories. A *Requiem Mass* is one celebrated on behalf of the dead. In Catholic theology the Mass is a real sacrifice of the Body and Blood of Christ, offered to God the Father under the species of bread and wine; attendance at Mass on Sundays and certain great feasts is obligatory on every Catholic. The Mass may only be offered by a duly consecrated priest.

Mass, in physics, the measure of the quantity of matter in a body, as distinguished from *weight*, which is the force of gravity upon a body.

Massachusetts, a New England State of the U.S.A., lies on the Atlantic seaboard between New Hampshire and Vermont on the N. and Rhode I. and Connecticut on the S., with New York on its western border; has a long, irregular coast-line and an uneven surface, rising to the Green Mountains in the W. The scenery is of great beauty, but the soil is in many places poor, the farms raising chiefly hay, potatoes, tobacco, and dairy produce. The winters are severe. Its industries include cotton, woollen, worsted, clothing, leather and leather goods, iron and iron goods, printing. There are several important universities and colleges, including Harvard, Boston, Williams and others. Founded in 1620 by the Pilgrim Fathers.

Massachusetts had many hardships in early days, and was long the scene of religious intolerance and persecution. The War of Independence began at Bunker's Hill and Lexington in 1776. The capital and chief seaport is Boston; Worcester has machinery factories, Springfield paper, and Lowell cotton mills; Concord was for long a literary centre. Area, 8,270 sq. m. Pop. 4,250,000.

Mass Action, Law of, in chemistry, discovered in 1864 by Guldberg and Waage, states that the rate of a chemical reaction is proportional to the active masses of the substances taking part in it, i.e., to their concentration in gram-molecules per litre. It has been of great value in the study of chemical dynamics.

Massage, in medicine, a process of kneading, stroking, and rubbing with the fingers and palms of the hands, to the body as a whole or to locally affected parts, to allay pain, promote circulation, and restore nervous and vital energy.

It was practised in very early times in China and India; was known to the Greeks and Romans, and has been considerably developed in modern times as a therapeutic method.

Massagetae, in classical times a people said to live on the N.E. of the Caspian Sea, and to kill and eat the aged among them, in an expedition against whom, it is said, Cyrus the Great lost his life.

Massawah, seaport and capital of the province of Eritrea, Italian East Africa, situated on a barren island of the Red Sea. It is the chief port of Italian East Africa; pearl-fishing is carried on. Pop. 4,200, chiefly Somalis.

Massena, André, Duc de Rivoli, Prince of Essling, one of the most illustrious marshals of France, born in Nice. He distinguished himself at Rivoli in 1796, at Zurich in 1799, at the siege of Genoa in 1800, at Eckmühl and at Wagram in 1809, and was named by Napoleon the favoured child of victory. He was recalled from the Peninsula by Napoleon for failing to expel Wellington. (1758-1817).

Massey, William Ferguson, New Zealand politician. Born in Ireland, he emigrated at the age of 14, and went in for farming. His political career started in 1894, when he became a local M.P. In 1903 he became leader of the opposition, and in 1912 Prime Minister, in which capacity he was a member of the Imperial War Cabinet and attended the Peace Conference in 1919. (1856-1925).

Massillon, Jean Baptiste, celebrated French pulpit orator, born at Hyères, Provence; entered the congregation of the Oratory, and was called to Paris. He was made bishop of Clermont, and next year preached before Louis XV., now king, his famous *Petit Carême*, a series of ten sermons for Lent. He was a devoted bishop, and the idol of his flock. (1663-1742).

Massinger, Philip, English dramatist. Little is known of his history except that he studied at Oxford, lived in London, and was buried as "a stranger" in St. Saviour's, Southwark. Of his 37 plays only 18 remain and of these the most famous is the comedy entitled *A New Way to Pay Old Debts*. Much of his work, it is alleged, was by way of collaboration with Dekker, Fletcher and other dramatists. (1583-1640).

Master, the title given to the heir of a Scottish peerage below the rank of earl, as Master of Sempill.

Master and Servant. In law a servant is one who has contracted to lease his services to another for a limited period. Servants consist of two classes, those who engage to perform certain duties for certain wages, and apprentices, who may receive something by way of wages, but who have to be taught a trade. The chief classes of servants are: agricultural labourers, operatives or skilled labourers, and menials or domestic servants.

In England, a contract for service for more than a year must be in writing: if for a year and if the servant be discharged without just cause during the year, he may claim wages up to the end of the year: on the other hand, if he leave without cause before the time no wages may be claimed. If he happen within the year to fall sick, or be hurt or disabled in the service of his master, the master cannot, apart from agreement, put him away or abate any part of his wages for that time.

If a domestic servant be engaged under no special contract, a month's warning or payment of a month's wages is all that is necessary to terminate the engagement. Operatives may be discharged or may leave at a week, fortnight or month's notice, according to the

recognised local or trade usage. The grounds on which a servant may be legally discharged without warning are: wilful disobedience of lawful commands, gross immorality, habitual negligence, dishonesty, permanent disability from illness, etc.

A master has no right to chastise a servant, but has the right of moderately correcting an apprentice under age. He is held liable in cases where his servant, in the course of his duty, injures a third party. A master can dismiss a servant without notice and without cause, on payment of wages for the full term of the contract, or for one month if there be no special agreement.

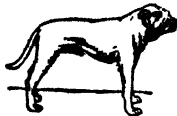
The death of a master terminates the contract, but in Scotland the servant can claim wages for the period of the contract, and in that case must serve the executors. In the case of bankruptcy of the master the servant, if a labourer or workman, is a privileged creditor for wages due, but not exceeding £25. If he be a clerk, shopman, etc., the period is four months, the limit £50.

Master of the Rolls, the custodian of the Record Office and principal Judge of the Court of Appeal; ranking in the English legal hierarchy immediately after the Lord Chief Justice.

Mastic, a brittle transparent resinous substance obtained in liquid form by making incisions in the mastic-tree (*Pistacia Lentiscus*) of the order Anacardiaceae. It is used as the main constituent of varnish and as a stopping in dentistry.

Mastiff, a massive and powerful British dog, weighing 155 to 175 lb.;

The head should be broad and square forehead flat with depression in centre; muzzle short; ears thin; eyes small and wide apart; chest and ribs wide and deep; forelegs straight; loins and back wide and muscular; coat close and short, apricot or silver fawn in colour, with black ears and muzzle.



MASTIFF

Mastodon, one of an extinct species of mammals akin to the elephant, of more primitive type than the mammoth, and belonging to the Miocene and Pliocene periods.

Mastoid, a mass of bone containing cavities which projects from the side of the human skull behind the ear. The mastoid antrum communicates with the middle ear and if the latter is diseased, is liable to suppurate. Suppuration may follow influenza or be caused by failure to keep the ear clean. The inflammation may cause an abscess and, if this is allowed to burst, grave danger may ensue.

Masurium, a supposed metallic chemical element, the discovery of which was claimed by Noddack and Tacke in 1925. Symbol Ma, atomic number 43, atomic weight undetermined. There is doubt whether the discovery can be authenticated.

Matabeleland, (name (now little used) of S. Rhodesia, the area conquered in 1840 by the Zulu Matabele tribes. It became British territory in 1890, native risings in 1893 and 1896 being put down. See Rhodesia.

Matanzas, province of Cuba, E. of Havana; area of 3,260 sq. m. Pop. 344,000. Also its chief town, 33 m. E. of Havana, with large harbour; exports sugar and guavas. Pop. 70,000.

Match, a splint of wood or length of taper capable of ignition. Phosphorus tapers existed in the 15th Century, these being sealed matches which lighted by contact with

the air. The discovery of sulphide of phosphorus revolutionized match-making, and matches which ignite by friction with any surface are tipped with this substance. The "safety-match" resulted from Von Schrotter's discovery in 1855 of amorphous phosphorus, which acts as an oxidizing agent to the material with which the match is tipped. Match-making has grown from a cottage occupation to a huge industry, especially in the countries round the Baltic, where the great forests supply matchwood.

Maté (*Ilex paraguayensis*), a species of holly, native of S. America, whose leaves, roasted and powdered, are used for the beverage "maté tea." It has a somewhat bitter flavour and is taken either neat or with lemon or sugar.

Materialism, the theory which, denying the independent existence of spirit, resolves everything within the sphere of being into matter, or into the operation and the effect of the operation of forces latent in it, or into the negative and positive interaction of mere material forces, to the exclusion of intelligent purpose and design. It is the first philosophical attempt to conceive the world as a unity, and is found in Buddhism as well as in the religious systems of the Chinese and Egyptians.

The clearest exposition is that of the Atomists, especially Democritus of Abdera who explained matter as an aggregation of atoms endowed with motion. He formulates the great principles of the indestructibility of matter and of the conservation of force. The doctrine was revived in England by Hobbes, in France by La Mettrie and Helvetius and in Germany as a reaction against the idealism of Fichte and Hegel by Moleschott and Vogt. Materialists so far have failed to explain satisfactorily either the ultimate nature of the atoms or the phenomena of consciousness by means of atoms and motion.

Mathematics, owes its origin to the antiquity, of the rules for the arithmetical operations of addition, subtraction, multiplication and division, the need for systematic land measurement and the observation of periodical events in the skies which gave rise to a fixed calendar. Its progress was largely held back by the absence of any convenient way of expressing numbers and quantities, and the introduction into Europe about the 10th Century A.D., of the Indo-Arabic system of numerals, 1, 2, 3 . . . together with a special symbol for zero, marked a great advance. Arithmetical calculations were further simplified in the 17th Century by the introduction of logarithms.

About 600 B.C. the Greek, Thales of Miletus, made use of the deductive method in proving some theorems of geometry. Starting from certain axioms or hypotheses which were believed to be self-evident, Thales was able to show what other facts could be demonstrated by logical deduction. The application of the new method quickly led to the development of the subject of geometry (q.v.) and was gradually applied in all branches of mathematics. The 15th Century A.D. saw the growth of the science of algebra, and the following century the foundation of analytical geometry.

From the 17th Century onwards mathematical methods received greater and greater application in the physical sciences, and the problems requiring solution demanded. In their turn, the development of new and powerful branches of mathematics, such as the calculus and differential equations. The growth of mathematics has been particularly rapid during the last two or three centuries, and, at the present day, a mere catalogue of its chief branches would require a long list of subjects.

Mather, Cotton, an American divine, born in Boston; notorious for his belief in witchcraft, and for the persecution he provoked against those charged with it. His book, *Wonders of the Invisible World*, is famous as an attack upon alleged witches. (1683-1728).

Matilda, or Maud, daughter of Henry I., of England and wife of the Emperor Henry V., on whose decease she was married to Geoffrey Plantagenet of Anjou and became mother of Henry II.; on the death of her father succeeded to the English throne, but was supplanted by Stephen, by whom she was finally defeated. (1102-1167).

Matisse, Henri, French post-impressionist painter, born at Le Cateau. From 1895 to 1899 he worked in the classical tradition, and lived some time in Morocco. Under Gauguin's influence, he joined the Fauvist school, and soon became one of its leaders. (1869-).

Matlock, a watering-place in Derbyshire, on a slope overlooking the Derwent, 15 m. N.W. of Derby; famous for over two centuries for its waters. Pop. 16,600.

Matopopo Hills, a range of hills in Matabeleland, S. Rhodesia, some 20 m. S. of Bulawayo. Cecil Rhodes is buried here.

Matriarchy, an order of society in precedence, more especially in reckoning descent, over the father. The existence of matriarchal rule, at one time supposed by many writers to have been not uncommon among primitive peoples, is now generally called in question.

Matriculation, in the general sense indicates admission to membership of any corporate body, but academically it means the formal entry into a university. The matriculation certificate of the University of London makes its holder an undergraduate of that University, and entitles him to become, under certain conditions, an undergraduate member of Manchester, Liverpool, Birmingham and some other universities. The standard of knowledge required by candidates is that which would be expected of a pupil of average ability who had been at a secondary school until reaching the age group of 16 to 18 years. As a preliminary to a course of study for external university degrees, all persons over the age of 16 are eligible. The choice of subjects is wide.

Matrix, the cavity in which anything is formed, and in mineralogy the natural material in which any metal or stone, etc., is embedded. In typography, a mould from which a stereo plate is made; also a mould used in making the face of a letter.

Matron, a term used to denote a married woman, or a woman who has reached an age of staid demeanour, whether or not married. The term is particularly applied to women in charge of staffs of homes and such institutions as hospitals and homes for girls. See also *Nursing*. A jury of matrons, composed of married women, may be empanelled to inquire into the truth of a plea of pregnancy advanced in stay of execution by a woman sentenced to capital punishment.

Matsys, Quentin, a Flemish painter, blacksmith; born in Louvain, originally a blocksmith; did altar-pieces, especially that of Antwerp Cathedral, and genre paintings. (1486-1530).

Mattathias, Jewish national hero, the father of the Maccabees (q.v.), who in 170 B.C. refused the request of a Syrian embassy to sacrifice to the Syrian gods, slew the priest who offered to act in his place, and set up in the Judean wilderness the standard of revolt against Syria thus opening

the Maccabean war which eventually brought national independence.

Matter, in physics, is roughly defined as occupies space. The law of the conservation of matter states that matter can neither be created nor destroyed, and in ordinary circumstances this law holds good with extreme accuracy. Modern research has, however, shown that matter may be converted into energy, 1 gram of matter (of whatever kind) yielding 9×10^{10} ergs; the reverse process, viz., the conversion of energy into matter, is also possible. It is therefore more correct to restate the laws of the conservation of matter and energy as follows: the sum total of energy plus matter in the universe is a constant.

Matterhorn, a sharp Alpine peak, 14,780 ft. high, on the Swiss-Italian border, difficult of ascent; first scaled by Whymper, 1865.

Matthew, a tax-collector or publican, one of the twelve apostles of Christ, also known as Levi; generally represented in Christian art as an old man with a large flowing beard, and often as occupied in writing his gospel; Feast, Sept. 21.

Matthew, Gospel according to, the first book of the New Testament, based largely on a collection of sayings of Jesus or "Logia," and on the Gospel according to Mark; it was originally written in Aramaic; both its date and its authorship are uncertain.

Matthias Corvinus, King of Hungary from 1458, born in Klausenburg. Though arbitrary in his measures, he promoted commerce, dispensed justice, fostered culture, and observed sound finance. He founded the University of Budapest, an observatory, and great library, but his reign was full of wars. For nine years he fought the Turks, and took from them Bosnia, Moldavia, and Wallachia. From 1470 till 1478 the struggle was with Bohemia, from which he wrested Moravia, Silesia, and Lusatia; then followed war with Frederick III., the capture of Vienna, 1485, and a large part of Austria, 1487. He made Vienna his capital. (1443-1490).

Maubeuge, a strongly fortified town of France in the dept. of Nord, on the Sambre. In the World War it was taken by the Germans in 1914 and held until Nov. 1918. It has a large arsenal. The industries include metal and marble works. Pop. 22,000.

Maude, Cyril, English actor-manager, the leading comedian of his time; born in London, educated at Charterhouse. First appeared at Denver, Colo., in *East Lynne*, 1884; in England, at the Criterion, 1886, in *The Great Divorce Case*; in first performance of *The Second Mrs. Tanqueray*, 1893; joint-manager at the Haymarket, 1896-1905; built the Playhouse, 1907, which he managed until 1913. (1862-).

Maude, Sir Frederick Stanley, British general. Of Irish birth, he entered the Coldstream Guards, saw service in the Sudan and Boer War, and in Oct. 1914, took command of the 14th brigade in France. He was in charge of the 13th division in Gallipoli, and later in Mesopotamia, where he succeeded Townshend and captured Bagdad, where he contracted fever and died. (1864-1917).

Maugham, William Somerset, English novelist and playwright, born in Paris; educated at the King's School, Canterbury, and Heidelberg University; studied medicine, but in 1897 published his first novel, *Liza of Lambeth*. Besides several volumes of short stories, he has written many novels and plays, among the former *Of Human Bondage*, and among the latter *Our Betters*, a

social satire performed in New York, 1917, and London, 1932. His autobiography, *The Summing Up*, appeared in 1938. (1874-).

Maumbury Rings, circular earth mounds situated about $\frac{1}{2}$ m. S. of the town of Dorchester, Dorset, England. They form a circle capable of holding 12,000 persons. Excavations carried out 1908-1913 disclose that the original work was an earthen circle, with an interior ditch, dating from the late Neolithic to Early Bronze Age (c. 1800 B.C.). In Roman times the work was converted into the amphitheatre of the town of Durnovaria (the modern Dorchester).

Maundy Thursday, the Thursday before Good Friday, on which day it was customary for princes, rulers and other great persons to wash the feet of a number of poor people, and on which a distribution of alms ("Maundy money") is still made on behalf of the King to a certain number of poor persons.

Maupassant, Guy de, a French novelist, born in Fécamp; served in the Franco-Prussian War, and afterwards gave himself to letters, producing novels, stories, lyrics, and plays; died insane. (1850-1893).

Maurice, Frederick Denison, a liberal theologian and social reformer, born at Normanston, near Lowestoft, the son of a Unitarian minister; for a time edited the *Athenaeum*, and took orders in the English Church in 1834; held professorships in Literature, in Theology, and Moral Philosophy; was a disciple of Coleridge, a Broad Churchman, and with Kingsley, one of the originators of Christian Socialism, and the founder of the Working-Men's College. (1805-1872).

Maurice of Nassau, Dutch statesman, Prince of Orange; one of the most famous generals of his time; was son of William the Silent, on whose assassination he was elected Stadtholder, and became the liberator of the United Provinces of Spain. (1567-1625).

Maurier, Sir Gerald du, English actor-manager, born at Hampstead; made his first stage appearance in 1894. Among his successes were the parts of Captain Hook in *Peter Pan*, Hamlet, and Brewster, in *Brewster's Millions*. He was knighted in 1912. (1873-1934).



SIR GERALD DU MAURIER

Mauritania, under the Roman empire name of the African country W. of the Mluya R. and N. of the Atlas Mts., from which supplies of corn and timber were obtained.

Mauritius, British possession in the Indian Ocean, 550 m. E. of Madagascar, a volcanic island with mountains 3,000 ft. high, a tableland in the centre, and many short streams. Formerly well wooded, the forests have been cut down to make room for sugar, coffee, maize, and rice plantations; sugar is the main export. The population is very mixed, including many Indians; there are also descendants of French settlers and Europeans. Discovered by the Portuguese about 1510, it was abandoned 90 years later; the Dutch held it for 112 years, and abandoned it in turn. Occupied by the French in 1721, it was captured by Britain in 1810. Area, 720 sq. m. Pop. 405,000. Port Louis (pop. 55,000) in the NW, is the capital and a British naval coaling station.

Maurois, André, pseudonym of Émile Salomon Wilhelm Herzog, French author, born at Elbeuf, educated at Rouen. Knowing English thoroughly, he was an official interpreter during the World War. His

first book, *Les Silences du Colonel Brambles*, 1918, displayed knowledge of English character. Other works are *Lives of Shelley, Diderot and Byron*, and *Poets and Prophets*. (1885-).

Maurras, Charles Marie Phébus, French monarchist writer; born at Martigues (Bouches-du-Rhône); educated at Catholic College of Aix. With Léon Daudet, conducted *L'Action Française* from 1908; imprisoned, 1926. His atheism antagonized the Church; but his authoritarian politics helped to form Italian Fascism. (1868-).

Mausier Rifle, a military rifle with ridges under the receiver in front of the trigger guard. The magazine box, which is movable, may be charged with a single cartridge or with five. It was invented by Paul Mauser, a German, and adopted as the standard rifle of the German Army. The Belgian Army adopted it in 1889, and the Argentine Republic two years later.

Mausolus, a king of Caria, husband of Halicarnassus, raised a monument to his memory, called the Mausoleum, reckoned one of the Seven Wonders of the world. From this is derived the use of the word to cover any large and imposing tomb.

Mauveine, the first of the aniline dyes to be prepared, was obtained by Sir W. H. Perkin in 1856 by the action of chromic acid upon aniline made from coal-tar benzene. The discovery was accidentally made while Perkin was trying to synthesize quinine.

Mawson, Sir Douglas, British explorer. He went to the Antarctic in 1907 with Shackleton, and in 1911 commanded the Australian Antarctic expedition, a venture which ended in failure and of which he was the only survivor. Knighted in 1914, he undertook a fresh voyage in the *Discovery* in 1929. (1882-).

Maxim, Sir Hiram Stevens, inventor, born at Tangerville, Maine, U.S.A.; later a naturalized British subject; is best known in connection with the invention of the gun named after him, but among his other inventions are the smokeless powder, the incandescent lamp carbons, and searchlights and he also carried out early experiments in flying. (1840-1916).

Maximilian, Emperor of Mexico, was an Austrian archduke, younger brother of Francis Joseph I., born in Schönbrunn; was made Mexican emperor under French influence in 1863, but roused the Liberal party against him, and at the head of 8,000 men was defeated at Queretaro, taken prisoner, tried by court-martial, and shot. (1832-1867).

Maximilian I. German Emperor, son of Frederick III., acquired Burgundy and Flanders by marriage, which involved him in a war with France; became emperor on the death of his father in 1493; became by marriage Duke of Milan, and brought Spain under the power of his dynasty by the marriage of his son Philip to the daughter of Ferdinand and Isabella. It was he who assembled the Diet of Augsburg at which Luther made appeal to the Pope. (1459-1519).

Max-Müller, Friedrich, philologist, German poet, Wilhelm Müller; educated at Leipzig and Paris, and came to England in 1846; was appointed Taylorian Professor at Oxford in 1854, and in 1868 professor of Comparative Philology there, a science to which he made large contributions, editing and translating many Hindu, Buddhist and other Eastern works, and writing much on the origin and development of language. (1823-1900).

Maxton, James, Scottish politician, educated at Glasgow, by profession a teacher. Member of Glasgow Education Authority, and Scottish organizer of Independent Labour Party, 1919-1922; M.P. for Bridgeton from 1922. Is leader of the Independent Labour Party group in Parliament, leading it in secession from the official Labour Party in 1931. (1885-).



JAMES MAXTON

May, the fifth month of the year, so called from the Latin *Maïus*, itself derived from a Sanskrit word signifying to grow, as being the shooting or growing month.

May, Phil, British artist who, after some years' work on the *Sydney Bulletin* in Australia, made a name by comic drawing, especially his Cockney studies in *Punch* and other periodicals and his work for the *Graphic*. (1864-1903).

Mayas, an ancient people of Central America whose high pitch of culture is revealed by the monuments, remains of palaces, temples, and pyramids found in Yucatan. At the present time the race is represented strongly in Yucatan, where the language is still spoken.

Mayenne, inland dept. of NW. France; cattle and horses are raised, and stone quarried; capital, Laval; area, 1,985 sq. m. Pop. 251,400.

Mayfair, a western district of London, in the City of Westminster, containing some of its most fashionable residential and shopping centres. It includes Carson Street, Berkeley Square, and Grosvenor Square; it is bounded roughly by Oxford Street, Bond Street, Piccadilly, and Park Lane.

Mayflower, The, the name of the small brigantine on which the "Pilgrim Fathers" (q.v.) sailed from Plymouth on Sept. 6, 1620, landing at Plymouth Rock, Massachusetts on December 21. This band of English Separatists formed the nucleus of the earliest permanent colony in Massachusetts.

Mayfly. See *Ephemera*.

Maynooth, village in co. Kildare, Eire (Ireland), 15 m. W. of Dublin; is the seat of a Roman Catholic seminary founded by the Irish Parliament in 1795 on the abolition of the French colleges during the Revolution; an annual grant of £9,000 was made, increased to £26,000 in 1846, but commuted in 1869 for a sum of £1,100,000, when State connection ceased; the college houses 500 students for the priesthood.

Mayo, maritime county in Connaught, Eire (Ireland), between Sligo and Galway; has many indentations, the largest Broadhaven, Blacksod, and Clew Bays, and Achill and Clare Is., with a remarkable peninsula, The Mullet; mountains in the W., the E. is more level, and has Lough Conn and the Moy R. Much of the county is barren and bog, but crops of cereals and potatoes are raised; cattle are reared on pasture lands. There are valuable slate quarries and manganese mines. Castlebar, in the centre, is the county town; Westport, on Clew Bay, has some shipping. Area, 1,324,000 acres. Pop. 161,000.

Mayors, chairmen of city and borough over which they preside. The office dates back to the time of Henry II. London and some of the large provincial cities have Mayors. The equivalent name in 11s Provost.

Mayweed (*Matricaria inodrata*), an annual or perennial plant of the order Compositae with finely dissected leaves and with white ray florets and yellow discs. It grows throughout Europe and Asiatic Russia.

May Week, the annual summer inter-collegiate races for the headship of the river held at Cambridge every June, when the college balls also take place.

Mazarin, Jules, Italo-French cardinal and statesman, born in Piscina, Abruzzi. Having been sent by the Pope on an embassy to France, he gained the favour of Richelieu, whom he succeeded, being naturalized as a Frenchman in 1642. He brought the Thirty Years' War to an end by negotiating the peace of Westphalia, crushed the revolt of the Fronde (q.v.), and imposed on Spain the treaty of the Pyrenees. At first a popular minister, he began to lose favour when cabals were formed against him, and he was dismissed, but he contrived to allay the storm, regained his power, and held it till his death. He died immensely rich, and bequeathed his library, which was a large one, to the College Mazarin. A bible in the Mazarin library, dated 1456, is known as the "Mazarin Bible." (1602-1661).

Maze, a building or place constructed of intricate passage-ways rendering egress difficult. Such devices were known to the classical world, existing in Crete and Egypt. There is a well-known maze at Hampton Court made in the reign of William III., the paths of which are bordered with yew trees. See also *Labyrinth*.

Mazeppa, Ivan, hetman of the Cossacks, born in Podolia; became page to John Casimir, king of Poland; was taken by a Polish nobleman, who surprised him with his wife, and tied by him to the back of a wild horse, which galloped off with him to the Ukraine, where he joined a Cossack band, became secretary to their hetman, and finally hetman himself. He won the confidence of Peter the Great, who made him a prince under his suzerainty, but in an evil hour he allied himself with Charles XII. of Sweden; fled to Bender on the defeat of the king at Pultowa in 1709. (1645-1709).

Mazurka, a lively Polish dance, executed much practised in the N. of Germany as well as in Poland; a favourite form of composition with Chopin.

Mazzini, Giuseppe, Italian patriot, born in Genoa, his life spent in political agitation for the regeneration of his country on a democratic basis; was arrested in 1831 and expelled from Italy; organised at Marseilles the secret society of Young Italy whose motto was "God and the People"; lived in Marseilles, Switzerland and London, until on the outbreak of the Revolution in 1848 at Paris he hastened thither to join the movement, which had spread into Italy, where in 1849 he was installed one of a triumvirate in Rome and conducted the defence of the city against France, but refused to join in the capitulation; he returned to London and eventually retired to Geneva. (1805-1873).

M.C.C., the Marylebone Cricket Club, formed about 1787 as a development of the White Conduit Cricket Club, whose members played cricket at White Conduit Fields, Islington. In that year Thomas Lord acquired a ground for the club at what is now Dorset Square. The club's present ground at St. John's Wood was acquired in 1808. During the whole of its existence it has been recognised as the controlling authority of cricket.

Mead, a beverage made by fermenting barley, honey, used in civilized and barbarous Europe from very early times.

Meadow Grass, a general name for grasses of the genus *Poa* of which there are 150 species, 8 being found in Britain. They include some of the commonest grasses, small or tall, with spreading panicles, and some useful pasture grasses. The spikelets have two or more florets.

Meadow Rue (*Thalictrum flavum*), a herbaceous British wild

plant of the natural order Ranunculaceae. It has fine compound leaves. The stems, short or tall, are crowned with numerous small flowers, giving a feathery effect. A number of other allied species, also so called, are grown in gardens as perennials for the sake of their fern-like foliage and attractive flowers.



MEADOW RUE

Meadow Saffron, or *Autumn Crocus*. See *Colchicum*.

Meadow Sweet (*Spiraea Ulmaria*), a plant of the rose (Rosaceae) order, growing wild in Britain. It bears sweetly-scented creamy-white clustered flowers and grows in moist soil, frequently by ditches and ponds. It grows 2 ft. to 4 ft. high. At least one variety (*S. ulmaria flore pleno*) is grown in moist peaty soil in gardens.

Mealie, the South African name for Indian corn or maize (q.v.)

Measles, an acute infective and eruptive, as yet unidentified. It is a serious illness, chiefly on account of possible complications, such as broncho-pneumonia, laryngitis, inflammation of the ear, and various nervous disorders. It most commonly occurs in young children, during the winter or spring. The incubation period is generally a fortnight, and quarantine 15 days. The rash appears on the fourth day, spreading from below the ears to the face and over the body; earlier symptoms are acute catarrh of the eyes and nose, an aversion from light, and a fairly high temperature. The rash, consisting of groups of raised spots, begins to subside after 2 days, the temperature returning to normal after a week.

Meath, a county of Leinster, Eire (Ireland), touching the Irish Sea between Louth and Dublin, watered by the Boyne R. and its tributary the Blackwater. The surface is undulating, the soil fertile; some oats and potatoes are grown, but most of the country is under pasture. There is a little linen and coarse woollen industry. The chief towns are Navan, Kells, and the county town, Trim. Meath was in ancient Ireland, one of the five kingdoms into which the country was divided. Area, 903 sq. m. Pop. 61,300.

Meaux, French town, on the Marne, 28 m. N.E. of Paris, a well-built town, with Gothic cathedral; has a large corn and provision trade, and copper and cotton industries; Bossuet was bishop here, and it contains his grave. Pop. 13,000.

Mecca, the birthplace of Mohammed, the capital of Hejaz and the former capital of Arabia; in the midst of sandy valleys, and 60 m. distant from Jeddah, its port; a city to which every Mussulman must make a pilgrimage once in his life. Pop. 80,000.

Mechanics, that branch of physical forces and their effect upon bodies as regards motion, acceleration, equilibrium, etc. The science was founded by Galilei (q.v.), Stevinus (1548-1630), and Newton (q.v.), and the Newtonian system is still entirely adequate for all except the most minutely accurate requirements, where it is supplemented by the

recent work of Einstein. See *Classical Dynamics*, *Kinetics*, *Kinematics*.

Mecklenburg, a German "land" the union of the former states of Mecklenburg-Schwerin and Mecklenburg-Strelitz, on the shores of the Baltic between Schleswig-Holstein and Pomerania; is mostly a level, fertile plain, with numerous small rivers and many lakes. Agriculture is the chief industry; merino sheep are renowned; there are iron-founding, sugar-refining, and tanning works, and amber is found on the coasts. Schwerin (pop. 54,000) on Lake Schwerin, is the capital. Rostock, a busy port on the Baltic has a University. Area, 6,200 sq. m. Pop. 805,000.

Medal, a small plate of metal bearing an inscription or design, struck to commemorate some notable occasion or event; the word to-day has only this specialised sense, but in classical times medals were not differentiated from coins. The art of striking medals reached its height between the 14th and 15th Centuries. Two schools, the Italian and the German, were particularly prominent, the former distinguished by the work of Vittore Pisano, the latter by that of Albrecht Dürer. The 17th Century saw the rise of the French and Dutch schools. In England, medals have been struck since the 16th Century. Since Waterloo (1815), campaign medals have been regularly awarded, as well as medals for valour and distinguished conduct. The Victoria Cross was instituted in 1856, the Conspicuous Gallantry Medal in 1855, the Distinguished Conduct Medal in 1845. There are special medals for the R.A.F. (the Distinguished Flying Medal, 1918), and life-saving medals are awarded by various institutions, the Royal Lifeboat Institution, the Board of Trade, etc. Since Edward VI. there has been an uninterrupted series of Coronation medals.

Medallion, a coin or medal struck to commemorate some particular event. In architecture the name is used of a tablet, in relief, for mural decoration.

Medea, a famous sorceress of Greek legend, daughter of Aetes, king of Colchis, who assisted Jason (q.v.) to acquire the Golden Fleece, and accompanied him back to Greece as his wife. By her art she restored the youth of Eson, the father of her husband, but the latter having abandoned her she avenged herself on him by putting the children she had by him to death. Her story is the subject of a play by Euripides.

Media, a country on the SW. of the Caspian Sea, originally a province of the Assyrian empire, from which it revolted; was after 150 years of independence annexed to Persia by Cyrus, of which it had formed the NW. portion; it is now part of Iran.

Medici, an illustrious family who, at Florence in the 15th Century, the most celebrated members of

which were: Cosimo de', surnamed the "Father of his country," was exiled for ten years but recalled, and had afterwards a peaceful and prosperous reign; was a student of philosophy, and much interested in literature (1389-1464). Lorenzo de', the Magnificent, did much to demoralise Florence, but patronised literature and the arts (1448-1492). Other celebrated members of the family were Popes Leo X., Clement VII., and Catharine and Mary de' Medici.



LORENZO DE' MEDICI

Medicine, the science of treating disease with a view to cure, has in the Western world a continuous history since Hippocrates, a Greek of 400 B.C., whose methods have been preserved in the Hippocratic Corpus. The second great figure in medical history was a Roman, Galen, who began to practise in the 2nd Century A.D., and after whom for fourteen centuries medicine remained almost stationary. In the Middle Ages the foremost practitioners were Arabs and Jews. In the 16th Century three men stand out—Paracelsus, a Swiss; Vesalius of Flanders; and Ambroise Paré of France. During the 17th Century special progress was made in anatomy, physiology, chemistry and ophthalmology. In the second half of the 19th Century surgical practice made rapid strides after the discovery of anaesthetics (first widely used by Simpson of Edinburgh), and the antiseptic principles of Lister, who applied the work of Pasteur, the founder of modern bacteriology (see also *Surgery*). The discovery of X-rays towards the end of the century had an immediate effect in the treatment of injuries, lesions, diseased tissues, etc. (See *Radiology*.) During the 20th Century the preventive side of medicine was developed. Laws were made relating to public health, sanitation, and the health of the worker, and clinics were established to deal with tuberculosis, venereal disease, and for maternity and child welfare. Before beginning medical practice the student must have his name entered on the Register of the General Medical Council, and for this certain medical degrees or other recognised qualifications are necessary.

Medicine Hat, a town of Alberta, is found in the district, and among its industries is that of flour-milling. It is an air-port. Pop. 10,300.

Medick (*Medicago*), a genus of clover-like plants with yellow or purple flowers. Some species, including alfalfa or Lucerne (*M. sativa*), are grown as fodder. Six species are found in England, known as medick, nonsuch, burweed, etc.

Medina (lit. the city), called also *Medina-en-Nabi*, 210 m. N. of Mecca, the city where Mohammed found refuge after his "flight" from Mecca in 632, and lived thereafter. His tomb is in a beautiful and rich mosque called El Haram (i.e., the inviolate), erected on the site of the prophet's house. Pop. c. 20,000.

Medina, a small river in the Isle of Wight, England, almost dividing the island in two. On its banks stands Newport, the chief town of the island, and Cowes stands on the estuary.

Medinet-el-Fayum, a city of Upper Egypt and capital of the Fayum province. It is a large trading centre. Pop. 21,800.

Mediterranean Sea, so called by as lying in the presumed middle of the earth, surrounded by Europe, Asia, and Africa; the largest enclosed sea in the world. Its communication with the Atlantic is Gibraltar Strait, 9 m. wide; it is linked with the Black Sea through the Dardanelles, and in 1869 a canal through the isthmus of Suez connected it with the Red Sea. It is 2,300 m. long by 1,200 m. broad, the S. shores regular; the N. with many gulfs, and two great inlets, the Aegean and Adriatic Seas. The Balearic Is., Corsica, Sardinia, Sicily, Malta, Cyprus, and Crete, the Ionian Is., and the Archipelago are the chief islands; the Rhône, Po, and Nile the chief rivers that discharge into it. A ridge between Sicily and Cape Bon divides it into two great basins; it is practically tideless, and saltier than the Atlantic: its waters too are warm. Northerly

winds prevail in the E. with certain regular variations. In recent years it has become the centre of gravity of European politics, as a result of Italian aspirations in Africa and the near East, and the Civil War in Spain.

Medjidie, a former Turkish order of knighthood instituted in 1852 by the Sultan Abd-ul-Medjid, as a reward of merit in civil or military service.

Medlar (*Pyrus*, or *Mespilus germanica*), a common deciduous shrub found in hedges in most parts of Europe. The fruit, which is about an inch in diameter, grows on the points of the main or side shoots, and is depressed and concave on top. The Nottingham cultivated variety is considered the best. The fruit is harsh and astringent. It is not eaten until "bletted," i.e., until it is brown and decay has set in.

Medmenham, a village of Buckinghamshire, 60 m. from London. The former Clisterian abbey was tenanted during the 18th Century by a band of men of fashion under the designation of the "Monks of St. Francis," better known as the "Hell Fire Club," led by Sir Francis Dashwood, John Wilkes and others, who converted it into a convivial retreat and there celebrated their orgies. Pop. 400.

Médoc, a district in the dept. of the Gironde, to the S. of the estuary of that name, in the S. of France, famous for its wines.

Medusa, one of the three Gorgons (q.v.), originally a beautiful woman who offended Athena, so that the goddess changed her hair into hideous serpents, and gave to her eyes the power of turning anyone into stone who looked into them. Perseus (q.v.) cut off her head by the help of Athena.

Medway, a river in Kent, England, rising in Sussex, and after a N.E. course of 58 m. falling into a tidal estuary of the Thames mouth at Sheerness.

Meerschaum (lit. sea-foam), a fine white clay, hydrated silicate of magnesia, found in Asia Minor, Morocco and elsewhere. It is used mainly for making tobacco pipe bowls.

Meerut, an Indian town in the North-West Provinces, on the Nuddi, 40 m. N.E. of Delhi; is capital of a district of the same name, and an important military station; it is noted as the scene of the outbreak of the Mutiny in 1857. Pop. c. 137,000.

Megalithic Age, the age of ancient or structures of large stones, such as the early Cyclopean architecture in ancient Greece. Such monuments were generally sepulchral, they are classified into dolmens, circles, menhirs etc. Examples in Britain include Stonehenge.

Megalomania, a disordered mental condition in which the patient is afflicted with the delusion that he is a person of the highest position or importance or endowed with vast riches. The latter delusion is frequent in cases of general paralysis.

Megalosaurus, gigantic extinct carnivorous dinosaur, about 48 ft. long; it walked on its hind legs and preyed upon the herbivorous dinosaurs.

Megaphone, a long funnel-shaped instrument for carrying sound over long distances. The less elaborate megaphones are commonly used to make announcements at sporting events. The instrument was invented by Edison. Electrical amplifiers have now largely replaced them.

Megararis, a small but populous state of ancient Greece, S. of Attica, whose inhabitants were adventurous seafarers, credited with deceitful propensities. The capital, Megara, famous for white marble and fine clay, was the birthplace of Euclid.

Megatherium, an extinct genus of mammalia allied to the sloth, some 18 or 20 ft. in length and 8 ft. in height; its remains are mostly found in S. America.



MEGATHERIUM

Megiddo,

an ancient city of Palestine, at which both Josiah and Ahaziah died. Excavations have revealed tombs and much of a well-built ancient town. In the World War it was captured by Allenby in 1918.

Mehemet Ali, pasha of Egypt, born in Albania; entered the Turkish army, rose into favour and seized the pashalik, the Sultan exacting an annual tribute in acknowledgment of his suzerainty; the Mamelukes proving unruly, he slaughtered them wholesale in 1811. He maintained two wars with the Sultan for the possession of Syria, with Ibrahim Pasha, his son, for lieutenant. Compelled to give up the struggle, he instituted a series of reforms in Egypt, and secured from the Sultan the hereditary rule of Egypt for his family. (1769-1849).

Meighen, Arthur, Canadian statesman; born at Anderson, Ontario, and educated at Toronto University. A barrister, he entered the Dominion Parliament as a Conservative in 1908, becoming Solicitor-General, 1913; Secretary of State, later Minister of Interior, 1917; Prime Minister in 1920-1921, and again in 1926. Leader of government in Senate, 1932-1935. (1874-).

Meissen, a town of Saxony, on the river Elbe, 15 m. NW. of Dresden; has a very fine Gothic cathedral and an old castle. There is a large porcelain factory, where Dresden china was made, besides manufactures of iron. Pop. 47,000.

Meissonier, Jean Louis Ernest, French painter, born in Lyons; began as a book illustrator, practising the while and perfecting his art as a figure painter, in which he achieved signal success, from his "Chess-player" series and military pieces to his designs for the decoration of the Pantheon. (1815-1891).

Meistersänger, or **Meistersingers**, a German in the 15th Century or earlier for the cultivation of poetry, of which Hans Sachs (q.v.) was the most famous member.

Mekong, or **Cambodia**, is the chief river of Siam. Its source in the mountains of Chiamdo is unexplored. Its course, 3,000 m., is southerly to the China Sea; the last 500 m. are navigable.

Melanchthon, Philip, Protestant Reformer, born in the Palatinate of the Rhine; met Luther at Wittenberg, where he was professor of Greek.

He wrote the first Protestant work in dogmatic theology, entitled *Loci Communes*, and drew up the "Augsburg Confession." The sweetness of temper for which he was distinguished, together with his soberness as a thinker, had a moderating influence on Luther, and contributed much to the progress of the Reformation. He combined the humanist with the Reformer. (1497-1560).



PHILIP MELANCHTHON

Melanesia, general name for the group of crystalline, coralline, and volcanic islands in the W. of Polynesia, all S. of the equator, inhabited by the Melanesian or dark oceanic race; includes the Fiji Is., New Britain and New Hebrides and part of New Guinea.

Melba, Dame Nellie, Australian opera-singer, the singer, born in Melbourne; made her first appearance when she was only six; studied in Paris in 1882 and appeared in opera for the first time in Brussels in 1887; often appeared in opera in London; received the D.B.E. for her charitable work in the World War. (1861-1931).

Melbourne, the capital of Victoria, Australia, on the R. Yarra and at the head of Port Phillip Bay; second largest city in Australia. It is well planned and built in broad regular streets with much architectural beauty, and contains many buildings of imposing appearance; was the seat of the Commonwealth Government till 1927, when this honour was transferred to Canberra. First settled in 1835, it was incorporated in 1842. Some of its streets are world-famed for their wonderful avenues of trees which extend for miles. It contains a large number of factories and is a great commercial and railway centre. Its shipping interests are very large, and it has wharves both at Port Melbourne and along the banks of the Yarra R. Pop. 1,018,000.

Melbourne, a small town of Derbyshire, shire, England, 8 m. S.E. of Derby, manufacturing silk fabrics, boots, shoes and hosiery. In the former castle John, Duc de Bourbon, taken at the battle of Agincourt, was detained 18 years. Pop. 3,700.

Melbourne, William Lamb, Viscount, English statesman, born in London; educated at Cambridge and Glasgow Universities; entered Parliament as a Whig in 1805, but was Chief Secretary for Ireland in the Governments of Canning, Goderich, and Wellington; succeeding to the title in 1828, he reverted to his old party; was Home Secretary under Earl Grey in 1830, and was himself Prime Minister for four months in 1834, and then from 1835 till 1841, when he retired from public life. (1779-1848).

Melchett, Alfred Moritz Mond, first Baron, British industrialist, largely responsible for the formation of Imperial Chemical Industries, Ltd.; elected to Parliament as a Liberal in 1906, became Minister of Health in 1921, changed to the Conservative party in 1927 and was raised to the peerage the following year. He was a prominent Zionist. (1868-1930).

Melchizedek (i.e., king of righteousness or justice), a priest-king of Salem, to whom Abraham, as recorded in Genesis, did homage and paid tithes.

Meleager, a Greek mythical hero, who slew a wild boar which devastated his country; his life depended on the burning down of a brand that was blazing on the hearth at the time of his birth, but which his mother at once snatched from the flames. He killed his uncles in a quarrel, and his mother, to be avenged on him for slaying her brothers, threw the brand back into the fire, and on the instant he breathed his last.

Mellon, Andrew William, American banker and politician, born in Pittsburgh; industrial development made his banking business prosper, and he became one of the three or four wealthiest men in the world. In 1921 he became Secretary of the Treasury, and he later came to London as American ambassador. He presented to American an art collection estimated to be worth \$10,000,000. In 1911 he founded the Mellon Institute at Pittsburgh, the world's largest institute for scientific research; the building was dedicated in 1937. (1855-1937.)

Melodrama, originally a play with music, now a play remarkable for rapid and incessant action, sensational situations, and violently expressed emotion, with marked contrast between hero and villain. Thomas Holcroft is credited with introducing this genre to the English stage with plays such as *Deaf and Dumb*, adapted from the French *melodrame* by Bouilly, and *The Tale of Mytelry* in 1803. The elements of melodrama had, however, existed long before, and were present in much Elizabethan tragedy and in late 18th-Century romantic drama. Famous Victorian melodramas, which have been revived with success in late years, include *Sweeney Todd*, *The Demon Barber of Fleet Street*, and *Maria Marten, or the Murder in the Red Barn*.

Melon (*Cucumis melo*), a tropical vine of the order Cucurbitaceae, with a large green, yellow or white succulent fruit. It is largely grown in Mediterranean countries and in America, and in Britain under glass.



Melpomene, the one of the nine muses which presides over tragedy.

Melrose, a small town in Roxburghshire, Scotland, at the foot of the Eildons, on the S. bank of the Tweed, famed for its abbey, founded by David I. in 1136; it is celebrated by Sir Walter Scott in his *Lady of the Last Minstrel*. Pop. 2,000.

Melton Mowbray, a town in Leicestershire, England, 15 m. N.E. of Leicester, the centre of a great hunting district; celebrated for its pork pies. Pop. 10,500.

Melville, Herman, American author, born in New York, went to sea in early life; wrote *Typee*, *Omoo*, *Moby Dick* and other stories of sea life and adventure. (1819-1891).

Memel, or Klaipėda, Baltic seaport at the mouth of the Kurisches Haft. Before the World War the town, with a strip of territory beyond the Niemen, belonged to Germany. After the War it was assigned to the League of Nations and administered by the Conference of Ambassadors for three years; but in 1923 it was handed over to Lithuania on condition that it received a considerable measure of autonomy. Since then Nazi influence has prevailed at recent elections to the Diet. Timber is exported in large quantities and there are chemical works and shipbuilding yards. Pop. (town) 38,000.

Memlinc, Hans, painter of Flemish school; born either at Mumlinc, near Aschaffenburg, Bavaria; or at Memelinc, near Alkmaar, Holland. He worked mainly at Bruges, and is renowned as a colourist. His work is still largely represented at Bruges. (c. 1430-1494).

Memnon, in Greek mythology, a son of Pora, slain by Achilles at Troy. At his death Aurora beguiled Zeus to immortalize his memory, and ever since the earth bears witness to her weeping in the dews of the morning. A statue to his memory was erected near Thebes, in Egypt, and was fabled to emit a musical sound every time the first ray of the sun fell on it.

Memory, the mental processes involved in the recollection and representation of past experience. The function is performed by the mind, but does not depend upon a separate faculty. A fundamental principle of memorization of any subject is that it must be understood, while the pre-

existence of other associated experiences is of material assistance in fixing it upon the mind. Concentration or attention is essential to rapid memorization. A faulty method of learning by memory, especially a lengthy passage of poetry, for example, is to learn a section at a time. Psychology has proved that repetition of the entire passage until complete mastery is assured, is more reliable.

Memphis, an ancient city of Egypt, of which it was at certain periods the capital; it was founded by Menes at the apex of the delta of the Nile, and contained 700,000 inhabitants; famous for its pyramids, the Serapeum and temples.

Memphis, city and port in Tennessee, U.S.A., on the Mississippi, 826 m. above New Orleans, accessible to the largest vessels; is also a great railway centre, and therefore of great commercial importance; has many industries, and a great cotton market. Pop. 253,000.

Menai Strait, a picturesque channel Anglesey from Caernarvonshire, 14 m. long and at its narrowest 200 yards wide; is crossed by a suspension bridge (1825) and the Britannia Tubular Railway Bridge (1850).

Menander, a Greek comic poet, born in Athens; of his works, which were numerous, we have only some fragments; they were largely used by the Latin poet Terence in the construction of his plays. (342-291 B.C.).

Mencius, or Meng-Tze, a celebrated Chinese sage, greatly honoured by Confucianists; his teachings were collected by his followers in a book entitled the *Book of Meng-tze*. (372-289 B.C.).

Mendel, Gregor Johann, Austrian cleric on heredity and biologist; his researches on heredity laid the foundations of the modern scientific study of the subject (see *Mendelism*). The value of his work was not recognised until several years after his death. (1822-1884).

Mendeleëff, Dmitri Ivanovich, Russian chemist, born at Tobolsk; was the first to arrange the chemical elements in a table in order of atomic mass and to observe the periodicity they displayed when so arranged. Certain unknown elements were subsequently discovered and found to have the properties assigned to them by Mendeleëff. His table remains the basis of atomic theory. (1834-1907).

Mendelism, the theory of heredity propounded by Mendel (q.v.), setting forth that certain "dominant" characteristics are inherited by hybrids rather than characteristics intermediate between those of the two parents. The offspring of the first generation inherits the dominant, while part of the offspring of the second generation exhibits the opposite or "recessive" characteristics. If those possessing recessive characteristics unite, the dominant recur in the offspring. Mendelian theory has proved of great practical value in the deliberate breeding of animals and plants for desirable characteristics.

Mendelssohn-Bartholdy, Felix.

brated German composer, grandson of Moses Mendelssohn, born in Hamburg; appeared publicly as a pianist at 19 and began to compose at an early age, producing the *Midsummer Night's Dream* overture at 17. His compositions consisted of symphonies, operas, oratorios (including *St. Paul* and *Elisab.*), and church music. A tour in Scotland inspired the *Hebrides* overture. (1809-1847)



MEDELSSOHN

Mendip Hills, in the N. of Somerset, England, extend from a little SW. of Frome to Hutton, S. of Weston-super-Mare, a distance of about 25 m.; the highest point is Blackdown Hill, 1,068 ft. above sea-level.

Mendoza, province in the extreme W. of Argentina; has the Andes in the W. Aconcagua (23,500 ft.), the highest peak in the New World. Otherwise consists chiefly of pampas, fertile only where irrigated from the small Mendoza River; there vines flourish. Copper is plentiful, coal and oil are found. Area, 57,500 sq. m. Pop. 445,000. **Mendoza** the capital, 640 m. W. of Buenos Aires by rail, is on the Trans-Andine route to Chile, with which it trades. Pop. 77,000.

Menelaus, king of Sparta, the brother of Agamemnon and the husband of Helen, the carrying away of whom by Paris led to the Trojan War.

Menelik II., Emperor of Abyssinia, claiming descent from Menelik I., reputed son of Solomon and the Queen of Sheba, was born at Ankober; son of Melicoot, King of Shoa, whom he succeeded in 1865. He became ruler of Abyssinia on the death of the Emperor John in 1889. He defeated the Italians at Adowa, 1896, as a result of which Italy recognised Abyssinian independence. (c. 1842-1913).

Menhir, a standing stone, erected in prehistoric times, probably in connection with funerary rites; examples occur in Brittany, Scotland, and elsewhere.

Menin Gate, the gate at Ypres leading to Menin, and to the scene of some of the severest fighting of the World War. Through it many thousands of British troops passed from 1914 to 1918, and on its site a memorial gateway in honour of the 56,000 of them who have no known grave was unveiled in 1927. Sir Reginald Blomfield designed the memorial, which bears the name of every officer and man it commemorates.

Meningitis, an inflammation of the meninges or membranes that invest the brain and spinal cord, due to infection by germs. Four different types are recognised. Simple acute meningitis is caused by injury to certain parts, e.g., the middle ear, the inflammation extending to the brain, or as a complication following certain fevers. The earliest symptoms are headache, followed by feverishness and general prostration. Constriction of the neck is followed by convulsions, and squint is often noticed. Septic meningitis is most often fatal. Tuberculous meningitis is due to tubercular disease in a bone or gland. It is most frequent in young children and has a slow and insidious onset. After two weeks' drowsiness the child becomes comatose, and after eight weeks the disease is almost always fatal. See also *Cerebro-Spinal Fever*.

Mennonites, a Protestant sect founded at Zurich by a priest, Menno Simons, about 1535, with a creed that combines the tenets of the Baptists with those of the Quakers; they maintain a rigorous church discipline. Communities are to be found to-day in Germany and the U.S.A.

Mensheviks, name given in Russia to opposition to Bolsheviks; it originated with a division in the Russian Social-Democratic Party in 1903. Their views were reformist rather than revolutionary, and they worked for the coming of Socialism by non-revolutionary methods.

Menstruation, the discharge of blood from the uterus of women which occurs about every 28 days during the period of fertility, commencing at puberty (in Europe usually at 14 or 15) and ceasing at the menopause, which commonly occurs between the ages of 40 and 50. It

ceases on conception, commencing again after the end of the period of lactation, or sometimes after childbirth. Disorders of the function include amenorrhoea, or absence of the menstrual flow; dysmenorrhoea, or its accompaniment with pain or an unusual degree of discomfort; and menorrhagia, or excessive menstrual flow.

Mensuration, the branch of mathematics concerned with ascertaining lengths of straight lines, areas of surfaces, and volumes of solids. The term is commonly restricted to the measurement of surfaces, solids and regular figures. The measurement of irregular lines is dealt with by that part of the integral calculus termed rectification.

Menthol, a crystalline substance obtained from the oil of peppermint, used in nervous affections, such as neuralgia, as a counter-irritant, and for relieving headaches and asthma.

Mentone, a town and seaport in France, on the Italian border; was under the princes of Monaco till 1848, when it subjected itself to Sardinia, which afterwards handed it over to France; protected by the Alps, the climate is delightful and renders it a favourite health resort in winter and spring; it exports olive-oil and fruit. Pop. c. 15,000.

Mentor, a friend of Ulysses, left by him in charge of his young son Telemachus; hence his name is used as a general term for a friendly guide, especially of an older in relation to a younger person.

Mercantile Marine, the body of men engaged in cargo shipping as distinct from naval service on the one hand and passenger shipping on the other; though in practice the term is often used to cover all shipping other than the Royal Navy. In 1937 the total tonnage of merchant vessels of 100 tons and over was for the world 66½ millions, of which over 20½ millions was in British ownership. In 1935 the British mercantile marine employed over 152,000 seamen. Merchant shipping law is administered by a special branch of the Board of Trade, which has representatives at all important ports and docks.

Mercator, the Latinised name of Gerardus Mercator, a celebrated Dutch geographer who invented the map-projection which bears his name, and which plots latitude and longitude by parallel straight lines at right angles to each other. (1512-1592).

Mercenaries, originally hired soldiers from feudal levies, now bodies of paid troops in the service of a State of which they are not subjects; the Scots Guards in France from the 15th to 18th Centuries were famous, and Swiss auxiliaries once belonged to most European armies; William III. had Dutch mercenaries in England; under the Georges, Germans were hired and used in the American War, the Irish rebellion, and the Napoleonic struggle; in the Crimean War German, Swiss, and Italian soldiers were enrolled. See also *Foreign Legion*.

Mercerisation, a process of treating fabrics invented by John Mercer in 1851. It consists of passing the material first through a solution of caustic soda and then through cold water, thus causing it to contract so as to improve it for dyeing purposes.

Merchant Taylors' School, famous English public school, founded in Suffolk Lane in the City of London in 1541, by the Master, Wardens, and Court of Assistants of the Worshipful Company of Merchant Taylors who are still the governing body. It moved in 1875 to Charterhouse Square from which it moved to its present

site of Sandy Lodge, Northwood, Middlesex, in 1933. The number of boys is limited to 500 and includes 50 boarders. Eight entrant scholarships are offered annually. There are also each year scholarships and Exhibitions to a value of not more than £200. Many famous men have been scholars at the school, including Edmund Spenser, Robert Clive and Juxon, Bishop of London.

Mercia, one of the three chief kingdoms of Anglo-Saxon England, eventually comprising most of the Midlands; founded by Angle settlers in the Upper Trent Valley (now S. Staffordshire) in the 6th Century. It rose to greatness under Penda, 626-655, and subsequently succeeded Northumberland in the supremacy. Under Offa, 757-795, it maintained its independence, but after the death of Cenwulf, 819, waned in turn before Wessex and the Danes.

Mercier, Désiré Joseph, Belgian ecclesiastic, who as Cardinal Archbishop of Malines opposed the German invasion of his country and issued an appeal to his compatriots to remain loyal to their king; he was partly responsible for the "Malines Conversations" (q.v.). (1851-1926).

Mercury, the Roman equivalent of the Greek God Hermes, the son of Jupiter and Maia, the messenger of the gods, the patron of merchants and travellers, and the conductor of the souls of the dead to the nether world.

Mercury, the planet of the solar system nearest to the sun, round which it revolves in 88 days at a mean distance of 36 million miles. It has a diameter of 3,000 miles and mass one twenty-fifth that of the earth. Owing to its proximity to the sun it is but rarely visible, and then either just before sunrise or just after sunset.

Mercury, a metallic chemical element belonging to the same group as cadmium and zinc and distinguished by its low melting-point, which renders it liquid under ordinary conditions. Symbol: Hg; atomic number 80; atomic weight, 200.61. Mercury or quicksilver (i.e., "living" silver) occurs native, as at Almaden, in Spain, and also as its sulphide, cinnabar, in Spain, Italy, Mexico and S. America; from cinnabar the metal is obtained by roasting in a current of air. It is very poisonous in both the liquid and the vapour states, and this property is shared by its compounds, e.g., mercurous chloride or calomel (used in medicine as a purgative), mercuric chloride, or corrosive sublimate (used in dilute solution as an antiseptic); and mercuric fulminate, used as a detonator since it explodes on being struck. Solutions of other metals in mercury are known as amalgams.

Meredith, George, English poet and novelist, born in Hampshire; began his literary career in 1851 as a poet. His novels appeal only to a select few, but by them they are regarded with admiration. *The Ordeal of Richard Feverel*, published in 1859, is by many considered his best, others being *The Egoist*, *Diana of the Crossways*, and *Evan Hannington*. (1828-1909).

Merganser, a genus (*Mergus*) of ducks of which the goosander (*Mergus merganser*) is a typical species. The head is crested in the male, and the colouring vivid. The red-breasted merganser (*M. serrator*) has a green head, red breast, and back plumage black edged with white.

Meridian, an imaginary great circle passing through the poles at right angles to the equator; the Meridian of Greenwich is the point from which longitudes are calculated.

Merimée, Prosper, French writer, born in Paris; abandoned law for literature; became under Louis Philippe inspector-general of historical documents. He wrote stories, historical dissertations, and

travels, among other works *Guzla*, *Chronicles of Charles IX.*, the *History of Don Pedro*, *King of Castile*, *Letters to an Unknown*, *Colomba* and *Carmen*. (1803-1870).

Merino, a species of sheep, native to Spain, raised chiefly for its wool. The flesh is of little value.

Merioneth, a mountainous county of North Wales, abutting on Cardigan Bay, between Caernarvon and Cardigan. Lofly peaks including Aran Mawddwy, Cader Idris, and Aran Benllyn and the rivers, Dee and Dovey, and Lake Bala, afford picturesque scenery. The soil is fit only for sheep-grazing; but there are slate and limestone quarries, manganese and gold mines. Festiniog is the largest town. The county town, Dolgelly, on the Wnion, has woollen and tweed manufactures. Area, 660 sq. m. Pop. 43,200.

Merit, The Order of, a British order instituted in 1902, limited in number to 24 men and women of eminent distinction; it confers no precedence; the ribbon is blue and crimson.

Merlin, a legendary Welsh prophet and magician, child of a wizard and a princess, who lived in the 5th Century, and was subsequently a prominent personage at King Arthur's court; prophecies attributed to him existed as far back as the 14th Century; Tennyson represents him as bewitched by Vivien.

Merlin (*Falco ascalon*), a species of small falcon, which breeds on moors in the British Isles, nesting on the ground.

The adult male is about 10 in. in length. The plumage of the male is lead colour streaked with black, throat nearly white, under-wing coverts rufous-brown; of the female, brown with brown and mottled underparts. It preys on small birds. The Red-headed Merlin (*Falco chiquera*) is an Indian species.



MERLIN

Mermaids and **Mermen** (i.e., sea-maids and seamen), a class of beings fabled to inhabit the sea, with a human body as far as the waist, ending in the tail of a fish; the females of them represented above the surface of the sea combing their long hair with one hand and holding a mirror with the other. They are supposed to be endowed with the gift of prophecy, and to be of an amorous temper. The belief in these half-human creatures is traced back to Oannes, the fish-god of the Babylonians, though certain sea beasts with a semi-human expression especially the sea-mammals known as dugongs may have given rise to it.

Meroë, or **Merawe**, a wide tract of Upper Blue Nile, and the Atbara rivers. Ruins on the Nile, 28 m. N.E. of Shendi, are believed to be those of Meroë, the ancient capital of Ethiopia.

Merovingians, a name given to the ruled over France after the downfall of the Roman empire, until A.D. 750; being derived from Merwig, the founder of the family.

Merrimac, a river in New Hampshire, U.S.A., which rises in the White mountains and flows by a course of about 150 m. into the Atlantic near Newburyport. It supplies water-power for industrial purposes. Lowell, Lawrence, Manchester and Concord are among the towns on its banks.

Merriman, Henry Seton, pseudonym of Hugh Stowell Scott, novelist, son of a Newcastle-on-Tyne shipowner. Spent some time in an underwriter's office. Among his more important works are *The Sowers*, *In Kedar's Tents*, *Barlasch of the Guard*. (1862-1903).

Mersey, English river, rising in NW. Derbyshire, flows westward 70 m. between Lancashire and Cheshire to the Irish Sea; is of great commercial importance, having Liverpool on its estuary. Its chief tributary is the Irwell, on which stands Manchester. Its estuary from Birkenhead to Liverpool is crossed by a railway tunnel, opened in 1886, and by a vehicular tunnel, 2 m. in length, opened 1934.

Merthyr Tydfil, industrial town in Glamorganshire, S. Wales, on the Taff, 15 m. NW. of Cardiff; is the centre of great coalfields and of enormous iron and steel works; its industrial life has suffered greatly since the economic crisis of 1931. Pop. 65,600.

Merv (or *Meru*), an oasis in the Turkoman S.S.R., occupied by Russia in 1883, 60 m. long by 40 m. broad, producing cereals, cotton, silk, etc.; breeds horses, camels, sheep. The town of the same name, on the Trans-Caspian railway, has a pop. of c. 10,000.

Meshed, a walled city, capital of the province of Khorassan, in N. Iran. It stands in a fertile plain; the mausoleum of the Imam Riza is visited by pilgrims. The city, a commercial centre, has manufactures of velvets, silks and carpets. Pop. 140,000.

Mesmer, Friedrich Anton, a German physician, born near Constance; trained for the Church, but took to medicine; was the founder of animal magnetism, called *mesmerism* after him, his experiments in connection with which created a great sensation, particularly in Paris. His system was reported on unfavourably by a committee of enquiry, and he retired into obscurity. (1733-1815).

Mesmerism, or animal magnetism, name first given (from Anton Mesmer, *q.v.*) to the practice, now called hypnosis (*q.v.*) of inducing artificial or hypnotic sleep for therapeutic purposes.

Mesopotamia, former name of the territory "between the rivers" Euphrates and Tigris, now included in Iraq (*q.v.*). It was in pre-classical times the centre of a series of great civilizations, centering on Sumer, Nineveh, Babylon, and other great cities.

Messenger, André Charles Prosper, French composer of operas born at Montluçon; a pupil of Saint-Saëns; director of Opera at Paris from 1907-1914. His works include *La Basoche*, *Véronique*, *Fortunio* and *L'Amour Masqué*. (1853-1929).

Messalina, Roman empress, the wife of Claudius I.; a byword for cruelty and licentiousness; she was killed by the Emperor's order after the exposure of her infidelity in A.D. 48.

Messenia, a province of Greece, mainly between the Gulfs of Arcadia and Coron. The Messenians after two long wars were conquered in 608 B.C. by the Spartans and fled to Sicily, giving their name to Messina (*q.v.*). Pop. of present province, 248,000.

Messiah (*i.e.*, the Anointed One), the leader to whom the Jews looked forward as restorer of their national glory. In the view of Christians the prophecies relating to him were fulfilled in the person of Jesus Christ, to whom the title is therefore applied. Claimants to the Messiahship have arisen from time to time among the Jews, the most famous being Sabbatai Zevi in the 17th Century.

Messina, ancient city on a bay at the NE. corner of Sicily, on the strait of the same name, which separates the island from Italy; has a 13th Century cathedral, two old castles, and a university, founded 1549. It manufactures light textiles, coral ornaments, and fruit essences, and has

an excellent harbour. In 1908 it was the scene of a great earthquake, in which over 70,000 people perished. Pop. 183,000.

Messina, Strait of, 24 m. long and at its narrowest, 2½ m. broad, separates Sicily from the Italian mainland; here were the Scylla and Charybdis of the ancients.

Messines Ridge, a spur of rising Ypres, Belgium, captured by the Germans in the World War after severe fighting in Nov., 1914, and the scene of further fighting in June, 1917, and April, 1918.

Message, a dwelling-house with build-up, flags and land attached for the use of the household.

Metabolism, name given to the chemical changes continually in progress in the cells of living matter, and essential to life. Constructive metabolism, or the changes involved in building up protoplasm from food, is known as *anabolism*, and the destructive process as *katabolism*.

Meta Fuel, a white solid made by to ice-cold acetaldehyde, (*q.v.*). It burns with a non-luminous flame, and is therefore used as a solid substitute for methylated spirit in heating lamps.

Metallurgy, the extraction of metals subsequent purification of the crude products. A few metals, such as gold, platinum and mercury, occur in a more or less pure form, but most are found as oxides (*e.g.*, iron, aluminium) or as sulphides (*e.g.*, lead, copper, zinc, nickel). The ores are subjected to a preliminary roasting, which drives off moisture and volatile impurities, and also, in the case of a sulphide, converts the ore into an oxide. The oxide is then mixed with carbon and heated in a furnace; in this way gaseous oxides of carbon are formed and escape, while the fused metal sinks to the bottom.

The crude metal is purified in various ways, *e.g.*, by electrolysis. Electrical methods are also being increasingly used for the actual extraction of metals; thus aluminium is obtained electrolytically from aluminium oxide, sodium from sodium hydroxide, and calcium from calcium chloride. With certain metals, special methods are employed; thus in the purification of nickel the crude metal is heated in a stream of carbon monoxide gas, with which it forms the volatile product nickel carbonyl. This passes on, leaving impurities behind, and is then heated to a higher temperature, when it splits up again into nickel and carbon monoxide (Mond Process for nickel).

In Spain, copper is extracted from copper sulphate solution by the addition of scrap iron, which passes into solution as iron sulphate while the copper is deposited in the form of a powder.

Metals. Metallic elements are distinguished from non-metals (i) by possessing high specific gravity, melting-point and boiling-point, a peculiar metallic lustre, and the capability of taking a brilliant polish, (ii) by being malleable and ductile and good conductors of heat and electricity, and (iii) by the fact that their chlorides are true salts, usually stable in the presence of water, and that their normal oxides are basic, reacting with acids to form salts and water. There are, however, many exceptional metals, *e.g.*, sodium, which is lighter than water and has low melting and boiling points, and bismuth, which is brittle and forms a chloride that is decomposed in water. The principal metals are sodium, potassium, calcium, iron, copper, silver, gold, magnesium, zinc, lead, tin, aluminium, nickel and chromium. A mixture of metals is called an alloy, *e.g.*, brass (a mixture of copper and zinc).

Metamorphic Rocks, those igneous or sedimentary rocks which have been altered by extreme heat, moisture or pressure, e.g., sandstones are changed into quartzite, limestones into marble, clays into slates, and granites into gneisses.

Metaphysics, the science of being as being; the science of the ultimate grounds of all other forms of knowledge. It is a branch of philosophy which deals with the fundamental principles that underlie reality. It deals with the relations between cause and effect, investigates the true nature of time (q.v.) and space (q.v.) and discusses the question whether reality is given in experience. The problems dealt with by metaphysics existed long before the term was invented. Literally the term (which is, properly, "metaphysic") means "after physics" and was applied to those writings of Aristotle which appeared after his *First Philosophy*.

Metazoa, that division of the animal kingdom which includes all multicellular organisms, as distinct from Protozoa, or unicellular organisms; but the term is more generally restricted to invertebrate multicellular animals.

Metempsychosis, or "transmigration of souls," the belief that the human soul after death passes into the body of another human being or an animal. In a broader sense it implies a conviction that the human phase is only one of a series of incarnations both in the past and the future. The belief is found in Indian religions, and was held by the ancient Egyptians as well as among some other peoples.

Meteorite, the name given to meteors which reach the surface of the earth before complete vaporization occurs. During their fall meteorites appear as fireballs, and set up sound-waves similar to thunderclaps. Their constituents are nickel, chromium, magnesium and a large proportion of iron.

Meteorology, that branch of natural science which deals with the factors influencing weather and climate. It was first established on scientific lines through the invention of the thermometer by Galilei and of the barometer by Torricelli, Boyle, Hooke, Pascal and others. The Meteorological Office of London was established in 1854, under the control of the Board of Trade; it is now a department of the Air Ministry. From the collation of weather reports, barometric heights, direction of winds, thermometer readings, and similar data, received from numerous and widely distributed observers, the prediction of weather over a few hours now reaches a high degree of certainty and precision, while longer forecasts, though less reliable, can often be made with some confidence.

The principal factor in making the forecast is a study of the distribution of the various pressures of the atmosphere at the time concerned. Spots at which the pressure is identical are plotted on the map and joined by isobars (q.v.). It is often noticed that many of the isobars form closed rings, approximately circular or elliptical in shape, such an arrangement, surrounding a region of lower pressure, being known as a depression or cyclone.

In the Northern hemisphere, a depression is marked by winds blowing in a counter-clockwise direction round its centre, and is usually accompanied by rain and a higher temperature than is general for the time of year; it moves more or less as a whole, most frequently from W. to E. In an anticyclone the pressure is high, the isobars are widely separated, and, in the Northern hemisphere,

the winds (much lighter than in a depression, or even scarcely perceptible) blow in a clockwise direction. A main depression is often accompanied by secondaries, which give rise to stormy weather with high winds, thunderstorms etc.

Meteors, small pieces of solid matter which appear in the earth's atmosphere as "shooting stars"; their size varies from a few ounces to several tons; as a rule they commence to glow when about 80 m. from the earth, owing to the friction of the air; they are usually destroyed during flight, but occasionally one reaches the ground; they appear to enter the atmosphere at a speed of about 30 m. per hour.

Methane, a simple hydrocarbon produced by decaying vegetable matter, and called "marsh gas" from its natural occurrence in swampy areas. It also occurs in mines as "firedamp"; with air it forms an explosive mixture which is responsible for many mining disasters.

Methodists, a body of Christians, ecclesiastically governed by a Conference with subordinate district synods, and professing evangelical principles, which they teach agreeably to the theology of Arminius; the name is also given to the followers of Whitefield, who are Calvinists in certain respects. The movement was founded in 1729 at Oxford. Their doctrines are substantially those of the Church

Primitive Methodists, Methodist New Connexion, and others; several of these united in 1907 to form the United Methodists, and in 1932 this body united with the Wesleyan Methodists and Primitive Methodists to form the Methodist Church. Methodists are numerous in N. America, where the leading body is the Methodist Episcopal Church. In the world to-day there are approximately 13 million Methodists.

Methuen, Paul Sandford, third Baron, British soldier, fought with distinction in Ashanti, Egypt, Bechuanaland and in the Boer War; Governor of Natal, 1909-1915; and of Malta, 1915-1919. (1845-1932).

Methuselah, son of Enoch, grandfather of Noah; according to the book of Genesis he reached the unusual age of 969.

Methyl Alcohol, an alcohol obtained by distilling monohydric alcohols with dilute potash, and prepared mainly from the products of the distillation of hard woods.

Methylated Spirits, ethyl (ordinary) alcohol containing about 10 per cent. of methyl alcohol (wood spirit), and small quantities of paraffin oil and pyridine to render it unfit for drinking; it is not subject to the tax on pure spirit and is used for many industrial purposes.

Metre, the name given to the unit of length in the metric or decimal system, equal to 39.37 English inches, the tenths, the hundredths, and the thousandths of which are called from the Latin respectively decimetres, centimetres, and millimetres, while ten times, a hundred times, and a thousand times are called from the Greek respectively decametres, hectometres, and kilometres. A metre was taken as one forty-millionth part of the earth's circumference.

Metric System, the system of measures in use in almost all Western countries except Great Britain and the U.S.A. It is based on the metre, a unit of length of about 39 in.; the litre, a unit of capacity of about 1½ pints; and the gram, of which 1,000 make 1 kilogram, roughly 2½ pounds. These units are divided or multiplied on a decimal system.

from the East to visit the infant Jesus (Matt. ii) are known as the Three Magi. Traditionally their names were Gaspar, who brought frankincense, the emblem of divinity; Melchior, who brought gold, the emblem of royalty; and Balthasar, a negro, who brought myrrh, the emblem of mortality. Their bodies are alleged to have been translated in the Middle Ages to Cologne, where their bones are still shown in the Cathedral.

Magic, the supposed art of influencing the course of nature or future events by occult means; the word is derived from the "Magi" (q.v.) who were believed to be skilled in enchantment. Magic, extensively practised by primitive man, is one of the main sources from which has grown religion on the one hand and natural science on the other. It has been practised in one form or another in every age and country; and has frequently been developed into an elaborate system. "Black" magic is that directed to the production of harmful or undesirable effects, or which involves supposed communication with evil spirits. "White" magic is either beneficent or neutral, and includes such widely different practices as astrology and conjuring.

Magic Lantern, a device for casting diagrams from an illuminated slide on to a screen, for entertainment or instruction. The lantern has a concave mirror to increase the intensity of the light (generally an incandescent lamp or an arc), a condensing lens which distributes the light over the slide, and a projection lens to focus the image on the slide. The slide is a transparent positive of the required picture printed from a glass negative on to a glass plate.

Magistrate, one in whom is vested authority in affairs of civil government; in other words, an administrator of the law. In this sense the King is the first magistrate in a monarchical state, while in a republic the President is the chief magistrate. The word is now more usually applied to subordinate officers to whom a part of executive judicial power is delegated; in England it means, specifically, a minor judicial officer, such as a justice of the peace, a stipendiary, or a police magistrate; in Scotland a provost or bailie of a burgh. Prior to the Local Government Act, 1888, the administrative work of the county fell to the lot of the justices or magistracy, but that Act, while leaving them their judicial functions, took away the bulk of their administrative functions. (See also *Justices of the Peace*).

Magna Carta, "the great charter," extorted from King John by the barons of England at Runnymede on June 15, 1215, that guaranteed various rights and privileges to the subjects of the realm, and established the supremacy of the law over the will of the monarch; it has ever since been looked upon as the foundation-stone of English political liberties.

Magna Græcia, given in classical times to the southern part of Italy, which had been extensively colonised by the Greeks.

Magnalium, a light, easily-worked alloy of aluminium (about 95 per cent.) and magnesium (about 5 per cent.). It is used in the construction of aircraft, internal combustion engines, etc.

Magnesia, the old-fashioned name for a variety of magnesium compounds. Thus *calcined magnesia* is magnesium oxide, MgO ; *magnesia alba levis* is a white powder precipitated on addition of sodium carbonate to a cold solution of sodium sulphate; *magnesia alba powderosa* is a somewhat similar compound obtained by adding sodium carbonate solution to a boiling concentrated solution of magnesium sulphate.

U.E.

Fluid magnesia is a solution of *ma...* bicarbonate. Calcined magnesia is used as a refractory lining for electric furnaces; the other varieties find application in medicine for the relief of minor ailments of the alimentary canal.

Magnesium, a metallic chemical element, related to beryllium, calcium and zinc. Symbol Mg ; atomic number 12; atomic weight 24.32. Being chemically very active, it is not found free in nature. It is, however, widely distributed in the form of its compounds, e.g., dolomite (a double carbonate of magnesium aluminate), magnesite, spinel (magnesium aluminate), and asbestos or calcium magnesium silicate. It is also one of the constituent elements of the green colouring matter (chlorophyll) of plants, and is therefore essential to plant life. It is a silvery-white metal which burns with an intensely brilliant white light and is therefore used in fireworks, star-shells, flashlights, etc. It is also an ingredient of many alloys, e.g., magnalium (q.v.).

Magnesium Sulphate. See *Epsom salt*.

Magnetic Induction, a magnet's power of producing magnetism in pieces of iron or steel near it.

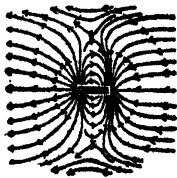
Magnetic Poles, (of the earth), two points on the earth's surface, where the dip of the needle is 90° . They are at a considerable distance from the geographical poles, and their positions are not constant.

Magnetism. Magnets have been known since classical times, and owe their name to the

fact that lumps of natural magnet-stone (lodestone, i.e., "way-stone" or "guiding-stone,"—chemically, magnetite) were found in the earth near Magnesia (the modern Manissa, near Smyrna). The use of lodestone in compasses was quickly superseded when it was discovered that a steel needle could itself be magnetized by rubbing it (always in the same direction) with a fragment of lodestone, and in the 12th Century Alexander Neckham describes the pivoted needle that was carried on ships to show sailors their course. The modern science of magnetism began with William Gilbert, who, in 1600, published his celebrated treatise *On the Magnet and on that Great Magnet the Earth*.

It is a peculiar fact, hitherto unexplained, that the earth behaves as though it were a huge magnet, with poles near (but not at) the N. and S. geographical poles. Upon this behaviour, the use of the magnetic compass depends, the N-seeking pole of the compass needle pointing towards the N. magnetic pole of the Earth, and the S-seeking towards the S. Every magnet is surrounded by a region in which its influence may be experienced, and this is known as its magnetic field. A magnetic field may be mapped by sprinkling iron filings in the field and observing their subsequent conformation.

If a coil of insulated wire is wound round a piece of soft iron and a direct current of electricity is passed through the coil, the iron is found to be a magnet as long as the current is passing, but loses its magnetism as soon as the circuit is broken; this property is made use of in various instruments, e.g., the electric bell. A similar coil of wire, without the iron, and free to rotate in a horizontal plane, is found to behave like a compass needle when the current is flowing; it is, in fact, a magnet. If the coil forms a closed circuit, without a



MAGNET
(showing
field of force)

supply of electricity, a momentary current is induced in it if a magnet is suddenly pushed into it. This fact, discovered by Faraday, is the principle of the dynamo or generator.

Magneto, an apparatus for generating electric currents to produce ignition in an internal combustion engine. It is used in aeroplanes, tractors, motor boats, etc., but has generally been superseded in motor cars by a coil and battery circuit.

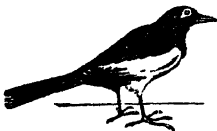
Magnificat, The, the hymn of the Virgin Mary (Luke i, 46-55); used as part of the evening service in both the Anglican and Roman Catholic Churches, and often sung to elaborate musical settings.

Magnitude, in astronomy the measure of a star's brightness. Ptolemy, in cataloguing the stars, assigned the fifteen brightest known to him to the first magnitude, and those just visible to the naked eye to the sixth. On the modern scale those of the first magnitude are $2\frac{1}{2}$ times as bright as those of the second, those of the second $2\frac{1}{2}$ times as bright as the third, and so on. Some have a fractional or even negative magnitude, e.g., that of the sun is minus twenty-six; the absolute magnitude is the intrinsic brightness, making allowance for the star's distance.

Magnolia, the typical genus of the natural order Magnoliaceae, comprising 21 species of trees and shrubs native to China, Japan and North America. They bear large flowers and foliage, on account of which they are cultivated in England. Some hybrid varieties have been developed.

Magpie (*Pica pica*),

a familiar bird of the crow (Corvidae) family, common in the British Isles. It is about 18 in. long, has a long glossy tail, greenish-black plumage and black and white wings and underparts.



MAGPIE

Magyars, the dominant race in Hungary, a people of Finno-Ugric stock who appear to have migrated from the plains of Central Asia.

Mahabharata, one of the two great Indian, a work of slow growth, with no single author. It relates the story of a war between two peoples in Northern India, in the early days of the Aryan settlement, and consists of upwards of 100,000 verses.

Mahaffy, Sir John Pentland, Irish scholar, born in Switzerland. He was educated in Germany and in 1856 entered Trinity College, Dublin, where he became a fellow in 1864. In 1871 he became Professor of Ancient History and was knighted in 1918. His published works include *Greece from Homer to Menander*, *History of Classical Greek Literature*, and *Alexander's Empire*. (1839-1919).

Mahandi, a great Indian river which, after flowing eastward for over 500 m., the last 300 of which are navigable, falls into the Bay of Bengal near Cape Palmyras. Its volume in flood is enormous, and renders it invaluable for irrigation.

Mahatma, literally "great soul." In Theosophists, a dian name, used also by the Theosophists, for a prominent religious teacher; in recent times it has frequently been applied to Gandhi.

Mahdi, a religious teacher and revivalist, equivalent in many ways to the Jewish Messiah, whom certain Mohammedan sects expect to arise in a future age and lead

them against the infidel world. The name was applied particularly to Mohammed Ahmed, a fanatic born in Dongola about 1843 who claimed the title, and at the head of an army of dervishes raised his standard in the Sudan. He was unsuccessfully opposed by the Egyptians, and Khartoum, occupied by them, fell into his hands, General Gordon being slain just as the British relief army under Lord Wolseley approached its walls in 1885, a few months after which Ahmed died at Omdurman.

Mah Jongg, a Chinese game played with 144 domino-like pieces, or tiles, usually by four players. The pieces are arranged in six suits, and counters are used. The game had an era of popularity in America and Europe in the nineteenth-century.

Mahler, Gustav, Austrian musical composer of Jewish antecedents, born at Kalischt. He conducted from 1880 in various parts of Europe, and in 1897 became director of the Court Opera at Vienna. Visited England and conducted German opera at Drury Lane, 1892. He composed several symphonies, and the famous *Lied von der Erde*. (1860-1911).

Mahmud II, Sultan of Turkey; came crushed a rebellion on his accession by putting to death his brother, on whose behalf the Janissaries had risen; introduced various military and administrative reforms; by his defeat at Navarino in 1827 he lost Greece, which declared its independence, and at his death was in conflict with Mehemet Ali, Governor of Egypt. (1785-1839).

Mahmud of Ghazni, Sultan of Afghanistan from 999, who, after deposing his brother Ismail, founded a powerful Afghan state from which he made repeated raids into India. (d. 1030).

Mahogany, a name applied to a number of timbers of various botanical origins. The true mahogany is the wood of *Swietenia mahagoni*, a tree indigenous to tropical America. The colour varies from yellow to a rich red brown; it is very hard and fine-grained and can be highly polished; hence its great popularity for furniture. Other varieties include the *Swietenia macrophylla* of British Honduras, and "Spanish" mahogany, grown in the West Indies. The *Khaya senegalensis*, or African mahogany, grows in Nigeria and Uganda.

Mahomet. See Mohammed.

Mahony, Francis, Irish author, born in Cork, a priest, who became known by his *nom de plume* of Father Prout; contributed to *Fraser's Magazine*, and was foreign correspondent to the *Daily News* and the *Globe*; his poem *The Bells of Shandon* is well-known. (1804-1866).

Mahrattas, Hindu race in Central India, which in the 18th Century secured power over a large part of that country, but came into conflict with the British, and were finally subdued in 1843. Their successors still rule in Gwalior, Indore, and Baroda.

Maia, in Greek mythology, the daughter of Atlas, the eldest of the seven Pleiades (q.v.), and the mother by Zeus of Hermes.

Maiden, The, an instrument of execution, resembling the guillotine, that appears to have been in use in Scotland during the 15th and 16th Centuries; one is preserved in the Antiquarian Museum, Edinburgh.

Maiden Castle, a prehistoric hill-fort, Dorsetshire, England, near Dorchester. It was inhabited from neolithic times and was finally captured and destroyed by the Romans.

Maidenhair Fern, the common name of the ferns of the genus *Adiantum* of the order Polypodiaceae, comprising 190 species of world-wide distribution but especially abundant in tropical America, *Adiantum Capillus-veneris*, a small, delicate European fern with many spreading capillary branches, used for ornament, is occasionally found in Britain.



MAIDENHAIR FERN

Maidenhead, market town of Berkshire, on the right bank of the Thames, 25 m. W. of London. It is a popular river resort, famous for the beautiful woods in the neighbourhood; regattas are held annually. Pop. 24,000.

Maid of Norway, daughter of Eric II., king of Norway, and through her mother heiress to the Scottish crown; died on her passage to Scotland in 1240.

Maid of Orleans, Joan of Arc, so called from her defence of Orleans against the English. See *Joan of Arc*.

Maidstone, county town of Kent, on the Medway, 30 m. S.E. of London; has several fine old churches and historical buildings, a grammar school and a school of art and music, numerous paper-mills and breweries, and does a large trade in hops. Pop. 47,000.

Maimonides, *Moses*, Spanish-Jewish rabbi and philosopher, born at Cordova; was a man of immense learning, and physician to the Sultan of Egypt; codified the principles of the Jewish faith, and drew up the "thirteen principles" which became its recognised summary; his best-known work is *Moreh Nebuchim*, or *The Guide of the Perplexed*. (1135-1204).

Main, the largest of the right-bank tributaries of the river Rhine, Germany, 310 m. in length and navigable for about 200 m.; it flows by Würzburg and Frankfurt to meet the Rhine at Mainz.

Maine, the most N.E. State in the American Union, lies between Quebec and New Hampshire on the W. and New Brunswick and the Atlantic on the E., and is a little larger than Ireland; a picturesque State, with high mountains in the W. (Katahdin 5,000 ft.), many large lakes, including Moosehead, numerous rivers, and a much indented rocky coast. The climate is severe but healthy, the soil only in some places fertile. The rainfall is abundant; hunting and shooting are good. Dense forests cover two N.; potatoes, oats, hay and apples are the chief crops. The principal industries are the making of paper, boots and shoes, and textiles; the fisheries are valuable; timber, building stone, cattle, wool, and ice are exported. Early Dutch, English and French settlements were unsuccessful till 1630. From 1651 Maine was part of Massachusetts, till made a separate State in 1820. The population is English-Puritan and French-Canadian in origin. The capital is Augusta; Portland is the largest city and chief seaport; Lewiston has cotton manufactures. Area, 32,560 sq. m. Pop. 797,000.

Maine, former French province, S. of Le Mans. It was captured by William the Conqueror from the French King in 1073; Henry II. inherited it from his mother, Matilda, wife of Geoffrey of Anjou. In 1445 the English ceded the province to René, Count of Anjou, and in 1451 it was annexed to France. It is now represented by the depts. of Sarthe and Mayenne.

Maine, Sir Henry, English jurist, legal adviser, member of the Council in India, and Professor of Jurisprudence at Oxford; wrote on *Ancient Law*, and important works on ancient institutions generally. His *Ancient Law* is chiefly notable for its brilliant identification of modern with ancient institutions through the (then) new method of evolution and it was really this work which earned for him his knighthood. (1822-1888).

Maine-et-Loire, dept. of N.W. France, watered by the rivers Loire and Maine; mainly agricultural, producing cereals, fruits, flax and hemp, with textile manufactures. Capital, Angers. Area, 2,810 sq. m. Pop. 477,700.

Maintenance, Cap. of an ermine-lined, crimson velvet cap used in the Coronation ceremony of British monarchs.

Maintenon, Françoise d'Aubigné, Marquise de Nior, where her father was incarcerated as a Protestant; became a Catholic, married the poet Scarron in 1652, but was widowed in 1660; was entrusted with the education of the children of Louis XIV. and was secretly married to him in 1684. She exercised a great influence over him, and on his death in 1715 retired into the Convent of St. Cyr, which she had herself founded. (1635-1719).

Mainz, or *Mayence*, in Hesse, on the Rhine, opposite the mouth of the Main, one of the oldest cities in Germany, and the centre from which Christianity spread over that country; it has a magnificent cathedral, restored in 1878; a large transit trade is done, and the making of furniture, leather goods, and machinery are important industries; Gutenberg (q.v.) was a native. Pop. 143,000.

Maistre, Joseph, Comte de, French writer, born in Chambéry, was ambassador at St. Petersburg from 1803 to 1817; wrote numerous works, especially in defence of Catholicism, the chief *Du Pape* and *Soirées de St. Petersburg*. (1754-1821).

Maitland, Frederic William, English legal historian, born in London; educated at Eton, and Trinity College, Cambridge; Reader of English Law, Cambridge, 1884; Downing Professor, 1888; founded, 1887, the Selden Society, for the study of the history of English law; edited many of its publications, and threw a new light on many ancient legal institutions, by applying the evolutionary principle. (1850-1906).

Maize, a cereal grass, *Zea Mays*, also in America it is called simply corn. It appears to have originated from Mexico but is now extensively cultivated in other tropical and sub-tropical parts of the world.

There are wide variations in the colour and shape of the grain of different varieties, the colour ranging from yellow to white and the shape from spherical to almost flat. The type chiefly grown in Kenya and other E. African territories and in S. Rhodesia is a flat white "dent" maize. The seeds and stems yield respectively animal food and ensilage. The hulled corn for human consumption is known as *frumentum*. Dextrose, glucose, maltose and dextrose are other products from the plant.

Majolica, a kind of enamelled pottery imported into Italy from Majorca, known also as *salerno* from its manufacture at Salerno, and applied also to vessels made of coloured clay in imitation.



MAIZE

Major, a commissioned army officer ranking next above captain and below lieutenant-colonel; in rank he is the lowest of the field officers. In the British infantry one major is second-in-command of the regiment while two hold company commands. His badge is a crown.

Majorca, the largest of the Balearic Is., is 130 m. N.E. of Cape San Antonio, in Spain; mountains in the N. rise to 5,000 ft., their slopes covered with olives, oranges, and vines; the plains are extremely fertile, and the climate mild and equable; manufactures of cotton, silk, and shoes are the industries; the capital, Palma, is on the S. coast, at the head of a large bay of the same name. The island was a stronghold of the insurgents during the Spanish Civil War which broke out in 1936. Pop. c. 240,000.

Major-General, in the British army, an officer next below a lieutenant-general in rank; holds a divisional command and his badge is a crossed sword and baton surmounted by a star.

Majuba Hill, a spur of the Drakensberg in Natal, famous as the scene of a defeat of a small British force under Sir G. Colley in a night attack in the first Anglo-Boer War, 1881.

Malabar, district of India, in the W. of the Malabar, Madras, sloping from the Ghats down to the Indian Ocean, and extending along the coast for 145 m.; very rainy; covered with vast forests of teak; produces rice, coffee, and pepper. Calicut is the chief town. Pop. c. 2,500,000.

Malacca, one of the British Straits Settlements in the S. of the Malay Peninsula, a Portuguese possession from 1511 until 1641, when the Dutch captured it, being driven out by the British in 1795; restored to the Dutch in 1818, it finally became British in 1824. Rice, tapioca, rubber, and fruit are produced, and tin mined. Area, 640 sq. m. Pop. 212,000. The capital of the same name, about 100 m. NW. of Singapore, has a pop. of 38,000.

Malachi, the last of the "Twelve Minor Prophets" of the Old Testament, a book of unknown authorship, the name meaning "My Messenger." It is an appeal for greater sincerity in devotion to Jehovah and was written after the Temple had been rebuilt.

Malachite, a copper ore, found chiefly in Russia, consisting chemically of the basic carbonate of copper. Good specimens are used for decorative jewellery, etc., since the substance is of a fine green colour and can easily be cut and polished.

Malachy, St., archbishop of Armagh in the 12th Century; full name Malachy O'Morgair; was a friend of St. Bernard, who wrote his Life and in whose arms he died at Clairvaux; a famous series of prophecies relating to future popes goes by his name, but is a forgery. (1094-1148).

Malaga, Spanish seaport, 65 m. N.E. of Gibraltar, an ancient Phœnician town; it exports olive-oil, wine, raisins, lead, etc., and manufactures cotton, linen, machinery, pottery, etc.; its magnificent climate makes it an excellent health resort. Pop. 204,000.

Malaria, a morbid condition, also known as marsh or jungle fever, common in tropical swampy regions, such as the Gold Coast, Honduras and Ceylon, but also well known in Palestine, Italy and parts of America, and carried by certain mosquitoes—particularly *Anopheles*—and gnats. It affects the system through the blood often as long as 12 months after the subject has been exposed to it, and may exert its influence throughout life. It induces ague, intermittent fever, and some kinds of yellow fever, while certain forms are characterized by particular

kinds of periodicity. Preventive measures include the installation of tanks with fish to devour the larvae of the mosquito, the reclamation of swampy land, and so forth. The sole known effective remedy for the disease is quinine. As a prophylactic, doses up to 3 or 4 grains are taken regularly by persons living in regions, such as Ceylon, where malaria is endemic.

Malaya, or British Malaya, the southern portion of the Malay Peninsula, comprising (1) the colony of the Straits Settlements, viz., Singapore, Penang, Malacca, Labuan, Wellesley Province, Christmas and Cocos Islands; (2) the Federated Malay States, viz., Perak, Selangor, Negri Sembilan and Pahang; (3) the Unfederated Malay States, viz., Johore, Kedah, Perlis, Kelantan, and Trengganu. The total area is about 51,000 sq. m. Trading is chiefly in the hands of Chinese. Crops include rubber, coconuts, areca nuts, coffee, tea, spices and tobacco, and the minerals gold, tin, coal, tungsten ores, iron ore, and phosphates. Pop. c. 4,800,000.

Malay Archipelago, the group of hundreds of islands stretching from the Malay Peninsula S.E. to Australia between the North Pacific and the Indian Ocean, of which Borneo, Sumatra, Java, and Celebes are the largest. They are divided between Great Britain and the Netherlands.

Malay Peninsula, the easternmost of Asia, comprising British Malaya and the portion of Siam immediately to the N. as far as the Kra Isthmus. The total length is about 700 m. The chief products are rubber, rice, tea and tin.

Malays, the native inhabitants of the Malay Peninsula, and the neighbouring islands, a mixed people of Mongolian, Negro and Australoid elements. They are of a dark-brown or tawny complexion, short of stature, having flat faces, black coarse hair, and high cheek-bones; the more civilised of them are Mohammedans.

Malcolm Canmore, Scottish king, son of Duncan whom Macbeth slew, succeeded his father in 1040 as King of Cumbria and Lothian, and in 1057, on Macbeth's death, became King of Scotland. After 1066 his reign was one long conflict with the Normans in England; in 1093 he was slain in battle at Alnwick. His second wife was the saintly Margaret, whose influence did much to bring Scotland into touch with European civilisation. There were other Malcolms, Kings in Scotland, ruling over the Southern part of the country.

Maldiv Islands, a chain of several islands in the Indian Ocean stretching 550 m. southward from a point 300 m. SW. of Cape Comorin, a dependency of Ceylon; grain and fruits are produced; the people are Mohammedans. Pop. 80,000.

Maldon, a municipal borough and an ancient market town of Essex, on the R. Blackwater. Malt, flour-milling, boat-building and fisheries are carried on. It is a favourite yachting centre. Pop. 8,600.

Malebranche, Nicholas, French philosopher, born in Paris; in early life a priest of the Oratorian congregation. His famous work, *De la Recherche de la Vérité*, published in 1675, seeks to bridge over the gulf which separates mind from matter by establishing that the mind immediately perceives God, and sees all things in Him. (1638-1715).

Male Fern, a common hardy fern (of the order Polypodiaceae, found wild in Britain and elsewhere in the northern hemisphere. It has light green lance-shaped fronds that may reach a length of 4 ft.

Malesherbes, *Lamignon de*, French Paris; adviser of Louis XVI, and his defender at his trial, for performing which office he was afterwards guillotined. He had been censor of the press, and to his liberal-minded censorship the world owes the publication of the *Encyclopédie*. (1721-1794).

Malherbe, *François de*, a French lyric poet, and miscellaneous writer, born in Caen; is from his correct though affected style regarded as one of the reformers of the French language. (1555-1628).

Malic Acid, an acid, discovered by Scheele in 1785, which occurs in the juice of many unripe fruits, e.g., apples (whence the name, from the Latin *malum*) and gooseberries. It is a white crystalline solid, readily soluble in water.

Malice, in law, indicates not merely evil times the mere doing of a thing is made a crime by statute and intention is immaterial—e.g., abducting a girl under 16 years of age; but where a vicious will (*mens rea*) is essential, it may be manifested by criminal intention or criminal negligence. Criminal intention or malice in the technical sense is simply the design of doing an act forbidden by the criminal law without just cause or excuse. Malice in this sense is thus found not only where the mind is actively in fault but also where there is culpable inattention or negligence. Malice may be "express" or "in fact" as where a person deliberately and with formed design kills another; or "implied" or "in law" as where one wilfully poisons another though no enmity can be proved. Malice is "presumed" in homicide, and therefore it lies on the accused to prove that the killing was justifiable or excusable.

Malines, or *Mechlin*, a Belgian City on the Dyle, 14 m. S. of Antwerp; manufactures lace and tapestry; has an ancient cathedral and various art treasures. Pop. 62,000.

Malines Conversations, unofficial negotiations between Roman Catholic and Anglican ecclesiastics to explore the possibilities of a reunion of the churches, opened at Malines in 1920 and lasting over several years. Lord Halifax (*q.v.*) was one of the chief negotiators on the Anglican side.

Mallard, the wild duck (*Anas boschas*), more especially the drake; the parent stock of our tame breed of duck. The male has a glossy green head and neck, and is grey or white underneath; the female is speckled, brown and buff. The bird migrates in large numbers in late autumn.



Mallarmé, *Stéphane*, French poet, leader of the Symbolist school, born in Paris; Professor of English at Tournon, and elsewhere from 1862 to 1892. His *Après-Midi d'un Faune* appeared 1876; French translation of Poe's poems, 1888; *Vers et Prose*, 1893; complete works, 1897. (1842-1898).

Mallee, a short, scrubby eucalyptus tree of Australia; eucalyptus oil is obtained from it.

Mallow, a town in the province of Cork, Eire (Ireland). There are mineral springs which are much visited in autumn. Pop. 4,500.

Mallow, the common name of plants of the genus *Malva*, natural order Malvaceae, comprising 30 species, 3 of which are found in Britain. They are some-

what weedy perennials. The common or Large Mallow (*Malva sylvestris*) bears a flower with a purple centre, five long and narrow petals, mauve streaked with purple; the sepals are green; it is much visited by insects for the honey it secretes. The Small Mallow (*M. rotundiflora*) also occurs, as well as the Musk Mallow (*M. moschata*) which bears rose-pink flowers. The Marsh-Mallow is the species *Althaea officinalis* of the same natural order. The Tree-Mallow (*Lavatera arborea*) bearing pink purple-veined flowers in summer and autumn also occurs in Britain on rocks by the coast.

Malmédy, a town of Belgium in the province of Liège. It was ceded by Germany to Belgium by the Treaty of Versailles, 1919. Pop. 5,400.

Malmesbury, a borough and market town in Wiltshire on the Lower Avon, 10 m. N. of Chippenham, famous for the remains of its Benedictine Abbey, said to have been founded in the 6th Century. The historian, William of Malmesbury, died here in 1142. Pop. 2,300.

Malmesbury, *William of*, English chronicler of the 12th Century, and one of the chief authorities for the history of his time; his chief works were *Gesta Regum Anglorum* and *Gesta Pontificum Anglorum*, followed by his *Historia Novella*. (c. 1093-1143).

Malmö, important seaport and third town of Sweden, opposite Copenhagen; ships farm produce, cement, matches and timber; has cigar and sugar factories, and some shipbuilding. Pop. 144,000.

Malmsey, a strong sweet white wine, Greece, and afterwards made in Madeira, the Azores and Sicily, from grapes which have been left to shrivel on the vine.

Malory, *Sir Thomas*, English author, flourished in the latter part of the 15th Century; a Warwickshire knight; was the author of *Morte d'Arthur*, a prose translation and collection of Arthurian legends which was finished in the ninth year of Edward IV., and printed fifteen years after by Caxton.

Malpighi, *Marcello*, Italian anatomist and professor of Medicine; noted for his discovery of the corpuscles of the kidney and the spleen, named after him. (1628-1694).

Malplaquet, a hamlet in the dept. of Nord, France, where Marlborough and Prince Eugene were victorious in 1709 over the French, under Villars, in one of the most famous battles of the Seven Years War.

Malt, grain, usually of barley, steeped in water and fermented, by which the starch of the grain is converted into saccharine matter, dried on a kiln, and then used in brewing (*q.v.*) ale, stout, beer or porter, and in the distillation (*q.v.*) of whisky. Brown or amber malts are used to give colour to light ales, while black or chocolate malts give the dark colour to porter and stout.

Malta, a small British island in the Mediterranean, 80 m. S. of Sicily; a strongly fortified and most important naval station, headquarters of the British Mediterranean fleet; was annexed to Britain in 1814. The island is treeless, and with few streams, but fertile, and has many wells. Wheat, potatoes, and fruit are largely cultivated, and filigree work and cotton manufactured. The people, who are Roman Catholics, are said to be descended from the ancient Carthaginians. There is a university at Valetta, the capital. In 1921 a more liberal constitution was granted, but owing to defects in its working and to interference in politics by the clergy and later by pro-

Italian influences this has been twice suspended, in 1930 and in 1933, and legislative power vested exclusively in the Governor. In 1938 a measure of Crown Colony Government was granted, but the new Maltese Legislature will not have power to legislate on the language question. Maltese is the language of general intercourse, and with English is the official language, Italian having been deposited from parity with them. The small islands of Gozo and Comino are included in the colony. Area (of 3 islands), 122 sq. m. Pop. 262,000.

Malta Fever, a febrile disease which made its first appearance in Malta and the Mediterranean coasts generally, having probably been spread by Maltese goats. The symptoms are high temperature, rheumatic pains and debility. The cause is a micro-organism discovered by Sir David Bruce.

Maltese Terrier, properly Maltese dog; a breed of small lap-dogs of Maltese origin. The type has been preserved for more than two thousand years. It has a white, silky coat which naturally parts from head to tail, long drooping ears, head short and full, eyes dark, and legs short.

Malthus, Thomas Robert, an English economist, born near Dorking, in Surrey; is famous as the author of an *Essay on the Principle of Population*, of which the first edition appeared in 1798, and the final, greatly enlarged, in 1803. This work aimed at showing how the progress of the race was held in check by the limited supply of the means of subsistence and suggested that the human race increased more rapidly than its food supply. From him Malthusianism, or the conscious and deliberate limitation of the birth rate, takes its name. (1766-1834).

Malton, market town and urban district on an eminence on the N. bank of the river Derwent. In 1138 it was burned down by Thurstan, Archbishop of York, who besieged the town in order to drive out the Scots. Pop. 4,400.

Maltose, or Malt-Sugar, a disaccharide produced during the hydrolysis of starch, e.g., by the enzyme diastase in malt. It is a solid substance crystallizing in white needles, and is converted by the enzyme maltase (e.g., in yeast) into glucose or grape-sugar.

Malvern, Great, a watering-place in the Malvern Hills, much frequented by invalids; the first hydropathic establishment in the country was opened here in 1842. There is a famous public school, founded in 1865. Every year a festival of drama is held here. Pop. 16,700.

Mamelukes, originally slaves from the regions of the Caucasus, captured in war or bought in the market-place, who from being the bodyguard of the Sultan in Egypt in the 13th Century, rose to rule the country and choose the Sultans from their own number until 1517. They remained powerful thereafter, and resisted Bonaparte, who defeated them, at the battle of the Pyramids in 1798, but recovering their power after his withdrawal they were annihilated in 1805 and 1811 by Mehemet Ali, who became Viceroy of Egypt under the Porte.

Mammals, or Mammalia, the highest class of the vertebrate sub-kingdom of animals; the females are characterized by the possession of mammae (teats) enabling them to suckle their young. They are usually marked by a peculiar cranial conformation, a highly developed brain, a hairy body, and by having two sets of teeth in their lifetime, the "milk teeth" and permanent teeth. The class, which is sometimes popu-

larly but erroneously called quadrupeds, includes some sea animals (whales, dolphins, etc.), and flying animals (bats). There are some 5,000 living species, and many more known only as fossils; and they are distributed over the whole globe. They are divided into Primates (monkeys, apes and man); Chiroptera (bats); Carnivora (cats, dogs, bears, etc.); Insectivora (insect-eaters); Rodentia (gnawing animals); Ungulata (hoofed animals); Edentata (sloths, etc.); Sirenia (dugongs and manatees); Cetacea (whales and porpoises); Marsupials (Kangaroos, etc.), and Monotremata (the echidna and ornithorhynchus).

Mammoth,

an extinct long-haired elephant-like mammal of enormous size found fossilised in Northern Europe and Asia in deposits together with human remains, and yielding a supply of fossil ivory; its tusks have a length sometimes exceeding 10 ft.



MAMMOTH

Mammoth Cave, a cave in Kentucky, U.S.A., the largest in the world, several miles in extent, and rising at one point to 300 ft. in height, with numerous side branches leading into grottoes traversed by rivers, which here and there collect into lakes.

Man, a quadruped of the order Primates, whose forelimbs have been specialised as tools and are not used for progression; he thus has an erect posture. He is also differentiated from other mammals by his exceptional mental development, his opposable thumb, and prominent chin. The use of articulate speech and the possession of a moral sense, and possibly the faculty of laughter, also appear to be peculiar to him. He is remarkable for his scanty growth of hair; his skin-colour ranges from pinkish-white through yellow and brown to black. His food covers a wide range of animal and vegetable substances; unlike any other animal he submits much of it to the action of heat before consuming it. He is found in all parts of the globe except the extreme Arctic and Antarctic regions. He lives in communities; the development of his hands and the possibility of communication of thoughts and ideas between individuals of the species consequent upon his faculty of speech have enabled him to exercise considerable mastery over his environment and to use the products and forces of Nature for his own ends. Man appears to have developed from a lemur-like ancestor, and the oldest fossil remains of a man-like creature so far known suggest that he has existed for at least a million years. All living men belong to a single species, *Homo sapiens*, but there have in the past been other species—*Homo neanderthalensis*, *Homo primigenius*, etc.—which are now extinct. See also *Races of Mankind*.

Man, Isle of, a small island in the Irish Sea, 35 m. W. of Cumberland, and about the same distance E. of Ireland; from its equable climate and picturesque scenery is a favourite holiday resort; it has lead mines at Laxey and Fordale; fishing and cattle-grazing are profitable industries. The people are of mixed Celtic and Norse extraction, and until a century ago spoke a Celtic language, Manx. The island has its own government, the Court of Tynwald, comprising a Council composed of the Bishop, docters, etc., and an elected House of Keys, and a Lieutenant-Governor; and is not bound by acts of the British parliament. The capital is Douglas. Area, 220 sq. m. Pop. 49,500.

Managua, the capital of the state of Nicaragua and the chief town of the department of the same name. It is situated on Lake Nicaragua. The town was almost entirely destroyed by earthquake on March 31, 1931. It is being rebuilt and has a university and considerable commerce. Pop. about 80,000.

Manaos, the capital and river port of the state of Amazonas on the Rio Negro, Brazil. Its exports include rubber, Brazil nuts, cocoa and hides. Pop. 89,000.

Manasseh, *Ben Israel*, a Jewish author, born in Lisbon; settled at Amsterdam; wrote several works in the interest of Judaism, and induced Cromwell to permit the re-settlement of Jews in England, from which they had been excluded for several centuries. (1604-1657).

Manatee, or *Sea-Cow*, the three species of the genus *Manatus* of the order Sirenia. They are inoffensive animals and inhabit the shallow coastal waters of tropical America and Africa feeding on aquatic vegetation. The body is naked and stout, shaped like



MANATEE

a whale's, and has a shovel-shaped tail. They have paddles as forelimbs and digits with flat nails; the eyes and ears are small. Manatees are valued for their skin, flesh and oil. The three species are the *Manatus senegalensis* of Africa, the *M. americanus* of America and the *M. inunguis* of the Amazon.

Manche, *la*, the French name for the English Channel, so called from its resemblance to a sleeve, which is the meaning of the French name.

Manchester, on the Irwell, in the SE. of Liverpool, the centre of the English cotton-manufacturing district, with many other textile and related industries, is the fourth largest city of England. It has many fine buildings, including a Gothic Town Hall and Assize Court House; there is a picture-gallery, several excellent schools, and the famous John Rylands library; Owens College was the nucleus of Manchester University. The city grew enormously during the Industrial Revolution, and its industrial struggles in the beginning of the 19th Century were severe, and included the famous "Peterloo massacre." The famous Ship Canal, which connects it with the Mersey estuary, makes it a port of first importance. The railway to Liverpool was one of the first in England. Pop. 744,000.

Manchester, a town in the county of Hillsborough, New Hampshire, U.S.A., on the Merrimac R. Its manufactures include paper, foundries, and weaving. Pop. 76,900.

Manchester Ship Canal, a ship canal between Liverpool and Manchester, the construction of which, sanctioned by Parliament in 1885, converted Manchester into a port. The course is via Eastham, Runcorn and Latchford, and it is linked with natural water-courses. Its length is 35½ m., depth 28-30 ft., and the narrowest width, apart from the locks, 120 ft. At Manchester the dock accommodation covers 100 acres, with a quay area of 150 acres. The quays have a total length of 6 m. It cost £15,500,000 to build.

Manchukuo. See Manchuria.

Manchuria, region of NE. Asia, lying between Mongolia and Korea, with the Amur R. on the N. and the Yellow Sea on the S., is five times the size of England and Wales. The N., central and E. parts are mountainous; the Sungari is the largest river; the soil is fertile, producing

large crops of millet, maize, hemp, etc., but the climate in winter is severe. Pine forests abound; the country is rich in gold, silver, coal, and iron; beans, silks, skins, and furs are exported; cotton and other manufactures are rapidly increasing. The chief towns are Hsinking (the capital), Mukden, Harbin, and Antung. Until the fall of the Chinese Empire in 1911, the country was part of China, Russian influence having been replaced by Japanese after the war of 1905.

In 1930 Japan alleged that her interests, especially in the S. Manchuria railway, were being jeopardised by Chinese action, and began the military occupation of the area, overcoming Chinese resistance, and setting up in 1932 a new Japanese-protected state of Manchukuo, consisting of the former provinces of Fengtien, Kirin, Heilungkiang, and Jehol, the former Chinese Emperor being set up as, first, President, and in 1934, hereditary Emperor of the state. A League of Nations commission of enquiry under Lord Lytton was sent out, and reported unfavourably to Japan, but no action was taken. The state of Manchukuo has an area of 460,000 sq. m. and a pop. of 34,350,000; the population is mainly Chinese, but Japanese and Koreans are immigrating in large numbers.

Manchus, the original inhabitants of Manchuria (*q.v.*), only a fraction of the present population, which consists mainly of Chinese immigrants. The Manchus proper are a Tungusian race with Mongolian characteristics; they invaded China in the 17th Century, and a Manchu dynasty ruled there until the advent of the Chinese Republic in 1911.

Mandalay, capital of Upper Burma, on the country, 360 m. N. of Rangoon; was seized by the British in 1885. The Aracon Pagoda, with a brazen image of the Buddha, attracts many pilgrims, and Buddhist monasteries cluster outside the town. There are silk-weaving, gold, silver, ivory, and wood work, gong-casting and sword-making industries. Pop. 148,000.

Mandamus, in law, an order of the Crown requiring a person, corporation or inferior court to do something pertaining to their office; but generally used of a writ of mandamus from the High Court to test the legality of an inferior court's action in some case of a public nature in respect of which no other legal remedy exists.

Mandarin, the name given by foreigners to Chinese official functionaries, of which under the Empire there were some nine orders, distinguished by the buttons on their caps; the name is also applied to the standard form of the Chinese language used for official purposes. Also the name of a small sweet orange from which a liqueur is made.

Mandated Territories, those lands which as a result of the World War ceased to be under the sovereignty of the Central Powers and which by agreement of the Allied and Associated Powers were mandated to various countries, the mandates being formally submitted to the League of Nations for approval. Great Britain received mandates for Iraq, Palestine, Tanganyika Territory, part of the Cameroons and of Togoland, and Trans-Jordan; France received Syria, part of the Cameroons and of Togoland; German SW. Africa went to the Union of South Africa; all the former German possessions in the Pacific S. of the equator, excepting Nauru and Samoa, went to Australia; Samoa to New Zealand; Nauru to Great Britain; and all Pacific possessions N. of the equator were assigned to Japan. Under the provisions of the mandates, the Mandatory is enjoined to submit an annual report of progress to the Permanent Mandates Commission of the

League of Nations, thereby affording a guarantee of the equitableness of the system. Britain has relinquished the mandate for Iraq, which is now independent; and that for Syria is to be relinquished by France in 1939; Japan, having left the League of Nations, now looks upon the territories mandated to her as her own possessions.

Mandeville, **Bernard de**, Anglo-Dutch writer, born in Dordrecht, Netherlands, who came to London to practise medicine, and wrote the *Fable of the Bees*, a cynical treatise on vice and virtue directed against the ethics of Shaftesbury (q.v.). (1670-1733).

Mandeville, **Sir John**, English adventurer, who from his own account travelled over 30 years in the East and wrote a narrative of the marvels he experienced in a book of voyages and travels published in 1356. The authorship of this book has been questioned, it being affirmed that the actual author was Jean de Burgoyne, of Liège, while there is evidence that much of the matter has been borrowed from other narratives.

Mandoline, musical instrument of the string family, Italian in origin; it has a short finger-board and pear-shaped body, and is played with a plectrum.

Mandrake (*Mandragora*), a small genus of hardy herbaceous perennial plants of the order Solanaceae comprising 3 species native to the Mediterranean areas and the Himalayas. The Common Mandrake or Devil's Apples (*Mandragora officinalum*) bears blue or white flowers in May. All kinds of wonderful properties were formerly attributed to these plants and for long they were deemed typical of all manner of dreadful things; but there is some little doubt as to what plant the ancients really meant when they spoke of the mandragora, to which they ascribed marvellous virtues. Soporific qualities were attributed to it and it formed an ingredient in love-potions.

Mandrill (*Papio maimon*), a ferocious variety of baboon found in W. Africa. It has naked cheeks striped in blue and vermilion, a short tail and ischial callosities of a bright red colour. Mandrills associate in large numbers and often plunder villages and growing crops.

Manes, the general name given by the Romans to the departed spirits of good men who are conceived of as dwelling in the nether world, and as now and again ascending to the upper.

Manet, **Edouard**, French artist. Son of a under Couture, travelled round Europe, settled down and produced paintings in a natural style, exhibiting at the Salon from 1861. (1832-1883).

Manganese, a metallic chemical element discovered by Gahn in 1774. Symbol Mn; atomic number 25; atomic weight 54.95. It finds little application except in the manufacture of alloys; but here its importance is considerable. Manganese steel is extremely hard and tough, and has proved invaluable for railway metals, protective helmets for military purposes, and many similar objects. Among the compounds of manganese, the chief are the permanganates of sodium and potassium. Both of these salts are powerful germicides, and a solution of the former is sold, under a trade name, for disinfection. Potassium permanganate is an almost black crystalline solid, which—like the sodium salt—dissolves in

water to give a deep purple solution. Manganese dioxide is used in the laboratory as a catalyst in the preparation of oxygen by the action of heat on potassium chlorate, and also for preparing chlorine from hydrochloric acid.

Manganin, an alloy of 7 parts of copper with 1 part of manganese and a small proportion of nickel; it is used for resistance coils in electricity, as the conductivity varies very little with change of temperature.

Mange, a disease of the skin occurring in dogs, cats, horses and cattle; it is similar to the itch in human beings. The disease is produced both by the carapotic mite and by a mite which infests the capillary follicles. It is very contagious and necessitates the burning of the patient's clothing and bedding.

Mangin, **Charles Marie Emmanuel**, French general, born at Sarrebourg; served in the Sudan (1895-1898), Tonkin (1901-1904), West Africa (1907-1911) and Morocco (1912-1913); and in the World War organised the army of French colonial troops. In command of the 8th Infantry Brigade, he gained successes at Verdun in 1916; from the end of 1917 he commanded the 10th Army and after the armistice, the army of the Rhine. (1866-1925).

Mango, the fruit (a large drupe) of the *Mangifera indica*, a tree of the natural order Anacardiaceae, grown abundantly in the tropics though native to the East Indies. It is used as an ingredient of chutney.

Mangold-Wurzel, a coarse kind of beet, pale yellow in colour, larger than the garden beet, and grown as cattle feed. It is derived from the sea-beet (*Beta maritima*).

Mangosteen (*Garcinia mangostana*), a tropical evergreen fruit tree of the order Guttiferae, whose delicately-flavoured brown fruits, not unlike oranges, are eaten in the East.

Mangrove (*Rhizophora*), a tropical tree with thick leaves, large flowers and an edible fruit. Its bark is used in medicine and as a dyestuff. The netlike formation of the widely-spreading roots about which decaying vegetable matter easily collects, cause the tree to be planted in swampy regions as an aid to land reclamation.

Manhattan, a long island at the mouth of the Hudson, on which a great part of New York stands.

Mani, or **Manes**, the founder of Manichæism (q.v.), a native of Ecbatana in Persia at the court of whose king, Sapor I, he preached. He was crucified A.D. 274.

Mania, a term applied to insanity characterised by mentalexaltation. In simple mania the brain over-functions and the patient is talkative and displays a marked absence of sustained purpose, though unweariness in mental activity. The degree of insanity is mild. In acute mania the motor functions of the brain are affected and the patient is increasingly active, incoherent in speech, and while seemingly untiring in both mind and body, gradually becomes exhausted with possibly fatal results.

Manichæism, a religious system founded by Mani, a Persian, which ascribes the created universe to two antagonistic principles, the one essentially good—God, spirit, light; the other essentially evil—the devil, matter, darkness. It was based in part on Zoroastrianism, and was for a time a serious rival to Christianity, especially in the E.; the Albigenses in Southern France were largely Manichæan in their belief. St. Augustine (q.v.) of Hippo was a Manichee before his conversion to Christianity.



MANDRILL

Manila, capital of the Philippine Is.; at the head of a great bay on the W. coast of Luzon; is hot, but not unhealthy; suffers severely from storms and earthquakes, and is largely built of wood. It has a cathedral, university, and observatory. Its main industry is cigar-making; the exports include manila hemp, sugar, and coffee. The population, chiefly Tagals, includes Chinese, Spaniards and Europeans. In the Spanish-American War of 1898 Admiral Dewey captured the city. Pop. 378,000.

Manila Hemp, a fibre from the leaf stalks of *Musa textile*, a plant of the Philippine Is. It is mostly used for making ropes, twine, etc., but the finer qualities are woven for sails, scarves and other wearing apparel.

Manipur, a native state of India between Burma and Assam. It has an area of 8,400 sq. m. and a population of 445,000 of whom one-third are animistic tribes.

Manitoba, a "prairie" province of Canada, with the United States on its S. border, Saskatchewan on the W., and Ontario on the E.; the S. is a level prairie and arable country, scantily wooded but well watered, having three large lakes, Winnipeg, Winnipegosis, and Manitoba, and three large rivers, Assiniboine, Souris and Red R. The soil is very fertile, producing fine wheat; mixed farming, dairy, cattle, and sheep farming are carried on successfully. Coal is found in the S., and gold, copper and zinc in the N.; fishing is pursued on the lakes and rivers. Constituted a province in 1870, Manitoba was the scene of the Riel rebellion, quelled that same year. In 1912 its territory was greatly extended. The capital is Winnipeg, the seat of a university and of extensive flourmills. Area, 251,800 sq. m. Pop. 700,000.

Manlius, Marcus, surnamed *Capitolinus*, a Roman hero who, in 390 B.C., saved Rome from an attack of the Gauls, and was afterwards for treason thrown down the Tarpeian Rock.

Mann, Thomas, German novelist, born in 19; practised literature while engaged in an insurance office. After issuing several minor works became famous with *Buddenbrooks*, 1903—a long novel describing experiences of an old Lübeck family. Other works: *Der Tod in Venedig* (Death in Venice), *Der Zauberberg* (The Magic Mountain), 1924. Nobel prize winner, 1929. He left Germany after the rise of the Nazis. (1875—).

Mann, Tom, British labour leader; born at Foleshill, Warwickshire; in youth worked on a farm, in a mine, and as an engineering apprentice, joining in 1881 the Amalgamated Society of Engineers, of which he was Secretary from 1918 to 1921. Became a Socialist in 1885, and was one of the leaders of the 1889 Dock Strike, becoming president of the Dockers' Union in 1890. From 1894 to 1896 secretary of the Independent Labour Party; from 1899 to 1902 kept a London tavern. In 1902 went to Australia and later to South Africa, returning to England in 1910 to lead the Syndicalist movement; in 1912 was imprisoned for exhorting soldiers against action in labour disputes. In 1927, having become a Communist, visited the interior of China on a revolutionary mission. (1856—).

Manna, the food with which the Israelites were miraculously fed in the wilderness, a term said to mean "What is this?" being the expression of surprise of the Israelites on first seeing it, but more credibly derived from the Hebrew *man*, a gift; identified with a species of tamarisk from the stem of which exudes a saccharine sap.

Mannheim, German city in Baden, on the Rhine, 55 m. above Mainz; has manufactures of tobacco, chemi-

cals, and iron goods, and a growing river trade. An old historical city, it was formerly capital of the Rhenish Palatinate, and a resort of Protestant refugees; later the capital of the Grand Dukes of Baden. Pop. 275,000.

Manning, Henry Edward, cardinal, born in Hertfordshire; Fellow of Merton, Oxford, and a leader in the Tractarian Movement there; became rector in Sussex, married, and became Archbishop of Chichester; dissatisfied with the state of matters in the Church of England, in 1851 he joined the Church of Rome, became Archbishop of Westminster in 1865, and Cardinal in 1875; was a strong supporter of infallibility at the Vatican Council of 1870; interested in social questions. (1808–1892).

Manoel I. ("the Happy"), king of Portugal 1495–1521; sent Vasco da Gama round the Cape of Good Hope to India, 1497; Cabral on the voyage in which he discovered South America, 1500; Corte Real to Labrador, 1500; Almeida and Albuquerque to the East Indies, 1505. (1469–1521).

Manoel II., king of Portugal 1908–1910; son of King Carlos I., on whose assassination he succeeded to the throne, being expelled from the country two years later on the establishment of the Republic; afterwards resided in England at Twickenham, engaged in literature, and in 1913 married Princess Augusta Victoria of Hohenzollern. (1889–1932).

Manometer, an instrument for determining the pressure of gases or vapours. A common form is a bent glass tube open at both ends and containing mercury at the angle. When gas or vapour is applied to one end the mercury rises in the other. Manometers which measure gaseous pressure by the tension of a spring are used for steam-gauges.



Manor, under the feudal MANOR system of land tenure, a piece of land held by a lord who occupied so much as was necessary for the use of his family and granted the remainder to tenants for stipulated rents or services. The manor was usually granted by the sovereign to the lord of the manor, who could hold a court of his tenants and impose fines for misdemeanours, and later exercised criminal jurisdiction. After the Norman Conquest the King's Courts absorbed much of the power of the manorial courts. In 1285 the granting of new manors ceased under the statute of *Quia Emptores*. Labourers on the manor were serfs who had no freedom.

Mans, Le, capital of the French dept. of Mayenne, Sarthe, on the R. Sarthe, 170 m. SW. of Paris; has a magnificent cathedral; is an important railway centre, and has tobacco and textile factories. It was the scene of a great French defeat by the Germans in January, 1871. It is the scene of an annual motor race. Pop. 85,000.

Mansard, the name of two French architects, born in Paris—François, who constructed the Bank of France (1598–1666), and Jules Hardouin, his grand-nephew, architect of the dome of the Invalides and of the palace and chapel of Versailles. (c. 1645–1708). François was the designer of a type of roof, consisting of 4 planes inclined to one another and hinging on one another and usually provided with dormer windows (q.v.); popular in France in the 17th century.

Mansfield, market-town of Nottinghamshire, in the centre of a mining district, with iron and lace-thread manufactures. Pop. 46,000.

Mansfield, Katherine, English writer, born in New Zealand; her several collections of short stories include *Hiss*, *The Garden Party*, *Something Childish*. She was the wife of John Middleton Murry (1889-1923).

Mansfield, William Murray, Earl of, Lord Chief Justice of England, born in Perth, called to the bar in 1730; distinguished himself as a lawyer, entered Parliament in 1743, and became Solicitor-General; accepted the chief-justiceship in 1756; was impartial as a judge, and is acknowledged as the founder of present-day commercial law; raised to the peerage in 1776, and resigned his judgeship in 1789. (1705-1793).

Mansion House, in the Poultry, London, the official residence of the Lord Mayor of London, erected in 1739 at a cost of £42,638, with a banquet-room accommodating 400 guests.

Manslaughter, is the unlawful killing of another without malice (q.v.) aforethought, express or implied; and is said to be voluntary or involuntary. Voluntary manslaughter is where death is caused by a sudden act of revenge whilst the accused is still under provocation; and it differs from excusable homicide in self-defence, because there has been no attempt to get away before killing in self-preservation the person who gives the provocation. Killing through culpable negligence is also manslaughter. In Scots law, the term is not used; the cardinal division of criminal homicide is into murder and culpable homicide. The punishment for manslaughter is up to penal servitude for life.

Mansurah, a city of Lower Egypt and capital of the province of Dakhla on the Nile about 25 m. from Damietta. It is a centre of trade in cereals, grain and cotton. Pop. 68,700.

Mantegna, Andrea, an Italian painter and engraver, born in Padua. His works were numerous, many of these altar pieces and frescoes, his greatest "The Triumph of Caesar." He was a man of versatile genius, was sculptor and poet as well as painter, and his influence on Italian art was great. (1431-1506).

Mantes, town in dept. Seine-et-Oise, France, with manufactures of brushes, baskets, etc. It was here that William the Conqueror received his death wound. Pop. c. 11,000.

Mantilla, a head-covering, commonly of lace, worn by women in Spain. It is used as a veil, and is draped around the shoulders. The term is also used to denote a woman's light shoulder cloak.

Mantis (Mantidae), a family of carnivorous orthopterous insects. The European Praying Mantis (*Mantis religiosa*) is so called from the attitude of its forelegs, as of a person at prayer, while lying in wait for its prey.

Mantling, or Lambrequin, in heraldry, the ornamental drapery flowing from the helm or crest in a coat-of-arms.

Mantra, the Hindun name for a religious poetical incantation or charm, especially a verse from the Vedas used for that purpose.

Mantua, city in Italy, in SE. Lombardy, on two islands in the R. Mincio, 83 m. E. of Milan, has a fine cathedral, and many other medieval buildings; there are salt-peter refineries, weaving and tanning industries. Virgil was born herein 70 B.C. Pop. 40,500.



PRAYING
MANTIS

Manu, Code of, a Hindu book, containing a code of religious and social legislation, dating in its present form from about the 1st Century B.C. It expounds the doctrines of Brahminism, inculcating "sound, solid, and practical morality," and contains evidence of the progress of civilisation among the Aryans from their first establishment in the valley of the Ganges. Manu, the alleged author, appears to have been a primitive mythological personage, conceived of as the ancestor and legislator of the human race.

Manure, any material used for treating the soil in order to increase the productivity of plants. Manure is necessary to replace the ash-constituents and air-food of exhausted soil, though to some extent this replacement proceeds naturally through decomposition of mineral matter, the absorption of carbonic acid, etc. The natural supply of plant food in soils has long been supplemented by the application of manures and by waste products of the farm or of industrial processes; but modern scientific research has revealed the nature of the principal plant foods and shown that such foods could be added to the soil in the form of simple chemical compounds almost equally beneficially.

Manzoni, Alessandro, Italian poet and novelist. Born in Milan; converted in early life from scepticism to Catholicism; wrote a volume of hymns entitled *Inni Sacri*, and a tragedy, *Adelchi*, his masterpiece, as also a novel, *I Promessi Sposi*, which gave him a European reputation. In 1860 was made a senator of the kingdom of Italy. (1785-1873).

Maoris, the natives of New Zealand, a Polynesian race, who appear to have reached that country from Hawaii; a well-developed, intelligent and brave people, now numbering about 80,000, and completely civilised. They are said to have been cannibals before their Europeanization; they were formerly famous for their custom of elaborately tattooing their faces and bodies.

Maori Wars, conflicts between the settlers of New Zealand and the aborigines over boundaries. They were fought from 1843-1847, 1863-1864, and 1869-1870.

Map, a plane diagram depicting the physical or other features of the whole, or any part, of the earth's surface. The system on which the meridians and parallels (see Latitude and Longitude) of a map are drawn is called the projection. One of the most common is Mercator's Projection, in which meridians and parallels are depicted as straight lines at right angles to each other. This scale is exaggerated in high latitudes, but is universally used at sea, since a ship keeping a constant course follows a straight line on the map or chart. A conical projection has the meridians represented by straight lines converging on a centre and parallels by concentric circles at right angles to these lines. A modified conical projection is the orthomorphic, with two standard parallels, usually called Lambert's second Projection. In the later stages of the World War such maps were used by the Allies. The choice of projection depends upon the purpose of the map. Modern survey maps are now made by a system of aerial photography, a series of photographs, one overlapping another, being taken and the prints assembled.

Map, or *Mages*, Walter, Welsh author, born probably in Herefordshire. He was a Canon of Lincoln and Archdeacon of Oxford from 1198. His one undoubted literary work is *De Nuptis Curialium*, consisting of rough notes and reminiscences, with gibes at monastic orders and the Roman court. Parts of the Arthurian legend, much satirical verse, and a famous drinking-song, are ascribed to him. (c. 1140-c. 1309.)

Maple, the common name of the trees *Aceraceae*. *Acer campestris* is indigenous in Britain. Other species are Silver, Oregon, Red swamp, Box elder and Sugar Maple. Maple sugar, a coarse sugar used in Canada and in Western states of U.S.A., is obtained by making incisions in the stem of the sugar maple (*A. saccharinum*) and evaporating and crystallizing the sap which flows therefrom. Good timber is obtained from the Oregon, Box elder and other kinds.



MAPLE

Marabou, a stork of the genus *Leptoptilus*. There are two species; *Leptoptilus marabou*, a native of Western Africa and *Leptoptilus dubius* the adjacent bird (q.v.) of India. The tail-covert feathers of both are used by milliners.

Marabouts, a sect of Mohammedan religious devotees, much venerated in N. Africa, believed to possess supernatural power, particularly in curing diseases, and exercising at times considerable political influence.

Maracaibo, a Venezuelan city on the W. shore of the outlet of Lake Maracaibo; has handsome streets and buildings, and exports coffee and valuable woods. The lake of Maracaibo is a large freshwater lake in the W. of Venezuela, connected with the Gulf of Maracaibo by a wide strait, across which stretches an effective bar. Pop. 110,000.

Marañon, one of the head-waters of the Amazon, rising in Lake Lauricocha, Peru, and flowing N. and E. till it joins the Ucayali and forms the Amazon; the name is sometimes given to the whole river.

Maraschino, the fermented juice of the marasca cherry which was originally distilled as a cordial in Dalmatia. It is flavoured with broken kernels. It is now produced in other countries.

Marat, Jean Paul, French revolutionary leader, born in Neuchâtel, his father an Italian, his mother a Genevese; studied medicine at Bordeaux, and afterwards practised in London and Paris, was arrested and imprisoned in 1789, and while subsequently hiding in Paris sewers contracted a skin disease; was prominent in demanding the death of Louis XVI, and a popular hero, but was assassinated by Charlotte Corday (q.v.) one evening as he sat in his bath. (1743-1793).

Marathon, a village, 22 m. N.E. of Athens, on the sea border of a plain where the Greeks under Miltiades defeated the Persians under Darius in 490 B.C. The plain on which the battle was fought extends between mountains on the W. and the sea on the E.

Marathon Race, an event in the held every fourth year in various parts of the world. It is also the name for similar races wherever held, generally over a course of 21 m. The name is derived from the classical story of Pheidippides, who ran from Marathon (q.v.) to Athens with news of the battle.

Maraion, or Market Jew, small town facing St. Michael's Mount, 3 m. from Penzance. It was burnt by the French in 1513, and again in 1549 during the Arundel rebellion in the reign of Henry VIII. Its name has been thought to commemorate the site of an ancient Jewish settlement. Pop. c. 1,000.

Marble, a calcareous stone of compact texture which can be highly polished. It consists of granules of uniform size which, in severance, split along the

rhombohedral cleavage planes presenting glistening facets. Marbles are metamorphosed limestones. They are of great economic value on account of their durability and many records on marble are of great antiquity. Marble is used for statuary and in ornamental architecture. Its distribution is very wide.

Marble Arch, erected by George IV. as a gateway to Buckingham Palace, and in 1850 removed to its present position by the N.E. corner of Hyde Park, London.

Marburg, German university town in Hesse-Nassau, on the Lahn, 40 m. N.E. of Limburg; has many old buildings; its Gothic church contains St. Elizabeth's tomb; Luther and Zwingli held a conference in the castle, 1529; William Tyndale and Patrick Hamilton were students at its university, which has a fine library. Pop. c. 20,000.

Marcellus, Claudius, Roman general; killed their chief, Viridomarus, with his own hands, whose spoils he dedicated as *spolia opima* to Jupiter; took Syracuse, which long baffled him through the skill of Archimedes, and fell fighting against Hannibal, 208 B.C.; he was five times consul.

March, the third month of our year; was before 1752 reckoned first month as in the Roman calendar, the legal year beginning on the 25th. It is proverbially stormy, and is the season of the spring equinox. It was dedicated to the Roman god Mars, whence the name.

March, market town and urban district of the Isle of Ely, Cambridgeshire, 29 m. N. of Cambridge, on the R. Nene. It is the centre of a corn and fruit growing district. Pop. 11,300.

March, a boundary, used especially of the *Welsh Marches*, and *Scottish Marches*, the border countries between England and Wales and Scotland respectively. The Earl of March (q.v.) took his title from the Welsh Marches, and in the Middle Ages the governors of the border districts were known as Wardens of the Marches. The name is allied to the German "Mark," with a similar meaning, as in the "Mark of Brandenburg." A Marquis was originally the ruler of such a "March."

March, Roger Mortimer, first Earl of Wigmore, Herefordshire; as Viceroy of Ireland in 1316, defeated the rebellion of the Lacys and repulsed Edward Bruce. Antagonised by encroachments of the Despauers in Wales, he rebelled; was imprisoned two years in Tower; escaped to the Continent; became paramour of Edward II.'s queen, Isabella; returned in 1326 and led the movement that deposed the king (soon afterwards murdered). He was made an Earl in 1328, and exercised kingly authority. Captured at Nottingham Castle by Edward III., he was carried to London and hanged. (1287-1330).

Marchand, Jean Baptiste, a French emissary in Africa; was sent in 1890 to explore the sources of the Niger and other districts, and was afterwards appointed to push on to the Nile, where he arrived in 1898, hoisting the French flag at Fashoda, an incident which gave rise to tension with England. He was obliged to retire and find his way back to France. (1863-1934).

Marchesi, Blanche, Baroness Caccamisl, French singer, born in Paris; appeared in Wagnerian and other operas in Berlin, Prague, Paris, and London with great success; afterwards taught singing. (1826-1913).

Marcion, a heretic of the 2nd Century, born in Sinope, in Pontus, who rejected the Jewish elements in Christianity,

refused to acknowledge the Old Testament, and took his stand on the words of Christ and the interpretation of St. Paul. He held that an ascetic life was of the essence of Christianity; his followers were called Marconites.

Marconi, Guglielmo, Marchese, Italian scientist, inventor of wireless telegraphy; born at Bologna of an Irish mother. Studied in Florence and Leghorn, and at Bologna university. He came to England in 1896, and took out the first patent for radiotelegraphy. A company to exploit it was formed in London, 1897. Communication between England and France was established, 1898, and between Cornwall and Newfoundland in 1901. Marconi shared the Nobel Prize for physics in 1909. During the World

War, 1914-1918, Marconi was in the service of the Italian Government, 1918-1937.

Marcus Aurelius, Antoninus, Roman emperor, was adopted by Antoninus Pius, when

the latter was adopted by Hadrian, and married Faustina, daughter of the licentious wife of Antoninus. On the death of Antoninus in 181, he succeeded to the throne, but most of his reign was spent in warring with the Marcomanni and Quadi. He is chiefly famous for his devotion to the Stoic philosophy, and is commonly called "the philosopher."



MARCUS AURELIUS

His *Meditations* is a record of his religious and moral principles, and is a most famous classic. (121-180 A.D.).

Mardi Gras, the French name for Shrove Tuesday, the eve of Lent and concluding day of the carnival, marked by a procession through the streets of a prize ox, a burlesque of an old Roman sacrificial custom, together with mock priests, a band, and other merry-makers.

Maremma, a malarial coast district of Italy, N. of the Campagna, stretching from Orbitello to Guardistallo, with few villages or roads. Part of it was improved by draining and planting (1824-1844), and is cultivated in summer by the Apennine farmers; in winter it is used for pasturage.

Marengo, a village of N. Italy, S.E. of Alessandria, where Napoleon defeated the Austrians under Baron Melas on June 14, 1800.

Mareotis, Lake, a lagoon in the N. of Egypt, 40 m. long by 18 m. broad, separated from the Mediterranean by a tongue of land on which part of Alexandria is situated.

Mare's Tail (*Hippuris vulgaris*), a water plant of almost cosmopolitan distribution, growing in ponds. The leaves are narrow and pointed, growing in whorls up the stem at short distances, the upper ones projecting above the water. The flowers grow from the joint of the leaf and are without petals.

Margaret, Queen of Denmark, Norway, and Sweden, was the daughter of Waldemar IV. of Denmark, whose crown, on his death in 1375, she received in trust for her son Olaf. Her husband, Haakon VII. of Norway, died in 1380, and left her queen; the Swedes deposed their king next year, and offered Margaret the throne, which she accepted, and ultimately brought about the Union of Calmar (1397), which provided for the perpetual union of the three crowns. (1368-1412).

Margaret, the "Maid of Norway," daughter of Eric II. of Norway and Margaret, daughter of Alexander III. of Scotland, affianced to Edward, later Edward II. of England, but died at sea on her way from Norway. (1283-1290).

Margaret, St., a Christian martyr of Antioch, the type of female innocence, represented as a maiden bearing the palm and crown of a martyr and attended by a dragon. Festival, July 20.

Margaret, St., Queen of Scotland, and sister of Edgar Atheling, born in Hungary; brought up at the court of Edward the Confessor; after the conquest sought refuge in Scotland, and married its king, Malcolm Canmore; was a woman of beautiful character and great piety and did much to civilise the country by her devotion and example. She was canonised by Innocent IV. in 1250. Festival, June 10 or November 16. (1047-1093).

Margaret of Anjou, queen of England, and daughter of the good King René of Anjou; was distinguished for the courage she displayed during the Wars of the Roses, though, after a struggle of nearly twenty years, she was defeated at Tewkesbury and committed to the Tower, from which, after four years of incarceration, she was afterwards released by ransom. (1430-1482).

Margaret of Navarre, Queen of Navarre, sister of Francis I., married in 1527 Henri d'Albret, king of Navarre, by whom she became the mother of Jeanne d'Albret; protected the Protestants, and encouraged learning and the arts. She left a collection of novels, under the name of *Heptameron*, and a number of interesting letters, as well as some poems. (1492-1548).

Margaret of Valois, third daughter of France and Catherine de' Medici; married Henry IV., by whom she was divorced for her immoral conduct. (1553-1615).

Margaret Rose, Princess, second daughter of King George VI. and Queen Elizabeth of England; born at Glamis Castle, Angus, Scotland, Aug. 21, 1930.

Margarine, a butter substitute made from various animal and vegetable oils and fats, frequently with the addition of milk or milk substitutes. Its manufacture and sale are carefully regulated by law, and all butter substitutes exposed for sale must be clearly labelled as margarine.

Margarita, Venezuelan island in the Caribbean Sea, 45 m. long by 20 m. at its greatest breadth. It is mountainous, fertile in the interior, produces maize, cotton and bananas, and there are magnetite deposits. Pearl fishing is a government industry. Capital, Aracua. The main port and chief commercial centre is Porlamar (pop. 4,900). Pop. c. 50,000.

Margate, a seaport and watering-place, 3 m. W. of the North Foreland, Kent, England, is with its firm sands, bathing facilities, and various attractions a favourite resort of London holiday-makers. It is particularly famous for its beautiful sunsets. There are large almshouses and orphanages, and other charitable institutions. Pop. 40,000.

Margay (*Felis tigrina*), a spotted and striped tiger-cat of South America. It is about the size of a house-cat and can be domesticated. It is useful as a destroyer of rats and mice.

Margrave, ancient German title of a military governor in charge of a frontier or "mark." The title in its territorial sense went out of use in 1806, but was retained as a courtesy title.

Marguerite, name for large species of *Chrysanthemum* of the order Compositae, generally bearing white flowers; especially for the *Chrysanthemum frutescens*, with yellow or white flowers, the best known garden variety.

Mariana, Juan, Spanish historical philosopher, born in Talavera; joined the Jesuits in 1554, and taught in their colleges in Rome, Sicily, and Paris; returning to Toledo, he gave himself to literature. His *History of Spain* appeared in 1592 and 1601. For certain theological writings he incurred persecution, and his greatest work *De Rege et Regis Institutione* in which he defended the right of the people to cast out a tyrant, was condemned by the general of his order. (1536-1624).

Maria Theresa, Empress of Austria, daughter of the Emperor Charles VI., whom on his death in 1740 she succeeded on the throne, associating her husband, Francis of Lorraine, with her in the government as Francis I.; despite the Pragmatic Sanction, which assured her of her dominions in their integrity, she was assailed by competing claimants, in particular by Frederick the Great, who wrested Silesia from her. The war thus occasioned, known as the war of the Austrian Succession, lasted seven years, and was concluded by the Peace of Aix-la-Chapelle in 1748. Backed by France, she soon renewed hostilities in the hope of compelling Frederick to restore what he had taken, but the Seven Years War left things in this respect as they were though she gained some territory, including Galicia and Lodomeria, as a result of the first Partition of Poland. She also secured Bukowina from the Porte and some territory from Bavaria. In the intervals of the wars Maria Theresa introduced many internal reforms including the curbing of abuses of the Church. (1717-1780).

Marie Antoinette, Queen of France, fourth daughter of Maria Theresa; was married in 1770 to the Dauphin, later Louis XVI. Beautiful, haughty, indiscreet and extravagant, she grew in unpopularity until the outbreak of the Revolution. She was guillotined nine months after her husband. (1753-1793).

Maria de' Medici, daughter of the Tuscan, born in Florence; was married to Henry IV. of France in 1600, with whom she lived unhappily till his murder in 1610; she was then Regent for seven years. In 1617 her son assumed power as Louis XIII. She was, for two years banished from the court, and on her return so intrigued as to bring about her imprisonment in 1631. Though a lover of art she was neither good wife nor good queen. Escaping from confinement, she died in destitution at Cologne. (1573-1642).

Marie Louise (Leopoldine Françoise Thérèse Joséphine Lucie), second Empress of Napoleon I.; eldest daughter of the Austrian emperor Francis I.; born at Vienna. Napoleon obtained her in marriage, after divorcing Joséphine in 1810. In 1811 she bore him "Napoleon II.," the "King of Rome" and "Duke of Reichstadt" (d. 1832). In 1813 she accompanied her husband to Dresden and was nominal regent during his absence in the field, 1814. On his exile to Elba, she returned to Vienna. The Duchies of Parma, Piacenza, and Guastalla, were reserved for her son; she was ably assisted in their government by Count Neipperg, who married her in 1822. She died in Vienna. (1791-1847).



MARGUERITE

Marienbad, or Mariánské Lázně, a high-lying Czechoslovakian watering-place 18 m. S. of Carlsbad; it is much frequented for its saline springs. Pop. c. 5,000.

Marigold, a name covering composite garden flowers. *Calendula officinalis* (or Pot Marigold), indigenous in S. Europe, is common in British gardens. It has orange or lemon-coloured flowers, used to impart a yellow colour to cheese. Other kinds are African (*Tagetes erecta*); Field (*Calendula arvensis*); Marsh (*Calitha palustris*); French (*Tagetes patula*).



POT MARIGOLD

Mariner's Compass. See Compass.

Marines, Royal, the name used to designate certain bodies of troops raised and organised for the dual purpose of serving either on shore or afloat in ships. The first record of such a body is in 1864 when Charles II. embodied the Duke of York and Albany's Maritime Regiment to consist of 1,200 "land soldiers." The present 1st East Lancs., 1st East Surrey, and 1st Duke of Cornwall's Light Infantry all started as marine units. In 1802 marines were designated Royal and their facings altered from white to blue.

Formerly there were two distinct divisions, the Royal Marine Artillery and the Royal Marine Light Infantry, but they were amalgamated in 1923. When serving ashore the Royal Marines are subject to the Army Act and when afloat to the Naval Discipline Act. In the World War the Royal Marines were conspicuous in various places, particularly Gallipoli and the Belgian Coast. They rendered valuable service in the third Battle of Ypres and took part in the famous exploit at Zeebrugge (q.v.).

Mariolatry, worship of the Virgin Mary; a term used by Protestants, usually in a derogatory sense, to censure what in their view is the undue honour paid to the Virgin Mary by the Greek and Roman communions since the 5th Century, and in recent years imitated by some Anglicans.

Marionette, a jointed puppet, representing a human being or animal, and operated by concealed controls for the purpose of entertainment.

Mariotte, Edmé, a French physicist, born in Dijon; discoverer of the law that the volume of a gas varies inversely as the pressure; it bears the name of Mariotte's law on the Continent and Boyle's law in England. (1630-1684).

Marius, Gaius, a celebrated Roman uncle by marriage to Julius Caesar, head of the popular party, and the rival of Sulla; conquered the Teutons and the Cimbri in Gaul, and made a triumphal entry into Rome. Having obtained command of the war against Mithridates, Sulla marched upon the city and drove his rival beyond the walls.

fled the city, and was condemned to death; his executioner allowed him to escape to Carthage, whence he later returned; and with Cinna organised a general slaughter of the partisans of Sulla. He recognised the Roman army and made it a power in the field. (155-86 B.C.).

Marjoram (*Origanum*), a genus of small hardy shrubs and perennial herbs of the order Labiales, native of Europe and Mediterranean regions. The Sweet Marjoram, *Origanum Marjorana*, yields an aromatic oil on distillation, used in cookery for flavouring. The Wild or Common Marjoram, *Origanum vulgare*, a native of Europe (including

Britain), bears purple flowers and is commonly grown in old-world gardens, especially the golden-leaved variety, *aureum*.

Mark, a German silver coin, with a pre-war value of 11*d.*. After the World War the **Mark** completely lost its value, and eventually was replaced by the Rentenmark, converted at the rate of one trillion marks to one Rentenmark. In 1923 the Rentenmark was established on a gold basis, which after depreciation in the currency crisis of 1931 was replaced by the Reichsmark, with a par value of 11*d.*, but exchanging in 1938 at about 1*s.* 7*d.*

Mark, Gospel according to, probably the earliest of the Gospels to assume its present form. It was used as a source by the authors of the first and third gospels. There seems no reason to question its traditional attribution to Christ's disciple Mark, "the interpreter of Peter." It was written primarily for Gentile readers, and is a vivid but unadorned account of the life of Christ, for the events of whose career it is the principal authority.

Mark, John, the traditional author of the **Mark**, second Gospel, the son of Mary, Barnabas' sister, who ministered to Christ, and whose house in Jerusalem was a place of resort for the disciples of Christ after the resurrection; accompanied Paul and his uncle on their first missionary journey and afterwards accompanied Peter. He is regarded as the founder of the Coptic Church, and his body is said to have been buried in Venice, of which he is the patron saint, the cathedral of that city being named St. Mark's after him. He is represented in Christian art as a man in the prime of life accompanied by a winged lion, with his Gospel in his left hand and a pen in his right. Feast, April 25.

Mark Antony. See **Antonius, Marcus**.

Market, a public place to which by custom, goods are brought to be exposed for retail sale. Such institutions were of great importance before the rise of modern methods of rapid and easy communication, and could only be established by licence of the Crown. They were generally held at fixed intervals; such names as Newmarket and Stowmarket still commemorate important markets of an earlier day. An annual market, or fair, is still held at many centres in Europe. The name is now most generally used of a place where agricultural and dairy produce is exchanged between the producers or wholesalers and the retail sellers; as Covent Garden (for fruit and vegetables) and Smithfield (for meat) in London.

Market Drayton, a market town of Shropshire, England, with manufactures of agricultural implements, a foundry and cattle market. Blore Heath in the vicinity, was the scene of a battle in the Wars of the Roses. Pop. 4,700.

Market Garden, a piece of land where fruit, vegetables and flowers are grown for sale at a market. Such gardens are usually near large towns, to minimise costs of transport. Success depends upon the right choice of produce for the particular soil, having regard both to quality and quantity. Flower cultivation under present conditions is the most profitable form of market gardening. In fruit gardening apples yield the most permanent results. Vegetable market gardens can be made to yield, given the right conditions, potatoes, cabbages, carrots, turnips, onions, and salads without difficulty.

Market Harborough, manufacturing and market town in Leicestershire, England, 83 m. from London, in the centre of a hunting country. There is a cattle market, and manufactures of corsets and brushes. Pop. 9,500.

Markham, Mrs., pseudonym of Elizabeth Penrose, author of children's books, second daughter of Rev. Edmund Cartwright (reputed inventor of the power-loom), born in Leicestershire. In 1823 her *History of England*, partly in conversational form, appeared; in 1838, her *History of France*. She died of cancer. (1780-1837).

Markievicz, Constance Georgina, Countess, Irish politician, daughter of Sir Henry Gore-Booth, and wife from 1900 of a Polish count; was active first in the Labour and later in the Sinn Féin movement, and was sentenced to death for her part in the 1916 rebellion, the sentence being commuted to imprisonment. In De Valera's revolutionary government she was Labour Minister. She was the first woman to be elected to the British House of Commons, being returned for St. Patrick's, Dublin, in December, 1918, but she never took the oath or her seat. (1884-1927).

Mark Twain. See **Clemens**.

Marl, in geology, a sedimentary rock intermediate in composition between the calcareous and the argillaceous rocks, and sometimes called clayey limestone; generally laid down in freshwater lakes, and contains plentiful remains of fresh-water crustacea, gasteropods and algae. Red and green marls exist in the trias of England just below the bone-bed. In agriculture, marl means any soil which readily falls to pieces on exposure to the air, even though it has no lime in its composition.

Marlborough, market town in Wiltshire, England, on the Kennet, 38 m. E. of Bristol, with sack and rope making, brewing, and tanning industries, and a famous public school founded in 1543. The Marlborough Downs, near the town, are used for racehorse training. Pop. 3,900.

Marlborough, John Churchill, first Duke of, soldier and statesman, born in Devonshire, and served in Tangier in 1667; sent to help Louis XIV. in his Dutch wars, his courage and ability won him a colonelcy. He married Sarah Jennings in 1678, and 7 years later became Baron Churchill on James II.'s succession. As general he was employed in putting down Monmouth's rebellion; he succeeded to William of Orange in 1688, and received from him the earldom of Marlborough. He was in dis-



DUKE OF
MARLBOROUGH

favour from 1694 till the outbreak of the Spanish Succession War, in which he gained his great renown. Beginning by driving the Spaniards from the Netherlands in 1702, he won a series of important victories—Blenheim 1704, Ramillies 1706, Oudenarde 1708, and Malplaquet 1709—and contributed to enhance the military glory of England. Queen Anne loaded him with honours; large sums of money, Woodstock estate, Blenheim Palace, and a dukedom were bestowed on him. His wife was the Queen's closest friend, and the duke and duchess virtually governed the country, till in 1711 the Queen threw off their influence, and charges of misappropriation of funds forced the duke into retirement. He was restored to many of his offices by George I. in 1714, but for the last 6 years of his life he sank into imbecility. (1650-1722).

Marlborough House, mansion in Pall Mall, London, built by Wren for the great Duke of Marlborough c. 1710, and since 1817 Government property. It has been used as a

residence by Edward VII. when Prince of Wales, Queen Alexandra, and Queen Mary, widow of George V.

Marlow, town of Buckinghamshire, England, on the Thames, 32 m. from London. Marlow Lock, one of the oldest on the Thames, was reconstructed in 1927. There are extensive beech woods and the surrounding scenery is remarkably beautiful. There are paper mills, a brewery, a cabinet factory and annual cattle show. Pop. 5,300.

Marlowe, Christopher, English dramatist and poet; son of a shoemaker at Canterbury. Besides a love poem entitled *Hero and Leander*, he was the author of 7 plays, the most famous being *Tamburlaine*, *Doctor Faustus*, *The Jew of Malta*, and *Edward the Second*. He made no attempt at comedy. Was killed at Deptford in a brawl. (1564-1593).

Marmalade, a general name for various fruits, especially citrus or those which have an acid taste, such as oranges, lemons, or barberries. The name is derived from Portuguese "marmelo," the quince, from which fruit marmalade was originally prepared. *Vicellaria mammosa* (the marmalade tree) is a West Indian tree of the family Sapotaceae, a milky tree with leathery leaves and large pulpy fruits.

Marmont, Auguste Frédéric, Duke of France, served under Napoleon; received the title of duke for his successful defence of Ragusa against the Russians in 1805; was present at Wagram, Lützen, Bautzen, and Dresden, but came to terms with the allies after the taking of Paris, which led to Napoleon's abdication in 1814; obliged to flee on Napoleon's return, he came back to France and gave his support to the Bourbons. (1774-1852).

Marmora, Sea of, 175 m. long and Europe and Asia Minor, opening into the Aegean through the Dardanelles and into the Baltic through the Bosporus; the Gulf of Ismid indents the eastern coast. Marmora, the largest island, has marble and alabaster quarries.

Marmoset (*Hapalidæ* or *Callithridæ*), a family of small

Anthropoid monkeys found almost exclusively in forest-areas of tropical S. America. The size of the different species varies from a few inches in length to one foot. The tails are long, bushy, and non-prehensile. The fur is thick and soft and of varying colours; the face short, with tufts of fur over the ears. Marmosets live on insects; they are sometimes kept as domestic pets.



MARMOSET

Marmot, the common name of the *marmota*, males of the genus *Arctomys* in the squirrel tribe of Rodents, one species the common Marmot (*Arctomys marmota*), being found in the Alpine regions of Europe. They have short bushy tails and the body is about 14 in. long. In colour they are greyish-brown. They commonly live in communities, burrow, and in winter often remain in a torpid state. Insects, roots and other vegetation form their diet. Prairie-Marmots or Prairie-Dogs (q.v.), are rodents of the genus *Cynomys*.

Marne, and Haute-Marne, contiguous departments in the N.E. of France, in the of the Marne R.; in both wine are the chief

products, the best champagne coming from the N. In the former, capital Châlons-sur-Marne, building stone is quarried: there are metal works and tanneries: in the latter, capital Chaumont, are valuable iron mines and manufactures of cutlery and gloves. It was the scene of two important battles in the World War. (See *Marne, Battles of the*.) Area (Marne), 3,170 sq. m.; (Haute-Marne), 2,420 sq. m. Pop. (Marne) 410,000; (Haute-Marne), 188,500.

Marne, Battles of the. The first Battle of the Marne in the World War began on Sept. 6, 1914, during the retreat of the Allies from the Sambre-Meuse line. It lasted seven days, and was really won on the extreme left by the British forces and the 5th French Army. The crisis was reached on Sept. 9. Von Kluck had aimed at dividing the British from the French Army, but British troops moving N.E. caused him to draw back on Château-Thierry. In the centre Foch successfully resisted attacks by Von Bülow, but his wings being driven back, eventually decided to push his centre forward, attacking the famous Prussian Guard. The German retreat now began. The German Army was forced to assume the defensive on the Aisne heights, and German hopes of a speedy victory were destroyed.

The second battle began with a great German attack on May 27, 1918. The line extended from Flanders to the R. Oise. After Ludendorff's successful attack, the French Army retreated to a line from Château-Thierry to Dormans. The 2nd American Division, with U.S.A. marines, counter-attacked and secured the SW. angle of the Salient. Ludendorff's last attempt began on July 16, but Foch's great counter-attack from Château-Thierry to the Aisne drove the German Army back. With their retreat across the Vesle the battle ended.

Maronites, a sect of Syrian Christians, originally Monothelite heretics, dwelling on the eastern slopes of Lebanon, where they settled in the 17th Century, and who joined the Roman Catholic Church in 1445; they maintained a long sanguinary rivalry with their neighbours the Druses (q.v.). A few are now settled in Cyprus. They number at present about 200,000.

Marot, Clément, French poet, born in Cahors; was valet-de-chambre to Margaret of Navarre; his satirical wit often brought him into trouble. His poems have left their impress on both the language and the literature of France, but in his own day he was best known for his metrical versions of the Psalms, which were commonly sung by the Huguenots. (1496-1544).

Marprelate Tracts, a series of scurrilous tracts published under the name of Martin Marprelate, but the work of different writers in the time of Elizabeth, aimed against prelacy. They gave rise to great excitement and some inquisition as to their authorship.

Marque. See Letter of Marque.

Marquesas Islands, a group of 13 small volcanic mountainous islands in the S. Pacific, 3,600 m. W. of Peru, under French protection since 1842; are peopled by a handsome but savage race, which is rapidly dying out; Chinese immigrants grow cotton. Area, 480 sq. m. Pop. 2,400.

Marquess (*Marquis*), a title of nobility in Great Britain and other European countries, derived from *marchio*, a name given to rulers of the border counties adjoining Wales and Scotland. The first English creations were those of Robert de Vere, Earl of Oxford, as Marquess of Dublin in 1386, and that of the Earl of Somerset as Marquess of Dorset in the following year. A Marquess

rank below a Duke and above an Earl. At present (1938) there are 27 Imperial, 4 Scottish and 9 Irish marquesses.

Marquetry, the inlaying of pieces of the surface of another. It includes buhl, mosaic, parquetry, etc., and the work is done by cutting designs in low relief in pieces of wood or plates of metal and inserting portions of the second material, which may be ivory, stone, mother-of-pearl, coloured marble, or wood.

Marquette, Jacques (Père), French missionary and explorer, born in Laon; a Jesuit, he went to Canada in 1686; in 1673 accompanied Joliet in the exploration of the Mississippi, re-discovering the river; died while on a missionary journey to the Indians of the Illinois region. (1637-1675).

Marrakesh, town in Morocco, former capital of the Moorish empire, in the French zone, about 125 m. E. of Mogador and to the N. of the Great Atlas Mts. It is a residence of the Sultan of Morocco and an important trade centre, with manufactures of carpets. Pop. 180,300.

Marriage, in law, the voluntary union to the exclusion of all others. It is a contract, and during its subsistence the personal rights and duties of the spouses are regulated by law. Varied forms of marriage are found among different peoples: polygamy, or plurality of wives; polyandry, where a woman has several husbands, usually brothers, at the same time, and cross-cousin marriage where the orthodox union is for a man to marry the daughter of his mother's brother, or of his father's sister.

To-day the monogamous marriage forms the basis of civilised society. In English law marriage cannot now be contracted by a person of either sex under the age of 16. Neither party may be bound by a subsisting legal marriage, be physically incapable of consummating the marriage, or be insane, but a marriage entered into during a lucid interval is not invalid. The parties to a marriage must not be within the prohibited relationships, namely brothers and sisters, uncles and nieces, aunts and nephews, half-blood relationships by affinity. A marriage may be invalidated by fraud or duress. Damages may be awarded for breach of promise.

Before a marriage can take place banns must be published for three successive Sundays in the parish or parishes, in which the two parties have resided for the preceding 15 days, the marriage taking place within 3 months of the last publication. As an alternative, notice may be given to a registrar of the district in which each party has resided for the preceding 7 days. A third necessary preliminary is the issue of a licence by the bishop or local incumbent.

Marriage at a church may take place only between the hours of 8 a.m. and 6 p.m. As soon as the registrar's certificate has been granted, a marriage may take place in any registered place of worship in the presence of the registrar or authorised representative. In Scotland marriages are regular or irregular. The former may be celebrated by a clergyman after the publication of banns, or a notice under the Notices Act of 1878. The latter is a form of marriage consisting of any acknowledgement followed by consummation: it may be registered before a sheriff.

Marrow (tissue), the medulla or fat filling the large intestinal cavities of the bones, especially the longer ones, the spongy tissue, and the articular extremities of these and the short rounded bones. It is an oily fluid contained in vesicles. That which is contained in the tissues is reddish and contains cells from which the red corpuscles of the blood are derived.

Marryat, Frederick, novelist, born in Westminster; after service in the royal navy, which he entered in 1806, and in which he attained the rank of commander, he retired in 1830, and commenced a series of novels, *Peter Simple* and *Midshipman Easy* being reckoned the best. (1792-1848).

Mars, the Roman god of war, the reputed protector of the Roman State, identified at length with the Greek Ares.

Mars, the exterior planet of the Solar system nearest the earth, of one-half its diameter, with a mean distance from the sun of 141,500,000 m., round which it takes 686 days to revolve, in a somewhat eccentric orbit, and 24½ hours to revolve on its own axis, which inclines to its equator at an angle of 29°. Examination of it shows that there is 4 times as much land as water on it, the so-called "seas" being now accepted as tracts of vegetation, apparently linked by a series of canals, the latter not actually defined as of objective existence. It is accompanied by 2 satellites, an outer making a revolution round it in 30 hours 18 minutes, and an inner in 7 hours and 38 minutes; they are the smallest heavenly bodies known to science.

Marsala, a seaport of Trapani province of Sicily, 70 m. from Palermo. It is renowned for the wines which take its name. It has also manufactures of soap, cement, and bricks. The district is largely devoted to fruit growing. Pop. 57,000.

Marseillaise, the hymn or march of the French republicans, composed, both words and music, at Strasbourg by Rouget de Lisle one night in April, 1792, and sung by the 600 volunteers from Marseilles who entered Paris on July 30 following. Prohibited during the monarchy and empire, it became eventually the national anthem of France.

Marseilles, second city and first seaport of France, on the shore of the Gulf of Lyons, 27 m. E. of the mouth of the Rhône; has extensive dock accommodation; does great trade in wheat, oil, wine, sugar, textiles, and coal, and manufactures soap, soda, macaroni, and iron. There is a cathedral, picture-gallery, museum, and library, schools of science and art. Founded by colonists from Asia Minor in 600 B.C., it was a Greek city till 300 B.C. After 12 days of Rome it had many vicissitudes, falling finally to France in 1575, and losing its privilege as a free port in 1660. Always a Radical city, it proclaimed the Commune in 1871. A cholera plague devastated it in 1885. Pop. 914,000.

Marshal, historically, an official who regulated combats in tournaments, or rank and precedence at feasts or processions. This latter function has devolved to some extent on the Earl Marshal of England, who is an hereditary officer of State, the Chief of the College of Arms, and performs important ceremonial functions at the Accession and Coronation of the Monarch. The Earl Marshal or Marischal of Scotland was a State officer who commanded the cavalry under the Constable. There were also law court Marshals, such as the Marshal of the King's Bench who had charge of old King's Bench prison in Southwark, and the Marshal of the Royal Household who heard pleas of the Crown. Field Marshal is the highest title of rank in the British Army; it was instituted in 1738, and the sign of rank is the bâton. Marshal is also the highest title in the French, German and Italian Armies.

Marshall Islands, a group of islands of the Pacific under Japanese mandate. There are two groups, of which several islands are uninhabited: Ratak (13 islands) and Ralik (11 islands). Copra is exported. They belonged

to Germany from 1885 until the Treaty of Versailles, 1919. Pop. 10,000.

Marshal of the Air Force, the highest rank in the Royal Air Force, corresponding to Admiral of the Fleet and Field-Marshal in the Navy and Army, respectively. In the same force the titles Air Chief Marshal, Air Marshal and Air Vice-Marshal correspond to Vice- and Rear-Admirals and Commodores in the Navy and to the various grades of general in the Army.

Marshalsea, a former prison in Southwark, London, under the jurisdiction of the Royal Household. It was later a debtors' prison. In 1842 its prisoners and those of the Fleet prison were transferred to the Queen's Bench Prison.

Marsh Gas. See Methane.

Marsh-Mallow (*Althaea officinalis*), a shrubby biennial or perennial herb of the order Malvaceae. It grows in marshes near the sea in temperate parts. The flowering stalks are about 3 ft. high and the flowers pale-rose. A demulcent derived from the root is used in making confectionery.



MARSH-MALLOW

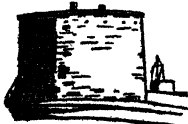
Marsh's Test, a test for arsenic, which depends upon the fact that when a substance containing arsenic is added to a mixture of zinc and dilute sulphuric acid, the hydrogen coming off from the mixture will carry away the arsenic in the form of the gaseous compound arsine or arsenuretted hydrogen. On passing the issuing gas through a heated glass tube, the arsenic is completely deposited as a black lustrous mirror. By comparing this mirror with standard mirrors made under known conditions, the weight of arsenic in the specimen under examination may be determined with extreme accuracy and reliability. Antimony gives a similar reaction, but the arsenic mirror is soluble in a solution of bleaching-powder ("chloride of lime") whereas the antimony mirror is unaffected.

Marston, John, English dramatist, whose dramas are remembered chiefly for the poetic passages they contain. His masterpiece is a comedy entitled *What You Will*. (1875-1834).

Marston, Philip Bourke, poet, son of a dramatist; wrote three volumes of verse, admired by Rossetti and Swinburne; was blind from boyhood. (1850-1887).

Marsupials, an order of mammals, with the exception of the American opossums restricted to Australasia, and including kangaroos, wallabies, wombats, bandicoots, dasyures, etc., called marsupials because the female of most species has a pouch or fold of skin (*marsupium*) on the belly, in which the young are carried after birth.

Martello Towers, round towers of erected as a defence at one time off the low shores of Sussex, Suffolk, and Kent. They are of Italian origin, being named after a tower on Cape Martello, in Corsica.



MARTELLO TOWER

Marten, a quadruped of the weasel family and genus *Mustela*, of which there are several species. All inhabit the N. Hemisphere. The name applies especially to the common

pine-marten (*Mustela martes*) about 18 in. long with short legs, and dark brown fur, those in the N. of England and Scotland being yellow at the throat. The continental marten has a white throat. The skins are much valued as furs.

Martha, st., the traditional sister of Mary of good housewives, represented in art in homely costume, with a bunch of keys at her girdle and a pot in her hand. Festival, July 30.

Martial (Marcus Valerius Martialis), a Latin poet, born in Bilbilis, in Spain. His epigrams are distinguished for their wit, diction, and indecency, but are valuable for the light they shed on the manners of Rome at the period. (43-104).

Martial Law, law enforced by a military court. It was originally administered by the medieval Court of Chivalry or Court of the Marshal and Constable, the jurisdiction of which was laid down by a statute of 13 Richard II. It fell into abeyance under the Tudors and discipline was thereafter enforced by Articles of War issued by the Crown through its prerogative. These articles, valid only in time of war or rebellion, were frequently abused, and ultimately the enforcement of martial law against rioters or rebels was condemned by the Petition of Right (1628). But on the establishment of a standing army provision for discipline was made by the Mutiny Act, 1689, and courts martial were empowered to deal with mutiny and desertion in time of peace. Ultimately the provisions of the Mutiny Act and of the Articles of War were consolidated in the annually passed Army Act. In this sense martial law is merely a synonym for military law, a code by which only persons "subject to military law" under the Army Act are triable. For ordinary civil offences even a soldier is amenable to the civil courts. In another sense martial law is merely a popular expression denoting the authority exercised by military forces in occupation of a territory during civil or international disturbances, superseding the ordinary civil law. It is based on military expediency rather than any written code, and is not recognised by English law. Indeed, any act done by a military court after a so-called "declaration of martial law," can be inquired into by the ordinary civil courts after their restoration. Hence the necessity for duly regularising their procedure before they take over the duties of the ordinary civil courts.

Martin, the popular name of certain birds of the family, especially applied in England to the House-Martin (*Chelidon urbica*), which nests under the eaves of houses and is distinguished from the swallow chiefly by its white rump and underparts; and to the Sand-Martin (*Cottia riparia*) which nests in a tunnel in a bank. Both are summer visitors to the British Isles.



HOUSE MARTIN

Martin, the name of five Popes: M. I., Pope from 648 to 655; M. II., Pope from 882 to 884; M. III., Pope from 942 to 946; M. IV., Pope from 1351 to 1358; M. V., Pope from 1417 to 1431, chosen to reunite the contending parties after the Great Schism, and distinguished for having condemned Huss to be burned.

Martin, Sir Theodore, Scottish man of letters, born in Edinburgh; acquired his first fame under the pseudonym of Bon Gaultier; is author of the *Life of the late Prince Consort*; with Arcton wrote a *Book of Ballads*, and translated the *Odes of Horace*,

Dante's *Vita Nuova* and Goethe's *Faust*. (1816-1909).

Martin, St., bishop of Tours, born in Hungary, was in early life a soldier, and meeting with a naked beggar one cold day in winter divided his military cloak in two, and gave him the half of it; was conspicuous both as monk and bishop for his compassion on the poor; was largely responsible for the spread of Christianity in France. d. 397. Festival, Nov. 11.

Martineau, James, English author, seer, and economist, born in Norwich; she was an "advanced" thinker, and a disciple of Auguste Comte; wrote a number of successful stories bearing on social questions; her best-remembered book is *Feats on the Fjord*. (1802-1876).

Martineau, James, rationalistic theologian, born in Norwich, brother of the preceding; began life as an engineer; was at first a follower of Bentham and then a disciple of Kant. At one time a materialist, he became a theist, and eventually a Unitarian minister. He was a thinker of great power, and did much both to elevate and liberate the philosophy of religion. Author of the *Endeavour after the Christian Life*, *Hours of Thought on Sacred Things*, and *The Seat of Authority in Religion*. (1805-1900).

Martini, Friedrich, Hungarian inventor, born at Mehadia; as an engineer officer in the Austrian Army, fought against Italy in 1859, later becoming a gun manufacturer in Switzerland; won a competition opened by British Government, 1871, for the best rifle; with adaptations it became the Martini-Henry, used till 1889. (1832-1897).

Martinique, a West Indian French possession, on one of the Lesser Antilles; has a much-indented, precipitous coast. A mountain range in the centre is densely wooded; the plains are fertile, and produce sugar, coffee, and cotton which with fruit and rum are the exports. The climate is hot and unhealthy. The island has been French, with three short intervals, since 1635; St. Pierre, the chief town, was destroyed in an eruption of the volcano Mont Pelée in 1902. The capital is Fort de France. Area, 385 sq. m. Pop. 247,000.

Martinmas, the feast of St. Martin (q.v.) on Nov. 11; a quarter day in Scotland.

Martyr, from the Greek word for suffer ignominy and death for the Christian religion. Festivals and prayers were offered at their tombs. The cultus of the martyrs rapidly spread, and became the basis of the honour paid to saints and holy men in general by the Roman Catholic and Eastern churches. A collection of the lives of martyrs and other saints is known as a martyrology. By extension the word is now used of any person who suffers or dies for his beliefs or opinions.

Marvell, Andrew, English poet and politician, born in Yorkshire; was first a lyric poet, and in politics much of a Royalist, at last a violent politician on the Puritan side, having become connected with Milton and Cromwell. He wrote a tract *On the Growth of Popery and Arbitrary Government in England* after the Restoration, which brought him into trouble. Being a favourite with the king, the king sought to bribe him, but in vain. He died suddenly, and an unfounded rumour was circulated that he had been poisoned. (1621-1678).

Marx, (Heinrich) Karl, a German Socialist Jew, and philosopher, born in Trèves, of Jewish descent; was at first a student of philosophy and a disciple of Hegel, but soon abandoned philosophy for social economy on a democratic basis and in a materialistic interest; early adopted socialistic opinions, for

his zeal in which he was driven from Germany, France, and finally Belgium, to settle in London, where he spent the last 30 years of his life; founded the "International" (q.v.), and wrote a work *Das Kapital*, which laid the foundations of modern Communist theory. He is buried at Highgate. (1818-1883).

Mary I., Queen of England, was born at Greenwich, daughter of Henry VIII. and Catharine of Aragon. After her mother's divorce she was treated with aversion. During Edward VI.'s reign she lived in retirement, clinging to her Catholic faith. On her accession in 1553 a Protestant plot to put Lady Jane Grey on the throne failed; she began cautiously to restore Catholicism, imprisoning reformers and reinstating the old bishops. On her choosing Philip of Spain for her husband a revolt broke out under Sir Thomas Wyatt, and though easily put down was the occasion for the execution of Lady Jane Grey and the imprisonment of Elizabeth. After her marriage in 1554 the religious reaction gained strength, submission was made to Rome, and a persecution began in which 300 persons, including Latimer, Ridley, and Cranmer, perished in three years. Ill-health, Philip's cruelty, and her childlessness drove her to melancholy; a war with France led to the loss of Calais in 1558, and she died broken-hearted, a virtuous and pious, but bigoted and relentless woman. (1516-1558.)

Mary II., Queen of England, daughter of James II., and Anne Hyde; was married to her cousin William of Orange in 1677, ascended the English throne with him on her father's abdication in 1688, and till her death was his much loved, good, and gentle queen. Greenwich Hospital for disabled sailors, which she built, is her memorial. (1662-1694.)

Mary, (Victoria Mary Augusta Louise, consort of King George V. of Great Britain; daughter of the Duke of Teck; born at Kensington Palace on May 26, 1867. She was betrothed to the Duke of Clarence, eldest son of King Edward VII., but after his death, which occurred a month after the engagement was announced, married his younger brother, then Duke of York, and later King George V., on July 6, 1893; to him she bore five sons (the eldest being Edward, Duke of Windsor, the second King George VI.) and one daughter. After the death of her husband she made her home at Marlborough House, London. (1867-).

Mary, (Queen of Scots, daughter of James V. of Scotland, and Mary of Guise, born in Linlithgow, became queen ere she was a week old. She was sent to France in 1548, and married to the dauphin in 1558, who for a year, 1559-1560, was King Francis II. On his death she returned to assume the government in Scotland, now in the throes of the Reformation. She retained her own Catholic faith, but chose Protestant advisers. Against all advice she married her cousin Darnley 1565, who tried to force her to settle the succession on him and his heirs, and had her favourite Rizzio murdered, with Mary's connivance. Her only son, afterwards James VI., was born in 1566. The murder of Darnley took place in February, 1567, being accomplished by Hepburn, Earl of Bothwell, her marriage with whom in May alienated the nobles. They rose, took the queen prisoner, and forced her to abdicate. Next year, escaping, she fled to England, and



MARY
QUEEN OF SCOTS

was there for many years a prisoner. Catholic plots were formed to liberate her and put her in place of Elizabeth on the English throne; at last she was accused of complicity in Babington's conspiracy, tried, found guilty, and executed in Fotheringhay Castle, Feb. 8, 1587. (1542-1587).

Mary, the Princess Royal, third child and only daughter of King George V. and Queen Mary, born April 25, 1897. She married, on Feb. 28, 1922, Viscount Lascelles, afterwards 6th Earl of Harewood, to whom she has borne two sons, George, Viscount Lascelles (b. Feb. 7, 1923) and the Hon. Gerald Lascelles (b. Aug. 21, 1924).

Mary, The Virgin, mother of Jesus Christ. All that is known of her life is what is recorded in the New Testament, principally the gospel of St. Luke. According to tradition she lived at Ephesus with St. John after the crucifixion, and died there. In Roman Catholic theology her part in the plan of redemption has made her an object of worship next after the Divine Persons.

Maryborough, (1) county town of (Ireland), on a tributary of the Barrow, 50 m. SW. of Dublin. Pop. 3,200. (2) A town in March county, Queensland, Australia, 178 m. from Brisbane. It is on the R. Mary, 25 m. from its mouth, and in railway connection with mining, pastoral, and sugar-growing districts. Pop. 11,800. (3) A town of Talbot county, Victoria, Australia, 112 m. from Melbourne, a busy railway junction, with railway workshops. Pop. 5,700.

Maryland, an Atlantic State of the U.S.A., one of the 13 original states, occupying the basin of the Potomac and of Chesapeake Bay, with Pennsylvania on the N., Delaware on the E., and the Virginias on the W. and S.; has a much indented coast-line, affording great facilities for navigation. The soil is throughout fertile; on the level coast plains tobacco and fruit, chiefly peaches, are grown; in the undulating central land wheat and maize. The mountains in the W. are well wooded with pine; there are coal-mines in the W., copper and chrome in the midland, and extensive marble quarries; the shad and herring fisheries are valuable. The manufacture of clothing stuffs, meat packing, and metal goods is extensive. The climate of Maryland is temperate. The Johns Hopkins University is in Baltimore. Colonisation began in 1634, and a policy of religious toleration and peace with the Indians led to prosperity; the State was active in the War of Independence, and remained with the North in the Civil War. The capital is Annapolis, but the largest city is Baltimore, a great wheat-shipping port and centre of industry. Cumberland has brick and cement works, and Hagerstown has machine, farm implement, and furniture factories. Area, 12,300 sq. m. Pop. 1,632,000.

Marylebone Cricket Club. See M.C.C.

Maryport, a market town and seaport of Cumberland, England, at the mouth of the R. Ellen. It has a harbour, docks, a prawn-fishing industry and an iron foundry. There are coal mines near. Pop. 12,400.

Masaccio, or Tommaso Guidi, an Italian painter, born in Florence: went when very young to Rome, where he painted in the church of St. Clement a series of frescoes, his greatest work being the frescoes in the Brancacci chapel of the Carmine Church. He was a great master of perspective and colour. (1401-1428).

Masai, a warlike Negro tribe in Africa, Victoria Nyanza, of powerful physique. From about 1850 to 1885 they were a formidable power in E. Africa, asserting themselves

with success against the Arab slave-raiders, but their power declined, largely through internal wars, and they later settled in reserves under British rule and engaged in stock-raising.

Masaryk, Thomas, Czechoslovakian statesman, son of a coach builder; trained for the teaching profession. During the World War he worked with Dr. Benč (q.v.) for the liberation of his country from Austria-Hungary, and on the declaration of its independence he became first President in Nov. 1918, retaining that office till 1935, and being admired by all Europe for his skill in managing its international relations. (1850-1937).

Mascagni, Pietro, Italian composer, born at Leghorn; wrote his most famous opera *Cavalleria Rusticana* in 1890, since when numerous others have been produced, with less success. (1863-).

Masefield, John, British poet, author, and playwright; on the death of Robert Bridges in 1936 he became Poet Laureate. His early days were spent in wandering around the world, many of them as an ordinary sailor, and in 1902 he published *Salt Water Ballads*, which caused a stir by their freshness. His poems are marked by great power and originality. *The Everlasting Mercy*, published in 1911, is his most celebrated poem; among his novels are *Captain Margaret* and *Sard Harker*. (1875-).

Mashonaland, district of central South Africa, a plateau 4,000 ft. high crossed by the Unvukwe Mts., lying to the NE. of Matabeleland and S. of the Zambesi R., of which its streams are tributaries. It is now a part of the British Colony of Southern Rhodesia, having been under British protection since 1888. The natives are of Bantu stock; the country is very rich in iron, copper, and gold, and has traces of ancient scientific gold-mining.

Mask, Lough, lake in Eire (Ireland), about 11 m. long by 3 m. broad, forming a portion of the boundary of Mayo and Galway counties, and remarkable for its beautiful scenery.

Mason, Alfred Edward Woodley, novelist, born at Dulwich, London; educated at Dulwich College, and Trinity College, Oxford. Liberal M.P. for Coventry, 1906-1910. His best-known novels are *The Courtship of Morrice Buckler* (1896); *The Four Feathers* (1902); *At the Villa Rose* (1910); *The House of the Arrow* (1924). (1865-).

Mason and Dixon's Line, so-called after two English engineers who surveyed it, 1784-1787, is the boundary separating Maryland from Pennsylvania and Delaware. During the Civil War the name was used of the boundary (not coincident with the real Mason and Dixon's line) dividing the free from the slave-holding states.

Masonry, the art of building in natural stone or artificial stone (concrete), and by extension, in brick, moulded earth (adobe, pisé), etc. The term also refers to the building itself. Stones vary in durability, hardness, etc.; those most commonly used are granite, gneiss, porphyry, marble, limestone, and sandstone. Cut stones are often backed with brick or with rubble masonry, the latter being composed of irregular stone, smaller in size than that used for dressed stone masonry. Rubble masonry may be given a squared facing, but the finest facing given to dressed stone masonry is called ashlar, this being a cut-stone masonry composed of large regular stones, carefully finished with cutting tools. At the present time the use of real stone in masonry has largely given way to that of artificial stone, or reinforced concrete, which can be moulded into any form for decorative work, arches, etc. In masonry

it is all-important that the blocks should be laid truly horizontally, with the joints truly vertical.

Maspero, Gaston Camille Charles, French Egyptologist, born at Paris; made extensive explorations and important discoveries in Egypt; wrote, among works bearing on Egypt, *Histoire Ancienne des Peuples de l'Orient*. (1846-1918).

Masque, a species of dramatic entertainment in which originally the performers wore masks of peculiar forms suggestive of the allegorical character assumed. Its essential feature was the presence of a group of dancers called masquers, who were frequently noblemen or courtiers. They neither spoke nor sang, their function being the creation of "an inspiring show" by their gorgeous costumes and fine presence, enhanced by artistic grouping and decoration. The speech and songs of the masques were always in the hands of a professional entertainer. The poetical background supplied by the genius of such writers as Ben Jonson and Fletcher enhanced the success of the 17th Century Court masques in England. Milton's *Comus* is commonly reputed the finest example of a masque.

Mass, the name given by Roman Catholics (and some Anglicans) to the Christian service commemorating Christ's last Supper. *High Mass* or *Solemn Mass* is the most elaborate form of celebration, with music and incense; *Low Mass* dispenses with these ceremonial accessories. A *Requiem Mass* is one celebrated on behalf of the dead. In Catholic theology the Mass is a real sacrifice of the Body and Blood of Christ, offered to God the Father under the species of bread and wine; attendance at Mass on Sundays and certain great feasts is obligatory on every Catholic. The Mass may only be offered by a duly consecrated priest.

Mass, in physics, the measure of the quantity of matter in a body, as distinguished from *weight*, which is the force of gravity upon a body.

Massachusetts, a New England State of the U.S.A., lies on the Atlantic seaboard between New Hampshire and Vermont on the N. and Rhode I. and Connecticut on the S., with New York on its western border; has a long, irregular coast-line and an uneven surface, rising to the Green Mountains in the W. The scenery is of great beauty, but the soil is in many places poor, the farms raising chiefly hay, potatoes, tobacco, and dairy produce. The winters are severe. Its industries include cotton, woollen, worsted, clothing, leather and leather goods, iron and iron goods, printing. There are several important universities and colleges, including Harvard, Boston, Williams and Amherst. Founded in 1620 by the Pilgrim Fathers, Massachusetts had many hardships in early days, and was long the scene of religious intolerance and persecution. The War of Independence began at Bunker's Hill and Lexington in 1776. The capital and chief seaport is Boston; Worcester has machinery factories, Springfield paper, and Lowell cotton mills; Concord was for long a literary centre. Area, 8,270 sq. m. Pop. 4,250,000.

Mass Action, Law of, in chemistry, discovered in 1864 by Guldberg and Waage, states that the rate of a chemical reaction is proportional to the active masses of the substances taking part in it, i.e., to their concentration in gram-molecules per litre. It has been of great value in the study of chemical dynamics.

Massage, in medicine, a process of kneading, stroking, and rubbing with the fingers and palms of the hands, applied to the body as a whole or to locally affected parts, to allay pain, promote circulation, and restore nervous and vital energy.

It was practised in very early times in China and India; was known to the Greeks and Romans, and has been considerably developed in modern times as a therapeutic method.

Massagetae, in classical times a people said to live on the N.E. of the Caspian Sea, and to kill and eat the aged among them, in an expedition against whom, it is said, Cyrus the Great lost his life.

Massawah, seaport and capital of the East Africa, province of Eritrea, Italian East Africa, situated on a barren island of the Red Sea. It is the chief port of Italian East Africa; pearl-fishing is carried on. Pop. 4,200, chiefly Somalis.

Massena, André, Duc de Rivoli, Prince of Essling, one of the most illustrious marshals of France, born in Nice. He distinguished himself at Rivoli in 1796, at Zurich in 1799, at the siege of Genoa in 1800, at Eckmühl and at Wagram in 1809, and was named by Napoleon the favoured child of victory. He was recalled from the Peninsula by Napoleon for failing to expel Wellington. (1758-1817).

Massey, William Ferguson, New Zealand politician. Born in Ireland, he emigrated at the age of 14, and went in for farming. His political career started in 1884, when he became a local M.P. In 1903 he became leader of the opposition, and in 1912 Prime Minister, in which capacity he was a member of the Imperial War Cabinet and attended the Peace Conference in 1919. (1856-1925).

Massillon, Jean Baptiste, celebrated French pulpit orator, born at Hyères, Provence; entered the congregation of the Oratory, and was called to Paris. He was made bishop of Clermont, and next year preached before Louis XV., now king, his famous *Petit Carême*, a series of ten sermons for Lent. He was a devoted bishop, and the idol of his flock. (1663-1742).

Massinger, Philip, English dramatist. Little is known of his history except that he studied at Oxford, lived in London, and was buried as "a stranger" in St. Saviour's, Southwark. Of his 37 plays only 18 remain and of these the most famous is the comedy entitled *A New Way to Pay Old Debts*. Much of his work, it is alleged, was by way of collaboration with Dekker, Fletcher and other dramatists. (1583-1640).

Master, the title given to the heir of a Scottish peerage below the rank of earl, as Master of Bempill.

Master and Servant. In law a servant is one who has contracted to lease his services to another for a limited period. Servants consist of two classes, those who engage to perform certain duties for certain wages, and apprentices, who may receive something by way of wages, but who have to be taught a trade. The chief classes of servants are: agricultural labourers, operatives or skilled labourers, and menials or domestic servants.

In England, a contract for service for more than a year must be in writing: if for a year and if the servant be discharged without just cause during the year, he may claim wages up to the end of the year: on the other hand, if he leave without cause before the time no wages may be claimed. If he happen within the year to fall sick, or be hurt or disabled in the service of his master, the master cannot, apart from agreement, put him away or abate any part of his wages for that time.

If a domestic servant be engaged under no special contract, a month's warning or payment of a month's wages is all that is necessary to terminate the engagement. Operatives may be discharged or may leave at a week, fortnight or month's notice, according to the

recognised local or trade usage. The grounds on which a servant may be legally discharged without warning are: wilful disobedience of lawful commands, gross immorality, habitual negligence, dishonesty, permanent disability from illness, etc.

A master has no right to chastise a servant, but has the right of moderately correcting an apprentice under age. He is held liable in cases where his servant, in the course of his duty, injures a third party. A master can dismiss a servant without notice and without cause, on payment of wages for the full term of the contract, or for one month if there be no special agreement.

The death of a master terminates the contract, but in Scotland the servant can claim wages for the period of the contract, and in that case must serve the executors. In the case of bankruptcy of the master the servant, if a labourer or workman, is a privileged creditor for wages due, but not exceeding £25. If he be a clerk, shopman, etc., the period is four months, the limit £50. **Master of the Rolls**, the custodian of the Record Office and principal Judge of the Court of Appeal; ranking in the English legal hierarchy immediately after the Lord Chief Justice.

Mastic, a brittle transparent resinous substance obtained in liquid form by making incisions in the mastic-tree (*Pistacia Lentiscus*) of the order Anacardiaceae. It is used as the main constituent of varnish and as a stopping in dentistry.

Mastiff, a massive and powerful British dog, weighing 155 to 175 lb.;

The head should be broad and square, forehead flat with depression in centre; muzzle short; ears thin; eyes small and wide apart; chest and ribs wide and deep; forelegs straight; loins and back wide and muscular; coat close and short, apricot or silver fawn in colour, with black ears and muzzle.



MASTIFF

Mastodon, one of an extinct species of mammals akin to the elephant, of more primitive type than the mammoth, and belonging to the Miocene and Pliocene periods.

Mastoid, a mass of bone containing cavities which projects from the side of the human skull behind the ear. The mastoid antrum communicates with the middle ear and if the latter is diseased, is liable to suppurate. Suppuration may follow influenza or be caused by failure to keep the ear clean. The inflammation may cause an abscess and, if this is allowed to burst, grave danger may ensue.

Masurium, a supposed metallic chemical element, the discovery of which was claimed by Noddack and Tacke in 1925. Symbol Ma, atomic number 43, atomic weight undetermined. There is doubt whether the discovery can be authenticated.

Matabeleland, name (now little used) of S. Rhodesia, the area conquered in 1840 by the Zulu Matabele tribes. It became British territory in 1890, native risings in 1893 and 1896 being put down. See Rhodesia.

Matanzas, a province of Cuba, E. of Havana; area of 3,260 sq. m. Pop. 344,000. Also its chief town, 33 m. E. of Havana, with a large harbour; exports sugar and guava. Pop. 70,000.

Match, a splint of wood or length of taper tipped with some substance capable of ignition. Phosphorus tapers existed in the 18th Century, these being sealed matches which lighted by contact with

the air. The discovery of sulphide of phosphorus revolutionized match-making, and matches which ignite by friction with any surface are tipped with this substance. The "safety-match" resulted from Von Schrotter's discovery in 1855 of amorphous phosphorus, which acts as an oxidizing agent to the material with which the match is tipped. Match-making has grown from a cottage occupation to a huge industry, especially in the countries round the Baltic, where the great forests supply matchwood.

Maté (*Ilex paraguayensis*), a species of holly, native of S. America, whose leaves, roasted and powdered, are used for the beverage "maté tea." It has a somewhat bitter flavour and is taken either neat or with lemon or sugar.

Materialism, the theory which, denying the independent existence of spirit, resolves everything within the sphere of being into matter, or into the operation and the effect of the operation of forces latent in it, or into the negative and positive interaction of mere material forces, to the exclusion of intelligent purpose and design. It is the first philosophical attempt to conceive the world as a unity, and is found in Buddhism as well as in the religious systems of the Chinese and Egyptians.

The clearest exposition is that of the Atomists, especially Democritus of Abdera who explained matter as an aggregation of atoms endowed with motion. He formulates the great principles of the indestructibility of matter and of the conservation of force. The doctrine was revived in England by Hobbes, in France by La Mettrie and Helvetius and in Germany as a reaction against the Idealism of Fichte and Hegel by Moleschott and Vogt. Materialists so far have failed to explain satisfactorily either the ultimate nature of the atoms or the phenomena of consciousness by means of atoms and motion.

Mathematics, owes its origin to the antiquity, of the rules for the arithmetical operations of addition, subtraction, multiplication and division, the need for systematic land measurement and the observation of periodical events in the skies which gave rise to a fixed calendar. Its progress was largely held back by the absence of any convenient way of expressing numbers and quantities, and the introduction into Europe about the 10th Century A.D., of the Indo-Arabic system of numerals, 1, 2, 3, together with a special symbol for zero, marked a great advance. Arithmetical calculations were further simplified in the 17th Century by the introduction of logarithms.

About 600 B.C. the Greek, Thales of Miletus, made use of the deductive method in proving some theorems of geometry. Starting from certain axioms or hypotheses which were believed to be self-evident, Thales was able to show that other facts could be demonstrated by logical deduction. The application of the new method quickly led to the development of the subject of geometry (q.v.) and was gradually applied in all branches of mathematics. The 15th Century A.D. saw the growth of the science of algebra, and the following century the foundation of analytical geometry.

From the 17th Century onwards mathematical methods received greater and greater application in the physical sciences, and the problems requiring solution demanded, in their turn, the development of new and powerful branches of mathematics, such as the calculus and differential equations. The growth of mathematics has been particularly rapid during the last two or three centuries, and, at the present day, a mere catalogue of its chief branches would require a long list of subjects.

Mather, Cotton, an American divine, born in Boston; notorious for his belief in witchcraft, and for the persecution he provoked against those charged with it. His book, *Wonders of the Invisible World*, is famous as an attack upon alleged witches. (1663-1728).

Matilda, or Maud, daughter of Henry I., of England and wife of the Emperor Henry V., on whose decease she was married to Geoffrey Plantagenet of Anjou and became mother of Henry II.; on the death of her father succeeded to the English throne, but was supplanted by Stephen, by whom she was finally defeated. (1102-1167).

Matisse, Henri, French post-impressionist painter, born at Le Cateau. From 1895 to 1898 he worked in the classical tradition, and lived some time in Morocco. Under Gauguin's influence, he joined the Fauvist school, and soon became one of its leaders. (1869-).

Matlock, a watering-place in Derbyshire, on a slope overlooking the Derwent, 15 m. NW. of Derby; famous for over two centuries for its waters. Pop. 16,600.

Matopopo Hills, a range of hills in Matabeleland, S. Rhodesia, some 20 m. S. of Bulawayo. Cecil Rhodes is buried here.

Matriarchy, an order of society in precedence, more especially in reckoning descent, over the father. The existence of matriarchal rule, at one time supposed by many writers to have been not uncommon among primitive peoples, is now generally called in question.

Matriculation, in the general sense to membership of any corporate body, but academically it means the formal entry into a university. The matriculation certificate of the University of London makes its holder an undergraduate of that University, and entitles him to become, under certain conditions, an undergraduate member of Manchester, Liverpool, Birmingham and some other universities. The standard of knowledge required by candidates is that which would be expected of a pupil of average ability who had been at a secondary school until reaching the age group of 16 to 18 years. As a preliminary to a course of study for external university degrees, all persons over the age of 16 are eligible. The choice of subjects is wide.

Matrix, the cavity in which anything is formed, and in mineralogy the natural material in which any metal or stone, etc., is embedded. In typography, a mould from which a stereo plate is made; also a mould used in making the face of a letter.

Matron, a term used to denote a married woman, or a woman who has reached an age of staid demeanour, whether or not married. The term is particularly applied to women in charge of staffs of homes and such institutions as hospitals and homes for girls. See also *Nursing*. A jury of matrons, composed of married women, may be empanelled to inquire into the truth of a plea of pregnancy advanced in stay of execution by a woman sentenced to capital punishment.

Matsys, Quentin, a Flemish painter, born in Louvain, originally a blacksmith; did altar-pieces, especially that of Antwerp Cathedral, and genre paintings. (1400-1530).

Mattathias, Jewish national hero, the father of the Maccabees (g.v.), who in 170 B.C. refused the request of a Syrian embassy to sacrifice to the Syrian gods, slew the priest who offered to act in his place, and set up in the Judean wilderness the standard of revolt against Syria thus opening

the Maccabean war which eventually brought national independence.

Matter, in physics, is roughly defined as that which has weight and occupies space. The law of the conservation of matter states that matter can neither be created nor destroyed, and in ordinary circumstances this law holds good with extreme accuracy. Modern research has, however, shown that matter may be converted into energy; 1 gram of matter (of whatever kind) yielding 9×10^{10} ergs; the reverse process, viz., the conversion of energy into matter, is also possible. It is therefore more correct to restate the laws of the conservation of matter and energy as follows: the sum total of energy plus matter in the universe is a constant.

Matterhorn, a sharp Alpine peak, 14,780 ft. high, on the Swiss-Italian border, difficult of ascent; first scaled by Whymper, 1865.

Matthew, a tax-collector or publican, one of the twelve apostles of Christ, also known as Levi; generally represented in Christian art as an old man with a large flowing beard, and often as occupied in writing his gospel; Feast, Sept. 21.

Matthew, Gospel according to, the first book of the New Testament, based largely on a collection of sayings of Jesus or "Logia," and on the Gospel according to Mark; it was originally written in Aramaic; both its date and its authorship are uncertain.

Matthias Corvinus, King of Hungary from 1458, born in Klausenburg. Though arbitrary in his measures, he promoted commerce, dispensed justice, fostered culture, and observed sound finance. He founded the University of Budapest, an observatory, and great library, but his reign was full of wars. For nine years he fought the Turks, and took from them Bosnia, Moldavia, and Wallachia. From 1470 till 1478 the struggle was with Bohemia, from which he wrested Moravia, Silesia, and Lusatia; then followed war with Frederick III., the capture of Vienna, 1485, and a large part of Austria, 1487. He made Vienna his capital. (1443-1490).

Maubeuge, a strongly fortified town of France in the dept. of Nord, on the Sambre. In the World War it was taken by the Germans in 1914 and held until Nov. 1918. It has a large arsenal. The industries include metal and marble works. Pop. 22,000.

Maude, Cyril, English actor-manager, the leading comedian of his time; born in London, educated at Charterhouse. First appeared at Denver, Colo., in *East Lynne*, 1884; in England, at the Criterion, 1886, in *The Great Divorce Case*; in first performance of *The Second Mrs. Tanqueray*, 1893; joint-manager at the Haymarket, 1896-1905; built the Playhouse, 1907, which he managed until 1913. (1862-).

Maude, Sir Frederick Stanley, British general. Of Irish birth, he entered the Coldstream Guards, saw service in the Sudan and Boer War, and in Oct. 1914, took command of the 14th brigade in France. He was in charge of the 13th division in Gallipoli, and later in Mesopotamia, where he succeeded Townsend and captured Bagdad, where he contracted fever and died. (1864-1917).

Maugham, William Somerset, English novelist and playwright, born in Paris; educated at the King's School, Canterbury, and Heidelberg University; studied medicine, but in 1897 published his first novel, *Liza of Lambeth*. Besides several volumes of short stories, he has written many novels and plays, among the former *Of Human Bondage*, and among the latter *Our Betters*, a

social satire performed in New York, 1917, and London, 1932. His autobiography, *The Summing Up*, appeared in 1938. (1874-).

Maumbury Rings, circular earth mounds situated about $\frac{1}{2}$ m. S. of the town of Dorchester, Dorset, England. They form a circle capable of holding 12,000 persons. Excavations carried out 1908-1913 disclose that the original work was an earthen circle, with an interior ditch, dating from the late Neolithic to Early Bronze Age (c. 1800 B.C.). In Roman times the work was converted into the amphitheatre of the town of Durnovaria (the modern Dorchester).

Maundy Thursday, the Thursday before Good Friday, on which day it was customary for princes, rulers and other great persons to wash the feet of a number of poor people, and on which a distribution of alms ("Maundy money") is still made on behalf of the King to a certain number of poor persons.

Maupassant, Guy de, a French Fécamp; served in the Franco-Prussian War, and afterwards gave himself to letters, producing novels, stories, lyrics, and plays; died insane. (1850-1893).

Maurice, Frederick Denison, a liberal theologian and social reformer, born at Normanston, near Lowestoft, the son of a Unitarian minister; for a time edited the *Athenaeum*, and took orders in the English Church in 1834; held professorships in Literature, in Theology, and Moral Philosophy; was a disciple of Coleridge, a Broad Churchman, and with Kingsley, one of the originators of Christian Socialism, and the founder of the Working-Men's College. (1805-1872).

Maurice of Nassau, Dutch statesman, Prince of Orange; one of the most famous generals of his time; was son of William the Silent, on whose assassination he was elected Stadtholder, and became the liberator of the United Provinces of Spain. (1567-1625).

Maurier, Sir Gerald du, English actor-manager, born at Hampstead; made his first stage appearance in 1894. Among his successes were the parts of Captain Hook in *Peter Pan*, Hamlet, and Brewster, in *Brewster's Millions*. He was knighted in 1912. (1873-1934).

Mauritania, under the Roman empire name of the African country W. of the Mulyra R. and N. of the Atlas Mts., from which supplies of corn and timber were obtained.

Mauritius, British possession in the Indian Ocean, 550 m. E. of Madagascar, a volcanic island with mountains 3,000 ft. high, a tableland in the centre, and many short streams. Formerly well wooded, the forests have been cut down to make room for sugar, coffee, maize, and rice plantations; sugar is the main export. The population is very mixed, including many Indians; there are also descendants of French settlers and Europeans. Discovered by the Portuguese about 1510, it was abandoned 90 years later; the Dutch held it for 112 years, and abandoned it in turn. Occupied by the French in 1721, it was captured by Britain in 1810. Area, 720 sq. m. Pop. 405,000. Port Louis (pop. 65,000) in the NW., is the capital and a British naval coaling station.

Maurois, André, pseudonym of Émile Salomon Wilhelm Herzog, French author, born at Elbeuf, educated at Rouen. Knowing English thoroughly, he was an official interpreter during the World War. His

first book, *Les Silences du Colonel Brambles*, 1918, displayed knowledge of English character. Other works are *Lives of Shelley*, *Disraeli and Byron*, and *Poets and Prophets*. (1885-).

Maurras, Charles Marie Phébus, French monarchist writer; born at Martigues (Bouches-du-Rhône); educated at Catholic College of Aix. With Léon Daudet, conducted *L'Action Française* from 1908; imprisoned, 1926. His atheism antagonized the Church; but his authoritarian politics helped to form Italian Fascism. (1868-).

Mauser Rifle, a military rifle with ridges under the receiver in front of the trigger guard. The magazine box, which is movable, may be charged with a single cartridge or with five. It was invented by Paul Mauser, a German, and adopted as the standard rifle of the German Army. The Belgian Army adopted it in 1889, and the Argentine Republic two years later.

Mausolus, a king of Caria, husband of Artemisia, who in 353 B.C., at Halicarnassus, raised a monument to his memory, called the Mausoleum, reckoned one of the Seven Wonders of the world. From this is derived the use of the word to cover any large and imposing tomb.

Mauveine, the first of the aniline dyes to be prepared, was obtained by Sir W. H. Perkin in 1856 by the action of chromic acid upon aniline made from coal-tar benzene. The discovery was accidentally made while Perkin was trying to synthesize quinine.

Mawson, Sir Douglas, British explorer. He went to the Antarctic in 1907 with Shackleton, and in 1911 commanded the Australian Antarctic expedition, a venture which ended in failure and of which he was the only survivor. Knighted in 1914, he undertook a fresh voyage in the *Discovery* in 1929. (1882-).

Maxim, Sir Hiram Stevens, inventor, born at Tangerville, Maine, U.S.A., later a naturalized British subject; is best known in connection with the invention of the gun named after him, but among his other inventions are the smokeless powder, the incandescent lamp carbons, and searchlights and he also carried out early experiments in flying. (1840-1916).

Maximilian, Emperor of Mexico, was an Austrian archduke, younger brother of Francis Joseph I., born in Schönbrunn; was made Mexican emperor under French influence in 1863, but roused the Liberal party against him, and at the head of 8,000 men was defeated at Queretaro, taken prisoner, tried by court-martial, and shot. (1832-1867).

Maximilian I. German Emperor, son of Frederick III., acquired Burgundy and Flanders by marriage, which involved him in a war with France; became emperor on the death of his father in 1493; became by marriage Duke of Milan, and brought Spain under the power of his dynasty by the marriage of his son Philip to the daughter of Ferdinand and Isabella. It was he who assembled the Diet of Augsburg at which Luther made appeal to the Pope. (1459-1519).

Max-Müller, Friedrich, philologist, German poet, Wilhelm Müller; educated at Leipzig and Paris, and came to England in 1846; was appointed Taylorian Professor at Oxford in 1854, and in 1868 professor of Comparative Philology there, a science to which he made large contributions, editing and translating many Hindu, Buddhist and other Eastern works, and writing much on the origin and development of language. (1823-1900).



SIR GERALD
DU MAURIER

Maxton, James, Scottish politician, educated at Glasgow, by profession a teacher. Member of Glasgow Education Authority, and Scottish organizer of Independent Labour Party, 1919-1922; M.P. for Bridgeton from 1922. Is leader of the Independent Labour Party group in Parliament, leading it in secession from the official Labour Party in 1931. (1885-).



JAMES MAXTON

May, the fifth month of the year, so called from the Latin *Maſus*, itself derived from a Sanskrit word signifying to grow, as being the shooting or growing month.

May, Phil, British artist who, after some years' work on the *Sydney Bulletin* in Australia, made a name by comic drawing, especially his Cockney studies in *Punch* and other periodicals and his work for the *Graphic*. (1864-1903).

Mayas, an ancient people of Central America whose high pitch of culture is revealed by the monuments, remains of palaces, temples, and pyramids found in Yucatan. At the present time the race is represented strongly in Yucatan, where the language is still spoken.

Mayenne, inland dept. of NW. France; and horses are raised, and stone quarried; capital, Laval; area, 1,985 sq. m. Pop. 251,400.

Mayfair, a western district of London, in the City of Westminster, containing some of its most fashionable residential and shopping centres. It includes Curzon Street, Berkeley Square, and Grosvenor Square; it is bounded roughly by Oxford Street, Bond Street, Piccadilly, and Park Lane.

Mayflower, The, the name of the small brigantine on which the "Pilgrim Fathers" (q.v.) sailed from Plymouth on Sept. 6, 1620, landing at Plymouth Rock, Massachusetts on December 21. This band of English Separatists formed the nucleus of the earliest permanent colony in Massachusetts.

Mayfly. See *Ephemera*.

Maynooth, village in co. Kildare, Eire (Ireland), 15 m. W. of Dublin; is the seat of a Roman Catholic seminary founded by the Irish Parliament in 1795 on the abolition of the French colleges during the Revolution; an annual grant of £9,000 was made, increased to £26,000 in 1846, but commuted in 1869 for a sum of £1,100,000, when State connection ceased; the college houses 500 students for the priesthood.

Mayo, maritime county in Connaught, Eire (Ireland), between Sligo and Galway; has many indentations, the largest Broadhaven, Blackrock, and Clew Bays, and Achill and Clare Is., with a remarkable peninsula, The Mullet; mountainous in the W., the E. is more level, and has Lough Conn and the Moy R. Much of the county is barren and bog, but crops of cereals and potatoes are raised; cattle are reared on pasture lands. There are valuable slate quarries and manganese mines. Castlebar, in the centre, is the county town; Westport, on Clew Bay, has some shipping. Area, 1,334,000 acres. Pop. 161,000.

Mayors, chairmen of city and borough over which they preside. The office dates back to the time of Henry II. London and several of the large provincial cities have Lord Mayors. The equivalent name in Scotland is Provost.

Mayweed (*Matricaria inodora*), an annual or perennial plant of the order Compositae with finely dissected leaves and with white ray florets and yellow discs. It grows throughout Europe and Asiatic Russia.

May Week, the annual summer inter-collegiate races for the headship of the river held at Cambridge every June, when the college balls also take place.

Mazarin, Jules, Italo-French cardinal and statesman, born in Piscina, Abruzzi. Having been sent by the Pope on an embassy to France, he gained the favour of Richelieu, whom he succeeded, being naturalized as a Frenchman in 1642. He brought the Thirty Years' War to an end by negotiating the peace of Westphalia, crushed the revolt of the Fronde (q.v.), and imposed on Spain the treaty of the Pyrenees. At first a popular minister, he began to lose favour when cabals were formed against him, and he was dismissed, but he contrived to allay the storm, regained his power, and held it till his death. He died immensely rich, and bequeathed his library, which was a large one, to the College Mazarin. A bible in the Mazarin library, dated 1456, is known as the "Mazarin Bible." (1602-1661).

Maze, a building or place constructed of egress difficult. Such devices were known to the classical world, existing in Crete and Egypt. There is a well-known maze at Hampton Court made in the reign of William III., the paths of which are bordered with yew trees. See also *Labyrinth*.

Mazeppa, Ivan, hetman of the Cossacks, born in Podolia; became page to John Casimir, king of Poland; was taken by a Polish nobleman, who surprised him with his wife, and tied by him to the back of a wild horse, which galloped off with him to the Ukraine, where he joined a Cossack band, became secretary to their hetman, and finally hetman himself. He won the confidence of Peter the Great, who made him a prince under his suzerainty, but in an evil hour he allied himself with Charles XII. of Sweden; fled to Bender on the defeat of the king at Pultowa in 1709. (1645-1709).

Mazurka, a lively Polish dance, executed by four or eight couples, and much practised in the N. of Germany as well as in Poland; a favourite form of composition with Chopin.

Mazzini, Giuseppe, Italian patriot, born in Genoa, his life spent in political agitation for the regeneration of his country on a democratic basis; was arrested in 1831 and expelled from Italy; organised at Marseilles the secret society of Young Italy whose motto was "God and the People"; lived in Marseilles, Switzerland and London, until on the outbreak of the Revolution in 1848 at Paris he hastened thither to join the movement, which had spread into Italy, where in 1849 he was installed one of a triumvirate in Rome and conducted the defence of the city against France, but refused to join in the capitulation; he returned to London and eventually retired to Geneva. (1806-1872).

M.C.C., the Marylebone Cricket Club, formed about 1787 as a development of the White Conduit Cricket Club, whose members played cricket at White Conduit Fields, Islington. In that year Thomas Lord acquired a ground for the club at what is now Dorset Square. The club's present ground at St. John's Wood was acquired in 1808. During the whole of its existence it has been recognised as the controlling authority of cricket.

Mead, a beverage made by fermenting barbarous Europe from very early times.

Meadow Grass, a general name for *Poa* of which there are 150 species, 8 being found in Britain. They include some of the commonest grasses, small or tall, with spreading panicles, and some useful pasture grasses. The spikelets have two or more florets.

Meadow Rue (*Thalictrum flavum*), a herbaceous British wild

plant of the natural order Ranunculaceae. It has fine compound leaves. The stems, short or tall, are crowned with numerous small flowers, giving a feathery effect. A number of other allied species, also so called, are grown in gardens as perennials for the sake of their fern-like foliage and attractive flowers.



MEADOW RUE

Meadow Saffron, or Autumn Crocus. See Colchicum.

Meadow Sweet (*Spiraea Ulmaria*), a plant of the rose (Rosaceae) order, growing wild in Britain. It bears sweetly-scented creamy-white clustered flowers and grows in moist soil, frequently by ditches and ponds. It grows 2 ft. to 4 ft. high. At least one variety (*S. ulmaria flore pleno*) is grown in moist peaty soil in gardens.

Mealie, the South African name for Indian corn or maize (q.v.)

Measles, an acute infective and eruptive, as yet unidentified. It is a serious illness, chiefly on account of possible complications, such as broncho-pneumonia, laryngitis, inflammation of the ear, and various nervous disorders. It most commonly occurs in young children, during the winter or spring. The incubation period is generally a fortnight, and quarantine 15 days. The rash appears on the fourth day, spreading from below the ears to the face and over the body; earlier symptoms are acute catarrh of the eyes and nose, an aversion from light, and a fairly high temperature. The rash, consisting of groups of raised spots, begins to subside after 2 days, the temperature returning to normal after a week.

Meath, a county of Leinster, Eire (Ireland), touching the Irish Sea between Louth and Dublin, watered by the Boyne R. and its tributary the Blackwater. The surface is undulating, the soil fertile; some oats and potatoes are grown, but most of the county is under pasture. There is a little linen and coarse woollen industry. The chief towns are Navan, Kells, and the county town, Trim. Meath was in ancient Ireland, one of the five kingdoms into which the country was divided. Area, 903 sq. m. Pop. 61,300.

Meaux, French town, on the Marne, 28 m. N.E. of Paris, a well-built town, with Gothic cathedral; has a large corn and provision trade, and copper and cotton industries; Bossuet was bishop here, and it contains his grave. Pop. 13,000.

Mecca, the birthplace of Mohammed, the capital of Hejaz and the former capital of Arabia; in the midst of sandy valleys, and 60 m. distant from Jeddah, its port; a city to which every Mussulman must make a pilgrimage once in his life. Pop. 80,000.

Mechanics, that branch of physical forces and their effect upon bodies as regards motion, acceleration, equilibrium, etc. The science was founded by Galilei (q.v.), Stevinus (1548-1620), and Newton (q.v.), and the Newtonian system is still entirely adequate for all except the most minutely accurate requirements, where it is supplemented by the

recent work of Einstein. See Statics, Dynamics, Kinetics, Kinematics.

Mecklenburg, a German "land" the union of the former states of Mecklenburg-Schwerin and Mecklenburg-Strelitz, on the shores of the Baltic between Schleswig-Holstein and Pomerania; is mostly a level, fertile plain, with numerous small rivers and many lakes. Agriculture is the chief industry; merino sheep are renowned; there are iron-founding, sugar-refining, and tanning works, and amber is found on the coasts. Schwerin (pop. 54,000) on Lake Schwerin, is the capital. Rostock, a busy port on the Baltic has a University. Area, 6,200 sq. m. Pop. 805,000.

Medal, a small plate of metal bearing an commemorative some notable occasion or event; the word to-day has only this specialised sense, but in classical times medals were not differentiated from coins. The art of striking medals reached its height between the 14th and 15th Centuries. Two schools, the Italian and the German, were particularly prominent, the former distinguished by the work of Vittore Pisano, the latter by that of Albrecht Dürer. The 17th Century saw the rise of the French and Dutch schools. In England, medals have been struck since the 16th Century. Since Waterloo (1815), campaign medals have been regularly awarded, as well as medals for valour and distinguished conduct. The Victoria Cross was instituted in 1856, the Conspicuous Gallantry Medal in 1855, the Distinguished Conduct Medal in 1845. There are special medals for the R.A.F. (the Distinguished Flying Medal, 1918), and life-saving medals are awarded by various institutions, the Royal Lifeboat Institution, the Board of Trade, etc. Since Edward VI. there has been an uninterrupted series of Coronation medals.

Medallion, a coin or medal struck to commemorate some particular event. In architecture the name is used of a tablet, in relief, for mural decoration.

Medea, a famous sorceress of Greek Colchis, who assisted Jason (q.v.) to acquire the Golden Fleece, and accompanied him back to Greece as his wife. By her art she restored the youth of Eson, the father of her husband, but the latter having abandoned her she avenged herself on him by putting the children she had by him to death. Her story is the subject of a play by Euripides.

Media, a country on the SW. of the Caspian Sea, originally a province of the Assyrian empire, from which it revolted; was after 150 years of independence annexed to Persia by Cyrus, of which it had formed the NW. portion; it is now part of Iran.

Medici, an illustrious family who attained sovereign power in Florence in the 15th Century, the most celebrated members of

which were Cosimo de' surnamed the "Father of his country," was exiled for ten years but recalled, and had afterwards a peaceful and prosperous reign; was a student of philosophy, and much interested in literature (1389-1464). Lorenzo de' the Magnificent, did much to demoralise Florence, but patronised literature and the arts (1448-1492). Other celebrated members of the family were Popes Leo X., Clement VII., and Catharine and Mary de' Medici.



LORENZO DE' MEDICI

Medicine, the science of treating disease with a view to cure, has in the Western world a continuous history since Hippocrates, a Greek of 400 B.C., whose methods have been preserved in the Hippocratic Corpus. The second great figure in medical history was a Roman, Galen, who began to practise in the 2nd Century A.D., and after whom for fourteen centuries medicine remained almost stationary. In the Middle Ages the foremost practitioners were Arabs and Jews. In the 16th Century three men stand out—Paracelsus, a Swiss; Vesalius of Flanders; and Ambroise Paré of France. During the 17th Century special progress was made in anatomy, physiology, chemistry and ophthalmology. In the second half of the 18th Century surgical practice made rapid strides after the discovery of anaesthetics (first widely used by Simpson of Edinburgh), and the antiseptic principles of Lister, who applied the work of Pasteur, the founder of modern bacteriology (see also *Surgery*). The discovery of X-rays towards the end of the century had an immediate effect in the treatment of injuries, lesions, diseased tissues, etc. (See *Radiology*.) During the 20th Century the preventive side of medicine was developed. Laws were made relating to public health, sanitation, and the health of the worker, and clinics were established to deal with tuberculosis, venereal disease, and for maternity and child welfare. Before beginning medical practice the student must have his name entered on the Register of the General Medical Council, and for this certain medical degrees or other recognised qualifications are necessary.

Medicine Hat, a town of Alberta, Canada. Natural gas is found in the district, and among its industries is that of flour-milling. It is an air-port. Pop. 10,300.

Medick (*Medicago*), a genus of clover-like plants with yellow or purple flowers. Some species, including alfalfa or Lucerne (*M. sativa*), are grown as fodder. Six species are found in England, known as medick, nonsuch, burweed, etc.

Medina (lit. the city), called also Medina-en-Nabi, 210 m. N. of Mecca, the city where Mohammed found refuge after his "flight" from Mecca in 632, and lived thereafter. His tomb is in a beautiful and rich mosque called El Haram (i.e., the inviolate), erected on the site of the prophet's house. Pop. c. 20,000.

Medina, a small river in the Isle of Wight, England, almost dividing the island in two. On its banks stands Newport, the chief town of the island, and Cowes stands on the estuary.

Medinet-el-Fayum, a city of Upper Egypt and capital of the Fayum province. It is a large trading centre. Pop. 21,800.

Mediterranean Sea, so called by as lying in the presumed middle of the earth, surrounded by Europe, Asia, and Africa; the largest enclosed sea in the world. Its communication with the Atlantic is Gibraltar Strait, 9 m. wide; it is linked with the Black Sea through the Dardanelles, and in 1869 a canal through the isthmus of Suez connected it with the Red Sea. It is 2,800 m. long by 1,200 m. broad, the S. shores regular; the N. with many gulfs, and two great inlets, the Aegean and Adriatic Seas. The Balearic Is., Corsica, Sardinia, Sicily, Malta, Cyprus, and Crete, the Ionian Is., and the Archipelago are the chief islands; the Rhône, Po, and Nile the chief rivers that discharge into it. A ridge between Sicily and Cape Bon divides it into two great basins; it is practically tideless, and saltier than the Atlantic; its waters too are warm. Northerly

winds prevail in the E. with certain regular variations. In recent years it has become the centre of gravity of European politics, as a result of Italian aspirations in Africa and the near East, and the Civil War in Spain.

Medjidie, knighthood instituted in 1852 by the Sultan Abd-ul-Medjid, as a reward of merit in civil or military service.

Medlar (*Pyrus*, or *Mespilus germanica*), a common deciduous shrub found in hedges in most parts of Europe. The fruit, which is about an inch in diameter, grows on the points of the main or side shoots, and is depressed and concave on top. The Nottingham cultivated variety is considered the best. The fruit is harsh and astringent. It is not eaten until "bletted," i.e., until it is brown and decay has set in.

Medmenham, a village of Buckinghamshire, 60 m. from London. The former Clisterian abbey was tenanted during the 18th Century by a band of men of fashion under the designation of the "Monks of St. Francis," better known as the "Hell Fire Club," led by Sir Francis Dashwood, John Wilkes and others, who converted it into a convivial retreat and there celebrated their orgies. Pop. 400.

Medoc, a district in the dept. of the Gironde, to the S. of the estuary of that name, in the S. of France, famous for its wines.

Medusa, one of the three Gorgons (g.r.), who offended Athena, so that the goddess changed her hair into hideous serpents, and gave to her eyes the power of turning anyone into stone who looked into them. Perseus (g.r.) cut off her head by the help of Athena.

Medway, a river in Kent, England, rising in Sussex, and after a N.E. course of 58 m. falling into a tidal estuary of the Thames mouth at Sheerness.

Meerschaum (lit. sea-foam), a fine white clay, hydrated silicate of magnesia, found in Asia Minor, Morocco and elsewhere. It is used mainly for making tobacco pipe bowls.

Meerut, an Indian town in the North-West Provinces, on the Nuddi, 40 m. N.E. of Delhi; is capital of a district of the same name, and an important military station; it is noted as the scene of the outbreak of the Mutiny in 1857. Pop. c. 137,000.

Megalithic Age, the age of ancient or structures of large stones, such as the early Cyclopean architecture in ancient Greece. Such monuments were generally sepulchral, they are classified into dolmens, circles, menhirs etc. Examples in Britain include Stonehenge.

Megalomania, a disordered mental condition in which the patient is afflicted with the delusion that he is a person of the highest position or importance or endowed with vast riches. The latter delusion is frequent in cases of general paralysis.

Megalosaurus, gigantic extinct carnisaur, nivorous dinosaur, about 48 ft. long; it walked on its hind legs and preyed upon the herbivorous dinosaurs.

Megaphone, a long funnel-shaped instrument for carrying sound over long distances. The less elaborate megaphones are commonly used to make announcements at sporting events. The instrument was invented by Edison. Electrical amplifiers have now largely replaced them.

Megaritis, a small but populous state of Attica, ancient Greece, S. of Attica, whose inhabitants were adventurous seafarers, credited with deceitful propensities. The capital, Megara, famous for white marble and fine clay, was the birthplace of Euclid.

Megatherium, an extinct genus of the sloth, some 18 or 20 ft. in length and 8 ft. in height; its remains are mostly found in S. America.



MEGATHERIUM

Megiddo,

an ancient city of Palestine, at which both Josiah and Ahaziah died. Excavations have revealed tombs and much of a well-built ancient town. In the World War it was captured by Allenby in 1918.

Mehemet Ali, pasha of Egypt, born in Albania; entered the Turkish army, rose into favour and seized the pashalik, the Sultan exacting an annual tribute in acknowledgment of his suzerainty; the Mamelukes proving unruly, he slaughtered them wholesale in 1811. He maintained two wars with the Sultan for the possession of Syria, with Ibrahim Pasha, his son, for lieutenant. Compelled to give up the struggle, he instituted a series of reforms in Egypt, and secured from the Sultan the hereditary rule of Egypt for his family. (1769-1849).

Meighen, Arthur, Canadian statesman; born at Anderson, Ontario, and educated at Toronto University. A barrister, he entered the Dominion Parliament as a Conservative in 1908, becoming Solicitor-General, 1913; Secretary of State, later Minister of Interior, 1917; Prime Minister in 1920-1921, and again in 1926. Leader of government in Senate, 1932-1935. (1874-).

Meissen, a town of Saxony, on the Upper Elbe, 15 m. NW. of Dresden; has a very fine Gothic cathedral and an old castle. There is a large porcelain factory, where Dresden china was made, besides manufactures of iron. Pop. 47,000.

Meissonier, Jean Louis Ernest, French painter, born in Lyons; began as a book illustrator, practising the while and perfecting his art as a figure painter, in which he achieved signal success, from his "Chess-player" series and military pieces to his designs for the decoration of the Pantheon. (1815-1891).

Meistersänger, or Meistersingers, a Germany in the 15th Century or earlier for the cultivation of poetry, of which Hans Sachs (q.v.) was the most famous member.

Mekong, or Cambodia, is the chief river of Siam. Its source in the mountains of Chiamdo is unexplored. Its course 3,000 m., is southerly to the China Sea; the last 500 m. are navigable.

Melanchthon, Philip, Protestant Reformer, former, born in the Palatinate of the Rhine; met Luther at Wittenberg, where he was professor of Greek.

He wrote the first Protestant work in dogmatic theology, entitled *Loci Communes*, and drew up the "Augsburg Confession." The sweetness of temper for which he was distinguished, together with his soberness as a thinker, had a moderating influence on Luther, and contributed much to the progress of the Reformation. He combined the humanist with the Reformer. (1497-1560).



PHILIP MELANCHTHON

Melanesia, general name for the group of crystalline, coralline, and volcanic islands in the W. of Polynesia, all S. of the equator, inhabited by the Melanesian or dark oceanic race; includes the Fiji Is., New Britain and New Hebrides and part of New Guinea.

Melba, Dame Nellie, Australian opera-singer, born in Melbourne; made her first appearance when she was only six; studied in Paris in 1882 and appeared in opera for the first time in Brussels in 1887; often appeared in opera in London; received the D.B.E. for her charitable work in the World War. (1861-1931).

Melbourne, the capital of Victoria, Australia, on the R. Yarra and at the head of Port Phillip Bay; second largest city in Australia. It is well planned and built in broad regular streets with much architectural beauty, and contains many buildings of imposing appearance; was the seat of the Commonwealth Government till 1927, when this honour was transferred to Canberra. First settled in 1835, it was incorporated in 1842. Some of its streets are world-famed for their wonderful avenues of trees which extend for miles. It contains a large number of factories and is a great commercial and railway centre. Its shipping interests are very large, and it has wharves both at Port Melbourne and along the banks of the Yarra R. Pop. 1,018,000.

Melbourne, a small town of Derbyshire, shire, England, 8 m. S.E. of Derby, manufacturing silk fabrics, boots, shoes and hosiery. In the former castle John, Duc de Bourbon, taken at the battle of Agincourt, was detained 18 years. Pop. 3,700.

Melbourne, William Lamb, Viscount, English statesman, born in London; educated at Cambridge and Glasgow Universities; entered Parliament as a Whig in 1805, but was Chief Secretary for Ireland in the Governments of Canning, Goderich, and Wellington; succeeding to the title in 1828, he reverted to his old party; was Home Secretary under Karl Grey in 1830, and was himself Prime Minister for four months in 1834, and then from 1835 till 1841, when he retired from public life. (1779-1838.)

Melchett, Alfred Moritz Mond, first Baron, British industrialist, largely responsible for the formation of Imperial Chemical Industries, Ltd.; elected to Parliament as a Liberal in 1906, became Minister of Health in 1921, changed to the Conservative party in 1927 and was raised to the peerage the following year. He was a prominent Zionist. (1868-1930).

Melchizedek (i.e., king of righteousness or justice), a priest-king of Salem, to whom Abraham, as recorded in Genesis, did homage and paid tithes.

Meleager, a Greek mythical hero, who slew a wild boar which devastated his country; his life depended on the burning down of a brand that was blazing on the hearth at the time of his birth, but which his mother at once snatched from the flames. He killed his uncles in a quarrel, and his mother, to be avenged on him for slaying her brothers, threw the brand back into the fire, and on the instant he breathed his last.

Mellon, Andrew William, American banker and politician, born in Pittsburgh; industrial development made his banking business prosper, and he became one of the three or four wealthiest men in the world. In 1921 he became Secretary of the Treasury, and he later came to London as American ambassador. He presented to America an art collection estimated to be worth \$10,000,000. In 1911 he founded the Mellon Institute at Pittsburgh, the world's largest institute for scientific research; the building was dedicated in 1937. (1855-1937.)

Melodrama, originally a play with music, now a play remarkable for rapid and incessant action, sensational situations, and violently expressed emotion, with marked contrast between hero and villain. Thomas Holcroft is credited with introducing this genre to the English stage with plays such as *Deaf and Dumb*, adapted from the French *melodrame* by Bouilly, and *The Tale of Mystery* in 1803. The elements of melodrama had, however, existed long before, and were present in much Elizabethan tragedy and in late 18th-Century romantic drama. Famous Victorian melodramas, which have been revived with success in late years, include *Sweeney Todd*, *The Demon Barber of Fleet Street*, and *Maria Martin*, or *the Murder in the Red Barn*.

Melon (*Cucumis melo*), a tropical vine of the order Cucurbitaceae, with a large green, yellow or white succulent fruit. It is largely grown in Mediterranean countries and in America, and in Britain under glass.



Melpomene, the one of the nine muses which presides over tragedy.

Melrose, a small town in Roxburghshire, Scotland, at the foot of the Eildons, on the S. bank of the Tweed, famed for its abbey, founded by David I. in 1136; it is celebrated by Sir Walter Scott in his *Lay of the Last Minstrel*. Pop. 2,000.

Melton Mowbray, a town in Leicestershire, England, 15 m. N.E. of Leicester, the centre of a great hunting district; celebrated for its pork pies. Pop. 10,500.

Melville, Herman, American author, born in New York, went to sea in early life; wrote *Typee*, *Momo*, *Moby Dick* and other stories of sea life and adventure. (1819-1891).

Memel, or Klaipėda, Baltic seaport at the mouth of the Kurisches Hafl. Before the World War the town, with a strip of territory beyond the Niemen, belonged to Germany. After the War it was assigned to the League of Nations and administered by the Conference of Ambassadors for three years; but in 1923 it was handed over to Lithuania on condition that it received a considerable measure of autonomy. Since then Nazi influence has prevailed at recent elections to the Diet. Timber is exported in large quantities and there are chemical works and shipbuilding yards. Pop. (town) 38,000.

Memlinc, Hans, painter of Flemish school; born either at Mummeling, near Aschaffenburg, Bavaria; or at Memelino, near Alkmaar, Holland. He worked mainly at Bruges, and is renowned as a colourist. His work is still largely represented at Bruges. (c. 1480-1494).

Memnon, in Greek mythology, a son of Tithonus and Aurora, who was slain by Achilles at Troy. At his death Aurora besought Zeus to immortalize his memory, and ever since the earth bears witness to her weeping in the dews of the morning. A statue to his memory was erected near Thebes, in Egypt, and was fabled to emit a musical sound every time the first ray of the sun fell on it.

Memory, the mental processes involved in the recollection and representation of past experience. The function is performed by the mind, but does not depend upon a separate faculty. A fundamental principle of memorization of any subject is that it must be understood, while the pre-

existence of other associated experiences is of material assistance in fixing it upon the mind. Concentration or attention is essential to rapid memorization. A faulty method of learning by memory, especially a lengthy passage of poetry, for example, is to learn a section at a time. Psychology has proved that repetition of the entire passage until complete mastery is assured, is more reliable.

Memphis, an ancient city of Egypt, of which it was at certain periods the capital; it was founded by Menes at the apex of the delta of the Nile, and contained 700,000 inhabitants; famous for its pyramids, the Serapeum and temples.

Memphis, city and port in Tennessee, U.S.A., on the Mississippi, 826 m. above New Orleans, accessible to the largest vessels; is also a great railway centre, and therefore of great commercial importance; has many industries, and a great cotton market. Pop. 253,000.

Menai Strait, a picturesque channel Anglesey from Caernarvonshire, 14 m. long and at its narrowest 200 yards wide; is crossed by a suspension bridge (1825) and the Britannia Tubular Railway Bridge (1850).

Menander, a Greek comic poet, born in Athens; of his works, which were numerous, we have only some fragments; they were largely used by the Latin poet Terence in the construction of his plays. (342-291 B.C.).

Mencius, or Meng-Tze, a celebrated Chinese sage, greatly honoured by Confucianists; his teachings were collected by his followers in a book entitled the *Book of Meng-tze*. (372-289 B.C.).

Mendel, Gregor Johann, Austrian cleric and biologist; his researches on heredity laid the foundations of the modern scientific study of the subject (see *Mendelism*). The value of his work was not recognised until several years after his death. (1822-1884).

Mendeleëff, Dmitri Ivanovich, Russian chemist, born at Tobolsk; was the first to arrange the chemical elements in a table in order of atomic mass and to observe the periodicity they displayed when so arranged. Certain unknown elements were subsequently discovered and found to have the properties assigned to them by Mendeleëff. His table remains the basis of atomic theory. (1834-1907).

Mendelism, the theory of heredity propounded by Mendel (q.v.), setting forth that certain "dominant" characteristics are inherited by hybrids rather than characteristics intermediate between those of the two parents. The offspring of the first generation inherits the dominant, while part of the offspring of the second generation exhibits the opposite or "recessive" characteristics. If those possessing recessive characteristics unite, the dominant recur in the offspring. Mendelian theory has proved of great practical value in the deliberate breeding of animals and plants for desirable characteristics.

Mendelssohn-Bartholdy, Felix,

brated German composer, grandson of Moses Mendelssohn, born in Hamburg; appeared publicly as a pianist at 12 and began to compose at an early age, producing the *Midsummer Night's Dream* overture at 17. His compositions consisted of symphonies, operas, oratorios (including *St. Paul* and *Elisabeth*), and church music. A tour in Scotland inspired the *Hebrides* overture. (1809-1847)



MENDELSSOHN

Mendip Hills, in the N. of Somerset, set, England, extend from a little SW. of Frome to Hutton, S. of Weston-super-Mare, a distance of about 25 m.; the highest point is Blackdown Hill, 1,068 ft. above sea-level.

Mendoza, province in the extreme W. of Argentina; has the Andes in the W., Aconcagua (23,500 ft.), the highest peak in the New World. Otherwise consists chiefly of pampas, fertile only where irrigated from the small Mendoza River; there vines flourish. Copper is plentiful, coal and oil are found. Area, 57,500 sq. m. Pop. 445,000. **Mendoza** the capital, 640 m. W. of Buenos Aires by rail, is on the Trans-Andine route to Chile, with which it trades. Pop. 77,000.

Menelaus, king of Sparta, the brother of Agamemnon and the husband of Helen, the carrying away of whom by Paris led to the Trojan War.

Menelik II., Emperor of Abyssinia, claiming descent from Menelik I., reputed son of Solomon and the Queen of Sheba, was born at Ankobar; son of Melicott, King of Shoa, whom he succeeded in 1865. He became ruler of Abyssinia on the death of the Emperor John in 1889. He defeated the Italians at Adowa, 1896, as a result of which Italy recognised Abyssinian independence. (c. 1842-1913).

Menhir, a standing stone, erected in prehistoric times, probably in connection with funerary rites; examples occur in Brittany, Scotland, and elsewhere.

Menin Gate, the gate at Ypres leading to Menin, and to the scene of some of the severest fighting of the World War. Through it many thousands of British troops passed from 1914 to 1918, and on its site a memorial gateway in honour of the 56,000 of them who have no known grave was unveiled in 1927. Sir Reginald Blomfield designed the memorial, which bears the name of every officer and man it commemorates.

Meningitis, an inflammation of the meninges or membranes that invest the brain and spinal cord, due to infection by germs. Four different types are recognised. Simple acute meningitis is caused by injury to certain parts, e.g., the middle ear, the inflammation extending to the brain, or as a complication following certain fevers. The earliest symptoms are headache, followed by feverishness and general prostration. Constriction of the neck is followed by convulsions, and squint is often noticed. Septic meningitis is most often fatal. Tuberculous meningitis is due to tubercular disease in a bone or gland. It is most frequent in young children and has a slow and insidious onset. After two weeks' drowsiness the child becomes comatose, and after eight weeks the disease is almost always fatal. See also *Cerebro-Spinal Fever*.

Mennonites, a Protestant sect founded at Zurich by a priest, Menno Simons, about 1535, with a creed that combines the tenets of the Baptists with those of the Quakers; they maintain a rigorous church discipline. Communities are to be found to-day in Germany and the U.S.A.

Mensheviks, name given in Russia to opposition to Bolsheviks; it originated with a division in the Russian Social-Democratic Party in 1903. Their views were reformist rather than revolutionary, and they worked for the coming of Socialism by non-revolutionary methods.

Menstruation, the discharge of blood from the uterus of women which occurs about every 28 days during the period of fertility, commencing at puberty (in Europe usually at 14 or 15) and ceasing at the menopause, which commonly occurs between the ages of 40 and 50. It

ceases on conception, commencing anew after the end of the period of lactation, or sometimes after childbirth. Disorders of the function include amenorrhoea, or absence of the menstrual flow; dysmenorrhoea, or its accompaniment with pain or an unusual degree of discomfort; and menorrhagia, or excessive menstrual flow.

Mensuration, the branch of mathematics concerned with ascertaining lengths of straight lines, areas of surfaces, and volumes of solids. The term is commonly restricted to the measurement of surfaces, solids and regular figures. The measurement of irregular lines is dealt with by that part of the integral calculus termed rectification.

Menthol, a crystalline substance obtained from the oil of peppermint, used in nervous affections, such as neuralgia, as a counter-irritant, and for relieving headaches and asthma.

Mentone, town and seaport in France, on the Italian border; was under the princes of Monaco till 1848, when it subjected itself to Sardinia, which afterwards handed it over to France; protected by the Alps, the climate is delightful and renders it a favourite health resort in winter and spring; it exports olive-oil and fruit. Pop. c. 15,000.

Mentor, a friend of Ulysses, left by him in charge of his young son Telemachus; hence his name is used as a general term for a friendly guide, especially of an older in relation to a younger person.

Mercantile Marine, the body of men engaged in cargo shipping as distinct from naval service on the one hand and passenger shipping on the other; though in practice the term is often used to cover all shipping other than the Royal Navy. In 1937 the total tonnage of merchant vessels of 100 tons and over was for the world 66½ millions, of which over 20½ millions was in British ownership. In 1935 the British mercantile marine employed over 152,000 seamen. Merchant shipping law is administered by a special branch of the Board of Trade, which has representatives at all important ports and docks.

Mercator, the Latinised name of Gerardus Mercator, a celebrated Dutch geographer who invented the map-projection which bears his name, and which plots latitude and longitude by parallel straight lines at right angles to each other. (1512-1592).

Mercenaries, originally hired soldiers from feudal levies, now bodies of paid troops in the service of a State of which they are not subjects; the Scots Guards in France from the 15th to 18th Centuries were famous, and Swiss auxiliaries once belonged to most European armies; William III. had Dutch mercenaries in England; under the Georges, Germans were hired and used in the American War, the Irish rebellion, and the Napoleonic struggle; in the Crimean War German, Swiss, and Italian soldiers were enrolled. See also *Foreign Legion*.

Mercerisation, a process, of treating fabrics invented by John Mercer in 1861. It consists of passing the material first through a solution of caustic soda and then through cold water, thus causing it to contract so as to improve it for dyeing purposes.

Merchant Taylors' School, famous English public school, founded in Suffolk Lane in the City of London in 1561, by the Master, Wardens, and Court of Assistants of the Worshipful Company of Merchant Taylors who are still the governing body. It moved in 1875 to Charterhouse Square from which it moved to its present

site at Sandy Lodge, Northwood, Middlesex, in 1933. The number of boys is limited to 500 and includes 50 boarders. Eight entrant scholarships are offered annually. There are also each year Scholarships and Exhibitions to a value of not more than £200. Many famous men have been scholars at the school, including Edmund Spenser, Robert Clive and Juxon, Bishop of London.

Mercia, one of the three chief kingdoms of Anglo-Saxon England, eventually comprising most of the Midlands; founded by Angle settlers in the Upper Trent Valley (now S. Staffordshire) in the 6th Century. It rose to greatness under Penda, 626-655, and subsequently succeeded Northumberland in the supremacy. Under Offa, 757-795, it maintained its independence, but after the death of Cenwulf, 819, waned in turn before Wessex and the Danes.

Mercier, Désiré Joseph, Belgian ecclesiastic, who as Cardinal Archbishop of Malines opposed the German invasion of his country and issued an appeal to his compatriots to remain loyal to their king; he was partly responsible for the "Malines Conversations" (q.v.). (1851-1926).

Mercury, the Roman equivalent of the Greek God Hermes, the son of Jupiter and Maia, the messenger of the gods, the patron of merchants and travellers, and the conductor of the souls of the dead to the nether world.

Mercury, the planet of the solar system nearest to the sun, round which it revolves in 88 days at a mean distance of 36 million miles. It has a diameter of 3,000 miles and mass one twenty-fifth that of the earth. Owing to its proximity to the sun it is but rarely visible, and then either just before sunrise or just after sunset.

Mercury, a metallic chemical element belonging to the same group as cadmium and zinc and distinguished by its low melting-point, which renders it liquid under ordinary conditions. Symbol Hg; atomic number 80; atomic weight 200.61. Mercury or quicksilver (i.e., "living" silver) occurs native, as at Almaden, in Spain, and also as its sulphide, cinnabar, in Spain, Italy, Mexico and S. America; from cinnabar the metal is obtained by roasting in a current of air. It is very poisonous in both the liquid and the vapour states, and this property is shared by its compounds, e.g., mercurous chloride or calomel (used in medicine as a purgative), mercuric chloride, or corrosive sublimate (used in dilute solution as an antiseptic); and mercuric fulminate, used as a detonator since it explodes on being struck. Solutions of other metals in mercury are known as amalgams.

Meredith, George, English poet and novelist, born in Hampshire; began his literary career in 1851 as a poet. His novels appeal only to a select few, but by them they are regarded with admiration. *The Ordeal of Richard Feverel*, published in 1859, is by many considered his best, others being *The Egoist*, *Diana of the Crossways*, and *Even Hannington*. (1828-1909).

Merganser, a genus (*Mergus*) of ducks (*Mergus merganser*) is a typical species. The head is crested in the male, and the colouring vivid. The red-breasted merganser (*M. serrator*) has a green head, red breast, and back plumage black edged with white.

Meridian, an imaginary great circle right angles to the equator; the Meridian of Greenwich is the point from which longitudes are calculated.

Merimee, Prosper, French writer, born in Paris; abandoned law for literature; became under Louis Philippe inspector-general of historical documents. He wrote stories, historical dissertations, and

travels, among other works *Guela, Chronicles of Charles IX.*, the *History of Don Pedro, King of Castile*, *Letters to an Unknown*, *Colomba* and *Carmen*. (1803-1870).

Merino, a species of sheep, native to Spain, raised chiefly for its wool. The flesh is of little value.

Merioneth, a mountainous county of Cardigan Bay, between Caernarvon and Cardigan. Lofly peaks including Aran Mawddwy, Cader Idris, and Aran Benllyn and the rivers, Dee and Dovey, and Lake Bala, afford picturesque scenery. The soil is fit only for sheep-grazing; but there are slate and limestone quarries, manganese and gold mines. Festinog is the largest town. The county town, Dolgelly, on the Wnion, has woollen and tweed manufactures. Area, 660 sq. m. Pop. 43,200.

Merit, The Order of, a British order instituted in 1902, limited in number to 24 men and women of eminent distinction; it confers no precedence; the ribbon is blue and crimson.

Merlin, a legendary Welsh prophet and a magician, child of a wizard and a princess, who lived in the 5th Century, and was subsequently a prominent personage at King Arthur's court; prophecies attributed to him existed as far back as the 14th Century; Tennyson represents him as bewitched by Vivien.

Merlin (*Falco aesalon*), a species of small falcon, which breeds on moors in the British Isles, nesting on the ground. The adult male is about 10 in. in length. The plumage of the male is lead colour streaked with black, throat nearly white, under-wing coverts rufous-brown; of the female, brown with brown and mottled underparts. It preys on small birds. The Red-headed Merlin (*Falco chiquera*) is an Indian species.



MERLIN

Mermaids and **Mermen** (i.e., sea-maids fabled to inhabit the sea, with a human body as far as the waist, ending in the tail of a fish; the females of them represented above the surface of the sea combing their long hair with one hand and holding a mirror with the other. They are supposed to be endowed with the gift of prophecy, and to be of an amorous temper. The belief in these half-human creatures is traced back to Oannes, the fish-god of the Babylonians, though certain sea beasts with a semi-human expression especially the sea-mammals known as dugongs may have given rise to it.

Meroë, or **Marawe**, a wide tract of Upper Blue Nile, and the Atbara rivers. Ruins on the Nile, 28 m. N.E. of Shendi, are believed to be those of Meroë, the ancient capital of Ethiopia.

Merovingians, a name given to the first dynasty that ruled over France after the downfall of the Roman empire, until A.D. 750; being derived from Merwig, the founder of the family.

Merrimac, U.S.A., a river in New Hampshire, the White mountains and flows by a course of about 150 m. into the Atlantic near Newburyport. It supplies water-power for industrial purposes. Lowell, Lawrence, Manchester and Concord are among the towns on its banks.

Merriman, Henry Seton, pseudonym of Hugh Stowell Scott, novelist, son of a Newcastle-on-Tyne shipowner. Spent some time in an underwriter's office. Among his more important works are *The Sowers*, *In Kedar's Tent*, *Barlasch of the Guard*. (1862-1903).

Mersey, English river, rising in NW. Derbyshire, flows westward 70 m. between Lancashire and Cheshire to the Irish Sea; is of great commercial importance, having Liverpool on its estuary. Its chief tributary is the Irwell, on which stands Manchester. Its estuary from Birkenhead to Liverpool is crossed by a railway tunnel, opened in 1886, and by a vehicular tunnel, 2 m. in length, opened 1934.

Merthyr Tydfil, industrial town in Glamorganshire, S. Wales, on the Taff, 15 m. NW. of Cardiff; is the centre of great coalfields and of enormous iron and steel works; its industrial life has suffered greatly since the economic crisis of 1931. Pop. 65,600.

Merv (or *Meru*), an oasis in the Turkoman S.S.R., occupied by Russia in 1883, 60 m. long by 40 m. broad, producing cereals, cotton, silk, etc.; breeds horses, camels, sheep. The town of the same name, on the Trans-Caspian railway, has a pop. of c. 10,000.

Meshed, a walled city, capital of the province of Khorassan, in N. Iran. It stands in a fertile plain; the mausoleum of the Imam Riza is visited by pilgrims. The city, a commercial centre, has manufactures of velvets, silks and carpets. Pop. 140,000.

Mesmer, Friedrich Anton, a German physician, trained for the Church, but took to medicine; was the founder of animal magnetism, called mesmerism after him, his experiments in connection with which created a great sensation, particularly in Paris. His system was reported on unfavourably by a committee of enquiry, and he retired into obscurity. (1733-1815).

Mesmerism, or animal magnetism, name first given (from Anton Mesmer, *q.v.*) to the practice, now called hypnotism (*q.v.*) of inducing artificial or hypnotic sleep for therapeutic purposes.

Mesopotamia, former name of the territory "between the rivers" Euphrates and Tigris, now included in Iraq (*q.v.*). It was in pre-classical times the centre of a series of great civilizations, centering on Sumer, Nineveh, Babylon, and other great cities.

Messenger, André Charles Prosper, French composer of operas born at Montluçon; a pupil of Saint-Saëns; director of Opera at Paris from 1907-1914. His works include *La Basoche*, *Véronique*, *Fortunio* and *L'Amour Masqué*. (1853-1929).

Messalina, Roman empress, the wife of Claudius I.; a byword for cruelty and licentiousness; she was killed by the Emperor's order after the exposure of her infidelity in A.D. 48.

Messenia, a province of Greece, mainly the Gulfs of Arcadia and Coron. The Messenians after two long wars were conquered in 608 B.C. by the Spartans and fled to Sicily, giving their name to Messina (*q.v.*). Pop. of present province, 248,000.

Messiah (*i.e.*, the Anointed One), the leader to whom the Jews looked forward as restorer of their national glory. In the view of Christians the prophecies relating to him were fulfilled in the person of Jesus Christ, to whom the title is therefore applied. Claimants to the Messiahship have arisen from time to time among the Jews, the most famous being Sabbatai Zevi in the 17th Century.

Messina, ancient city on a bay at the NE. corner of Sicily, on the strait of the same name, which separates the island from Italy; has a 12th Century cathedral, two old castles, and a university, founded 1549. It manufactures light textiles, coral ornaments, and fruit essences, and has

an excellent harbour. In 1908 it was the scene of a great earthquake, in which over 70,000 people perished. Pop. 183,000.

Messina, Strait of, 24 m. long and at narrowest 2½ m. broad. separates Sicily from the Italian mainland; here were the Scylla and Charybdis of the ancients.

Messines Ridge, a spur of rising Ypres, Belgium, captured by the Germans in the World War after severe fighting in Nov., 1914, and the scene of further fighting in June, 1917, and April, 1918.

Message, a dwelling-house with buildings and land attached for the use of the household.

Metabolism, name given to the chemical changes continually in progress in the cells of living matter, and essential to life. Constructive metabolism, or the changes involved in building up protoplasm from food, is known as *anabolism*, and the destructive process as *katabolism*.

Meta Fuel, a white solid made by adding dilute sulphuric acid to ice-cold acetaldehyde, (*q.v.*). It burns with a non-luminous flame, and is therefore used as a solid substitute for methylated spirit in heating lamps.

Metallurgy, the extraction of metals subsequent purification of the crude products. A few metals, such as gold, platinum and mercury, occur in a more or less pure form, but most are found as oxides (*e.g.*, iron, aluminium) or as sulphides (*e.g.*, lead, copper, zinc, nickel). The ores are subjected to a preliminary roasting, which drives off moisture and volatile impurities, and also, in the case of a sulphide, converts the ore into an oxide. The oxide is then mixed with carbon and heated in a furnace; in this way gaseous oxides of carbon are formed and escape, while the fused metal sinks to the bottom.

The crude metal is purified in various ways, *e.g.*, by electrolysis. Electrical methods are also being increasingly used for the actual extraction of metals; thus aluminium is obtained electrolytically from aluminium oxide, sodium from sodium hydroxide, and calcium from calcium chloride. With certain metals, special methods are employed; thus in the purification of nickel the crude metal is heated in a stream of carbon monoxide gas, with which it forms the volatile product nickel carbonyl. This passes on, leaving impurities behind, and is then heated to a higher temperature, when it splits up again into nickel and carbon monoxide (Mond Process for nickel).

In Spain, copper is extracted from copper sulphate solution by the addition of scrap iron, which passes into solution as iron sulphate while the copper is deposited in the form of a powder.

Metals. Metallic elements are distinguished from non-metals (i) by possessing high specific gravity, melting-point and boiling-point, a peculiar metallic lustre, and the capability of taking a brilliant polish, (ii) by being malleable and ductile and good conductors of heat and electricity, and (iii) by the fact that their chlorides are true salts, usually stable in the presence of water, and that their normal oxides are basic, reacting with acids to form salts and water. There are, however, many exceptional metals, *e.g.*, sodium, which is lighter than water and has low melting and boiling points, and bismuth, which is brittle and forms a chloride that is decomposed in water. The principal metals are sodium, potassium, calcium, iron, copper, silver, gold, magnesium, zinc, lead, tin, aluminium, nickel and chromium. A mixture of metals is called an alloy, *e.g.*, brass (a mixture of copper and zinc).

Metamorphic Rocks, those igneous or sedimentary rocks which have been altered by extreme heat, moisture or pressure, e.g., sandstones are changed into quartzite, limestones into marble, clays into slates, and granites into gneisses.

Metaphysics, the science of being as being; the science of the ultimate grounds of all other forms of knowledge. It is a branch of philosophy which deals with the fundamental principles that underlie reality. It deals with the relations between cause and effect, investigates the true nature of time (q.v.) and space (q.v.) and discusses the question whether reality is given in experience. The problems dealt with by metaphysics existed long before the term was invented. Literally the term (which is, properly, "metaphysic" means "after physics" and was applied to those writings of Aristotle which appeared after his *First Philosophy*.

Metazoa, that division of the animal kingdom which includes all multicellular organisms, as distinct from Protozoa, or unicellular organisms; but the term is more generally restricted to invertebrate multicellular animals.

Metempsychosis, or "transmigration of souls," the belief that the human soul after death passes into the body of another human being or an animal. In a broader sense it implies a conviction that the human phase is only one of a series of incarnations both in the past and the future. The belief is found in Indian religions, and was held by the ancient Egyptians as well as among some other peoples.

Meteorite, the name given to meteors the earth before complete vaporization occurs. During their fall meteorites appear as fireballs, and set up sound-waves similar to thunderclaps. Their constituents are nickel, chromium, magnesium and a large proportion of iron.

Meteorology, that branch of natural science which deals with the factors influencing weather and climate. It was first established on scientific lines through the invention of the thermometer by Galilei and of the barometer by Torricelli, Boyle, Hooke, Pascal and others. The Meteorological Office of London was established in 1854, under the control of the Board of Trade; it is now a department of the Air Ministry. From the collation of weather reports, barometric heights, direction of winds, thermometer readings, and similar data, received from numerous and widely distributed observers, the prediction of weather over a few hours now reaches a high degree of certainty and precision, while longer forecasts, though less reliable, can often be made with some confidence.

The principal factor in making the forecast is a study of the distribution of the various pressures of the atmosphere at the time concerned. Spots at which the pressure is identical are plotted on the map and joined by isobars (q.v.). It is often noticed that many of the isobars form closed rings, approximately circular or elliptical in shape, such an arrangement, surrounding a region of lower pressure, being known as a depression or cyclone.

In the Northern hemisphere, a depression is marked by winds blowing in a counter-clockwise direction round its centre, and is usually accompanied by rain and a higher temperature than is general for the time of year; it moves more or less as a whole, most frequently from W. to E. In an anticyclone the pressure is high, the isobars are widely separated, and, in the Northern hemisphere,

the winds (much lighter than in a depression, or even scarcely perceptible) blow in a clockwise direction. A main depression is often accompanied by secondaries, which give rise to stormy weather with high winds, thunderstorms etc.

Meteors, small pieces of solid matter which appear in the earth's atmosphere as "shooting stars"; their size varies from a few ounces to several tons; as a rule they commence to glow when about 80 m. from the earth, owing to the friction of the air; they are usually destroyed during flight, but occasionally one reaches the ground; they appear to enter the atmosphere at a speed of about 30 m. per hour.

Methane, a simple hydrocarbon produced by decaying vegetable matter, and called "marsh gas" from its natural occurrence in swampy areas. It also occurs in mines as "firedamp"; with air it forms an explosive mixture which is responsible for many mining disasters.

Methodists, a body of Christians founded by John Wesley, ecclesiastically governed by a Conference with subordinate district synods, and professing evangelical principles, which they teach agreeably to the theology of Arminius; the name is also given to the followers of Whitefield, who are Calvinists in certain respects. The movement was founded in 1729 at Oxford. Their doctrines are substantially those of the Church of England. In the early years of the Methodist movement it broke up into various bodies, such as the Wesleyan Methodists, Primitive Methodists, Methodist New Connexion, and others; several of these united in 1907 to form the United Methodists, and in 1932 this body united with the Wesleyan Methodists and Primitive Methodists to form the Methodist Church. Methodists are numerous in N. America, where the leading body is the Methodist Episcopal Church. In the world to-day there are approximately 12 million Methodists.

Methuen, Paul Sandford, third Baron, British soldier, fought with distinction in Ashanti, Egypt, Bechuanaland and in the Boer War; Governor of Natal, 1909-1915; and of Malta, 1915-1919. (1845-1932).

Methuselah, son of Enoch, grandfather of Noah; according to the book of Genesis he reached the unusual age of 969.

Methyl Alcohol, an alcohol obtained by distilling monohydric alcohols with dilute potash, and prepared mainly from the products of the distillation of hard woods.

Methylated Spirits, ethyl (ordic) containing about 10 per cent. of methyl alcohol (wood spirit), and small quantities of paraffin oil and pyridine to render it unfit for drinking; it is not subject to the tax on pure spirit and is used for many industrial purposes.

Metre, the name given to the unit of length in the metric or decimal system, equal to 39.37 English inches, the tenths, the hundredths, and the thousandths of which are called from the Latin respectively decimetres, centimetres, and millimetres, while ten times, a hundred times, and a thousand times are called from the Greek respectively decametres, hectometres, and kilometres. A metre was taken as one forty-millionth part of the earth's circumference.

Metric System, the system of measures in use in almost all Western countries except Great Britain and the U.S.A. It is based on the metre, a unit of length of about 39 in.; the litre, a unit of capacity of about 1½ pints; and the gram, of which 1,000 make 1 kilogram, roughly 2½ pounds. These units are divided or multiplied on a decimal system.

Metronome, an instrument used for determining the movement of musical compositions. The rate of vibration is regulated by the variation of elevation of a weight attached to a pendulum to correspond with a scale graduated on the pendulum shaft. The instrument was invented by Maelzel about 1815.



METRONOME

Metropolitan Police and Courts.

The Metropolitan Police area extends over a radius of 15 m. from Charing Cross, exclusive of the City of London, an area of 699 sq. m. The Metropolitan Police Office is at New Scotland Yard; the College and Laboratory are at Hendon. Apart from its duties in apprehending criminals and in the investigation of crime generally, the Metropolitan Police is the authority for issuing traffic licences, and regulating street traffic.

The Police Courts were first established by an Act of 1792 which authorised the establishment of seven police courts, each with three magistrates and six constables. Further acts have increased the number of courts, staff, and duties and now almost any act or conduct that interferes with public order comes within their jurisdiction.

Metropolitan Water Board,

a body constituted under the Metropolis Water Act, 1902, to supply water to the administrative county of London and surrounding areas, thus assuming the functions hitherto performed by separate metropolitan water companies. The Board's charges are normally levied on the rateable value of property, at such rate, not exceeding 8½ per cent., as the Board may determine. Supply comes mainly from the Rts. Thames and Lea, and the New River system. The average daily supply is about 290 million gallons.

Metternich, *Clement, Prince von*, a Austrian diplomatist, born in Coblenz; served as ambassador successively at the courts of Dresden, Berlin, and Paris, and became first Minister of State in 1809, exercising for 40 years from that date the supreme control of affairs in Austria. One of his first acts as such was to effect a marriage between Napoleon and the Archduchess Marie Louise, himself escorting her to Paris. He presided at the Congress of Vienna in 1815, and from that date dominated in foreign affairs in the interest of the rights of kings and the repression of popular insurrection. He had to flee from Vienna in 1848, but returned in 1851, after which, though not called back to office, he continued to influence affairs by his advice. (1773-1859).

Metz, city in the dept. of Moselle, France, the second town of Alsace; 105 m. SW. of Coblenz. In 1870 it was the scene of Bazaine's surrender to the Germans with his army of 180,000 men. At the end of the war it was annexed by Germany, but returned to France after the World War in 1919. It has a Gothic cathedral, and is industrially important. Pop. 83,000.

Meurthe-et-Moselle, dept. of NE. France, about the river Moselle; there are forest areas, and fruits, grapes, and hops are grown. Capital, Nancy. Area, 2,035 sq. m. Pop. 576,000.

Meuse (*Mass*), river, 500 m. long, rises in Haute-Marne, France, and flows N. through Belgium, by Namur and Liège, to enter Holland at Maastricht; is for a time the boundary, finally trends westward, and joins the Rhine at the delta. Also the name of a

French department, in the N.E., including theilly Argonne country; has iron mines; capital, Bar-Je-Duc. Area, 2,400 sq. m. Pop. 217,000.

Mexborough, a market town and W. Riding of Yorkshire, 6 m. N. of Rotherham. Industries include iron works and potteries. Pop. 15,800.

Mexico, a federal republic of 28 States, lying S. of the United States, between the Gulf of Mexico and the Pacific, and including the peninsulas of Lower California in the W. and Yucatan in the E. Its area is 784,000 sq. m. Pop. 16,550,000; it consists of an immense plateau 3,000 to 8,000 ft. high, from which rises the Sierra Nevada, 10,000 ft., running N. and S., and other parallel ranges. The largest lake is Chapala, in the centre; the rivers are mostly rapid and unnavigable; the chief seaports are Vera Cruz and Tampico on the E., and Acapulco on the W. but though the coast-line is indented it affords no good harbours.

Along the eastern seaboard runs a strip of low-lying unhealthy country, 60 m. broad; on the Pacific side the coast land is sometimes broader. These coast-lines are well watered, with tropical vegetation, tropical and sub-tropical fruits; the higher ground has a varied climate. In the N. are great cattle ranches; all over the country the mineral wealth is enormous, gold, silver, copper, iron, sulphur, zinc, quicksilver, and platinum are wrought; coal also exists. The bulk of Mexican exports consists of precious metals, oil, and ores. There are cotton, paper, glass, and pottery manufactures. One-sixth of the population is white, the rest Indian and half-caste; the religion is Roman Catholic, the language Spanish.

Conquered by Cortez in 1519, the country was ruled by Spain for 300 years; a rebellion established its independence in 1822, but the first 50 years saw perpetual civil strife, and wars with the United States in 1848 and France in 1862. In 1867 the constitution was modelled on that of the United States, and Porfirio Diaz, the President, proved a masterly ruler. In 1911 Diaz fell, revolutions and counter-revolutions gripping the country until partial order was restored in 1920 by the usurpation of power by Gen. Obregon. Ownership of the vast petroleum fields of the country is a constant source of friction, as is the question of the power of the Catholic Church; in 1938 the oilfields in foreign ownership were assumed by the State, which has threatened to pay no compensation. Mexico, the capital of the republic, 7,000 ft. above the level of the sea, in the centre of the country, is a handsome though unhealthy city, with many fine buildings, including a magnificent cathedral; cotton goods, tobacco, and pottery are manufactured; the trade is chiefly transit. Pop. 1,030,000.

Mexico, Gulf of, a large basin of the Western Atlantic, between United States and Mexican territory; shut in by the peninsulas of Florida and Yucatan, 500 m. apart, and the western extremity of Cuba, which lies between them; it receives the Mississippi, Rio Grande, and many other rivers; the coasts are low, with many lagoons; ports like New Orleans, Havana, and Vera Cruz make it a highway for ships; north-easterly hurricanes blow in winter.

Meyerbeer, *Giuseppe*, German musical of Jewish birth; composer of operatic music, and for 30 years supreme in French opera; produced *Robert le Diable* in 1831, the *Huguenots* in 1836, *Le Prophète* in 1849, *L'Étoile du Nord* in 1854, the *Dinorah* in 1859. *L'Africaine*, produced after his death, was a great success. (1791-1864).

Meynell, Alice Christians, English poetess. Influenced in her early days by Ruskin and Henley, she produced her first volume of verse in 1875, her poems being distinguished by their simplicity and charm; she is also remembered for several volumes of essays. (1849-1922).

Mézières, capital of the dept. of the Ardennes, France, 47 m. N.E. of Reims. A bridge across the Meuse connects it with Charleville; it manufactures hardware. Mézières was taken by the Germans in 1914, and occupied by them throughout the World War. Pop. 10,500.

Mezzotint, a mode of engraving on steel or copper in imitation of Indian ink drawings, the lights and shades of the picture being produced by scraping on a black ground.

Miami, a city in Florida, U.S.A., on the Miami R.; a popular winter pleasure resort. It is an important taking-off ground for air services to the W. Indies and S. America. Pop. 111,000.

Mica, a transparent mineral found in easily into thin plates. White mica or muscovite is used for windows, where a non-inflammable substance is desirable, lamp covers, and as an insulator; it is mined in India; several varieties exist, some of them coloured, including biotite (brown) and lepidolite (red).

Micah, the sixth of the minor prophets of the Old Testament, a contemporary of Isaiah, Hosea, and Amos; his prophecies are in the same strain as those of Isaiah. They predict the destruction both of Samaria and Jerusalem, the captivity and the return, with the re-establishment of the theocracy and the advent of the Messiah.

Michael, an archangel, the leader of the heavenly host, at never-ending war with the devil and his angels; is represented in art as clad in armour, with a sword in one hand and a pair of scales in the other to weigh the souls of men at the judgment. Festival, Sept. 29.

Michael, the name of a succession of eight emperors who, at different periods, occupied the throne of the East from 811 to 1282, the last being Michael VIII., the founder of the Palaeologian dynasty.

Michael, King of Rumania, 1927-1930. Owing to the renunciation of rights by his father, Carol (q.v.), he succeeded his grandfather, King Ferdinand, at the age of five in 1927. His father returned to Rumania in June, 1930; Michael abdicated in his favour and became Crown Prince. (1922-).

Michaelmas, the festival in honour of St. Michael and the angels, held on September 29; it is one of the quarter days.

Michelangelo Buonarroti, Italian painter, sculptor, architect, and poet, born in Caprese, in Tuscany, one of the greatest artists that ever lived; studied art as apprentice for three years under Domenico Ghirlandajo, and at 17 his talents attracted the notice of Lorenzo de' Medici, who received him into his palace at Florence, and employed as well as encouraged him. On the death of his patron he left for Bologna, and afterwards, in 1496, went to Rome, where he executed his "Bacchus" and "Cupid," followed by his "Pieta" or Virgin weeping over the dead Christ, and the colossal "David." From 1503 to 1513 he was engaged on the ceiling in the Sistine Chapel. In 1530 he was working at Florence as an engineer in the defence of the city and as a sculptor; in 1537 he was in Rome, working on the great "Last Judgment," completed four years later. In 1542 he was appointed architect of St. Peter's, and he planned and built the dome. His sonnets

indicate that his literary power was worthy to be compared with his excellence in the other arts. (1475-1564).

Michelet, Jules, French historian, born among other works of a *History of France* in 18 vols., and a *History of the Revolution* in 7 vols. He was, from 1838, for 13 years professor of History in the College of France, but lost the appointment because he refused to take the oath of allegiance to Louis Napoleon. He wrote on birds and insects, on the sea, on women, on love, on witchcraft, and the Bible and humanity. (1798-1874).

Michelson-Morley Experiment, an attempt to measure the velocity

of the ether, with which the earth is moving through the ether of space, carried out in 1887 by A. A. Michelson (1852-1931) and E. W. Morley (1838-1923). It gave negative results, and was supposed to disprove the existence of the ether: it was one of the foundations on which Einstein based his theory of relativity.

Michigan, a state of the U.S.A., broken in two by Lake Michigan. The western portion has Wisconsin on its S. border, the eastern portion has Indiana and Ohio on the S.; the rest of the state is surrounded by Lakes Superior, Huron, and Erie. The western section is mountainous, with great forests of pine, little agriculture, rich mines of copper and iron, and some gold. The eastern section is much larger, very flat and low, has coal, gypsum, and marble quarries, but is chiefly a wheat-growing area; in the Saginaw Valley are great salt wells. The climate is modified by the lakes. The main industries are motor-car manufacture, mining, and furniture making. At first a French colony, the country was handed over to England in 1760, and to the United States in 1776; it was organized as a territory in 1805, and admitted a state in 1837. The chief commercial city is Detroit, on Detroit R., in the E., has manufactures of machinery and railway plant, leather, and a large shipping trade; other large cities are Grand Rapids and Flint. Lansing is the state capital, and an important railway centre. Area, 58,000 sq. m. Pop. 4,842,000.

Michigan, Lake, in the N. of the United States, between Michigan and Wisconsin, is the third largest of the Great Lakes between Canada and the U.S.A., covering about 22,500 sq. m. It is 335 m. long and 50 to 80 m. broad, bears much commerce, has low sandy shores and no islands. The chief ports are Chicago, Milwaukee, and Racine.

Microbe, a minute organism found in the blood of animals, especially when suffering from disease. See *Bacteria*.

Microchemical Analysis,

in chemistry, the detection and estimation of the ingredients of substances by methods involving the use of minimum quantities. Qualitative microchemical analysis, that is, the discovery of the identity of substances in this way, is largely colorimetric and has been developed by Feigl and others. Minute quantities of the elements are also detected by spectroscopy, *c.g.*, by observing the spectrum of the electric arc struck between carbon electrodes previously soaked in a solution of the substance to be analysed.

Micrometer, an instrument for measuring very small distances. There are many kinds. In astronomy it is used for measuring small angles, and generally consists of two constantly parallel wires, which can be set at a tangent to the image of the object whose angular diameter is required. A graduated scale measures the amount of displacement. A micrometer gauge is a form of measuring gauge having its adjustment effected by an extremely fine

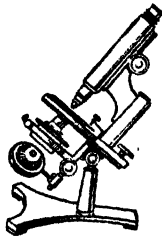
pitch screw. There are also special forms of micrometers for microscopes.

Micron, a unit of length, the thousandth part of a millimetre; it is represented by the Greek letter μ (*mu*).

Microphone, an instrument invented in 1878 by Professor Hughes, consisting of charcoal tempered in mercury, which intensifies and renders audible the faintest possible sound. In microphones of this type the carbon granules are packed behind a thin diaphragm which vibrates in contact with sound waves, and thereby alters the pressure on the carbon granules; this alters their resistance, causing current variations identical with the variations of pressure made by the sound waves in the air. The Marconi-Reisz microphone is an improved type of carbon-granule microphone. Another type is the electrodynamic microphone, also called a ribbon microphone or magnetophone; it consists of a small coil of aluminium wire attached to a freely moving diaphragm, suspended in a powerful magnetic field.

Microscope, an optical instrument of small size of a minute object

by means of a combination of lenses, invented towards the end of the 16th Century, although wrought glass lenses had been manufactured in the 14th Century. A simple microscope is a single lens or magnifying glass. The compound microscope consists of two or more such lenses contained in a hollow tube, usually fitted with a "coarse" and a "fine" adjustment to gain the right focus. The lower lens (nearer the object to be observed), called the objective, is capable not only of magnifying but also of resolving; that is, it has the power of separating out the details of the object at the distance necessary for them to be visible, for, by the nature of light and the human eye, mere magnification of detail does not of itself produce greater visibility.



MICROSCOPE

Midas, in classical legend, a king of Phrygia who obtained from Dionysus the power of turning everything he touched into gold, a gift which he successfully prayed him to revoke when he found it affected his very food. Preferring the pipes of Pan to the lyre of Apollo, the latter awarded him a pair of ass's ears, which he was unable to hide from his barber, who whispered the secret to some reeds, and these as the wind passed through them spread the fact broadcast.

Middelburg, the capital of the province of Zeeland, Netherlands, on the island of Walcheren. It has a 12th century abbey. Pop. 18,500.

Middle Ages, is a term used in connection with European history to denote the period beginning with the fall of the Roman Empire in 476, and closing with the invention of printing, the discovery of America, and the revival of learning in the 15th Century.

Middle English, the form of the English language in use for two centuries and a half from 1200 to 1400.

Middleham, a small town in the N. Riding of Yorkshire, England, on the R. Ure. It has the ruins of the castle of Warwick, the king-maker.

Middle Oil, a name given to one of the fractions obtained in the distillation of coal tar; the products obtained from it are naphthalene and carbolic acid.

Middlesbrough, iron manufacturing and shipping town at the mouth of the Tees, in the N. Riding of Yorkshire, England, 45 m. N. of York; has also shipbuilding yards and chemical works and exports coal. It owes its growth to the discovery of one of the largest ironfields in the country in the Cleveland hills, near at hand, in 1850. Pop. 140,000.

Middlesex, a small English county on the N. of the Thames, adjacent to and W. of London; its surface is flat, and there are no streams of importance. By far the greatest part of the county is now built over, and it is practically a part of London; manufactures of all kinds are carried on. All the former towns, including Harrow, Hendon, Ealing, Willesden, Tottenham, Hornsey, and many others, are now suburbs of the Metropolis. Area of administrative county, 232 sq. m. Pop. 1,638,700.

Middleton, a municipal borough and market town, Lancashire, England, on the R. Irk, 5½ m. N. from Manchester. Spinning and manufacture of cotton fabrics, bleaching and dyeing are carried on. Pop. 29,100.

Middleton, Thomas, English dramatist, born in London, where he was afterwards City Chronicler; received assistance in his best work from Drayton, Webster, Dekker, Rowley, and Jonson. His comedies are smart and buoyant, sometimes indecorous, his masques more than usually elaborate and careful. His best works are *The Spanish Gypsy*, and the tragedies *The Changeling* and *Women beware Women*. (1570-1627).

Midgard, a name given in the Norse intermediate between the Asgard (*g.v.*) of the gods and Utgard of the Jötuns (*g.v.*).

Midianites, a nomadic race mentioned in the Bible, descended from Abraham by Keturah, who dwelt to the E. of Akaba; though related, were troublesome to the Hebrews, but were subdued by Gideon.

Midothian, a county of Scotland, bounded by the Firth of Forth and the shires of Linlithgow, Lanark, Peebles, Selkirk, and Haddington. The Moorfoot hills are in the S.E. of the county. The Pentland hills run from the S.W. to the N.E. The principal rivers are the Water of Leith, the Esk and the Almond. The county is chiefly agricultural, but coal is mined in the N.E. Edinburgh is the capital. Other chief towns are Leith, which is now a part of Edinburgh, Dalkeith, Musselburgh and Portobello. Area, 366 sq. m. Pop. 548,600.

Midnight Sun. Within the Arctic during summer, the sun is constantly visible, according to the distance from the poles, for a period varying from 48 hours to six months. Hence northern Norway is sometimes called the "Land of the Midnight Sun."

Midrash, the earliest Hebrew exposition of the Old Testament; strictly it includes the Halakha, or development of the legal system on Pentateuchal lines, and the Haggadah, a commentary on the whole Scripture, with ethical, social, and religious applications; but is frequently used of the latter alone.

Midshipman, a naval rank, intermediate between cadetship and that of commissioned officer; it is the midshipman's duty to supervise and convey to the men the orders of his superior officers. They are trained at the Royal Naval Colleges, Dartmouth and Greenwich.

Midwifery, or *Obstetrics*, the branch of medicine concerned with the welfare of women during childbirth, including those ailments to which a mother is

subject during gestation and lactation. In the middle of the 18th Century parturition was left almost wholly to midwives, and medical help was only sought in cases of unusual difficulty.

The birth of a child is a natural process needing no artificial assistance, but conditions often result in a mother having a distorted or contracted pelvis or in weakness of the muscles concerned with the expulsion of the child. In such a case the use of an instrument, the forceps, may be necessary.

In exceptional cases it may be necessary to open the abdominal cavity, cut into the womb, and remove the child through the front of the body, this operation being known as Caesarian Section—Julius Caesar, it is said, having been born in this manner.

Within recent years there has been considerable legislation dealing with midwifery. Midwives are now registered by the state, and an official midwifery service, operated by local authorities, is at the service of all expectant mothers.

Mignonette, a widely-annual garden plant, *Reseda odorata*, having sweet-scented greenish-cream flowers. It is native to N. Africa, and is the floral emblem of Saxony.



Migraine, or **Megrim**, a severe form of headache to which highly strung or neurotic persons are specially subject. It may follow worry, depression, bad health, etc., and is prone to attack one side only of the head. The MIGNONETTE symptoms are undue sensibility, nausea and visual disturbances.

Migration, in biology, the practice of certain animals, particularly birds and fishes, of changing their habitat at certain seasons of the year. Many fishes, such as salmon and eels, migrate regularly for breeding purposes; birds often migrate, singly or in flocks, over immense distances, breeding in colder climates and spending the cooler seasons in warmer regions. The movements of birds have been to some extent traced by the use of identification rings.

Miguel, Dom, king of Portugal from 1828 to 1833, born in Lisbon; usurped the throne in defiance of the right of his brother, Pedro IV., emperor of Brazil, who had offered him the regency on condition that he married his daughter, Maria, which he refused to do. A civil war ensued, in which Pedro was successful, and bestowed the throne on his daughter, Miguel going into exile. (1802-1866).

Mikado, a name given by foreigners, to the Emperor of Japan.

Milan, the largest city in N. Italy, in Lombardy, 25 m. S. of Lake Como; acquired by Italy from Austria in 1859; manufacturing silks and velvets, gold, silver, motor cars, and porcelain ware, and trading in raw silk, grain, and tobacco, with great printing works; is the chief financial centre of N. Italy. Its architectural treasures include the magnificent Gothic cathedral of white marble; there is a university, and other important educational institutions. The opera house, La Scala, is famous. Pop. 1,116,000.

Mildew, various parasitic fungi that grow and rapidly spread on vegetable matter. They affect mostly rose trees, wheat, barley, and other cereals. Spraying with a solution of sulphur sometimes prevents its growth.

Miletus, the foremost Ionian city of the mouth of the Meander, was the mother of

many colonies, and an important trading centre; its most famous citizen was the philosopher Thales.

Milford Haven, fine naval and mercantile natural harbour in Pembrokeshire, Wales. It is about 16 m. in length and 2 m. in width, and is one of the finest natural harbours in the world. The town of the same name, situated on it, has a pop. of 10,700.

Milford Haven, first Marquess of, (Louis Mountbatten, formerly Prince Louis of Battenberg), British Admiral, son of Prince Alexander of Hesse, he married Victoria, granddaughter of Queen Victoria. From 1908 to 1912 he commanded the Atlantic Fleet, and was First Sea Lord from 1912 to 1914, when prejudice excited by his German origin caused his resignation. He adopted the English title in 1917. (1854-1921). The second Marquess was his son, George (1892-1938). He was succeeded by the third, David, formerly Earl of Medina.

Military Cross, was instituted by warrant of Dec. 28, 1914, and awarded in recognition of distinguished and meritorious services in time of war to captains, commissioned officers of lower rank, warrant officers, class 1 or 11, in any of the British, Indian and Colonial military forces and to foreign officers of equivalent rank. It consists of a Cross of silver having on each arm the Imperial Crown and in the centre the Royal and Imperial Cypher.

Military Law, the law administered, whose jurisdiction is limited to the armed forces; it is therefore distinct from so-called "martial law" or military government. The English code as set forth in the official *Manual of Military Law* is traceable to the codes drawn up about 1640 during the Civil War. It is renewed annually by the provisions of the Army (Annual) Act, which permits the Crown to maintain a standing army for the forthcoming year.

Military Medal, a decoration commissioned officers and men in the British forces for bravery in the field.

Military Orders, associations of the period of the Crusades, bound by the religious vows of poverty and chastity; the principal were the Templars, the Hospitallers, and the Teutonic Knights, the last being eventually secularised, and taking a great part in the foundation of the state of Prussia.

Militia, a non-professional military force raised to assist the regular forces in case of necessity, generally for home defence only. Such bodies everywhere preceded the rise of professional armies, and powers still exist in Great Britain for the compulsory enrolment of able-bodied men in the militia by ballot, though they are not in fact used. The old "Special Reserve" was given the name Militia in 1921; but the place of a Militia is in reality occupied to-day by the Territorial Army.

Milk, the glandular product excreted by all female mammals for feeding their young. In Europe and North America cow's milk is very extensively used as an article of food, and vast numbers of cattle are kept solely to produce it. Cow's milk contains water, fat, casein, albumen, ash, and lactose; milk offered for sale in Great Britain must contain fixed minimum proportions of butter-fat and solids. In recent years a great deal of legislation regarding milk and its production has appeared on the Statute book; legal definitions of special grades of milk have been established, and a Milk Marketing Board supervises production and distribution. The portion of the milk which rises to the surface after standing is known as cream; there are

no cream standards in Great Britain. Milk yielded immediately after calving contains 15 per cent. albumen, and is unsuitable for human consumption.

Milk-Sugar. See *Lactose*.

Milky Way, or *Galaxy*, a belt of stars encircling the whole visible heavens, in which stars appear to cluster more thickly than elsewhere. According to modern astronomical theory it is possibly a "self-contained" universe of which the Solar System forms part, and which may possibly have a rotation of its own independent of other universes seen dimly as nebulae, which may be systems similar to the Milky Way itself.

Mill, a device for grinding grain to corn, the motive power being wind, steam or water. See *Windmill*.

Mill, James, British economist, born near Montrose; was a disciple of Locke and Jeremy Bentham; wrote a *History of British India*, *Elements of Political Economy*, and an *Analysis of the Human Mind*; held an important post in the East India Company's service. (1773-1835).

Mill, John Stuart, British logician, economist, and Utilitarian philosopher, born in London. In the preceding; began to learn Greek and read it and Latin at 14; entered the service of the E. India Company in 1823, but devoted himself to philosophic discussion; published his *System of Logic* in 1843, and in 1848 his *Political Economy*; wrote *Liberty* in 1859, *Utilitarianism* in 1863, left an *Autobiography*; was the father of the movement for women's suffrage; died at Avignon. (1806-1873).

Millais, Sir John Everett, English painter, associated with Rossetti and Holman Hunt, he remained for over 20 years under their influence, producing "The Carpenter's Shop," 1851, "Autumn Leaves," 1856, and "The Mill-race," 1866. His later work, outside the pre-Raphaelite tradition, included portraits of Gladstone and Beaconsfield, with numerous illustrations and etchings. In 1896 he was made President of the Royal Academy. (1829-1896).

Millbank Prison, Westminster, constructed as a "model prison" on lines suggested by Howard and Bentham, existed from 1821 to 1886, after which the Tate Gallery was erected on its site.

Millennium, a period of a thousand years, especially a period during which, on the basis of Rev. xx. 6, certain Christian sects believe that Christ will in the future reign on earth. The belief was common in England about the time of the Civil War.

Miller, Hugh, Scottish geologist, born in Cromarty; began life as a stonemason; editor of the *Witness* newspaper from 1839 till his death; wrote the *Old Red Sandstone*, *Footprints of the Creator*, and the *Testimony of the Rocks*, and an autobiography, *My Schools and Schoolmasters*; died by his own hand at Portobello. (1802-1856).

Millerand, Etienne Alexandre, 11th President of the third French Republic (1920-1924); born in Paris; by profession an advocate; entered the Chamber in 1885, Minister of Commerce, 1889; War Minister, 1912-1913, 1914-1915. Prime Minister, 1920, before becoming President. His interference in cabinet affairs antagonized the chamber, and he was forced to resign the presidency. (1859-).

Milles, Vilhelm Carl Emil (Andersson), Swedish sculptor, born near Upsala. Studied in Paris. Much of his work consists in portrait busts and animal groups, as well as fountains and monuments in Stockholm, Chicago, etc. (1875-).

Millet, a grain of several species, the common especially *Panicum miliaceum*, branched spikes. The spikelets are surrounded by fine hairs or bristles which fall as the seeds ripen. Millet is grown for its seed, which is principally used in the West for poultry food, but in India and the East is an important food grain.



MILLET
(*Panicum Miliaceum*)

Millet, Jean François, French painter, born near Greville; after studying at Paris he lived at the village of Barbizon, near the Forest of Fontainebleau, where he produced pictures of French country life, completing his famous "Sower" and treating such subjects as the "Gle" the "Sheep-Shearers," and "The Angelus," his most famous work. (1814-1875).

Millibar, unit of atmospheric pressure used for meteorological purposes: 1006 millibars are equal to one bar, which is equivalent to a pressure of a million dynes per square centimetre, or that of a column of mercury 29.9 inches or 750 mm. long.

Millikan, Robert Andrews, American physicist; born at Morrison, Ill. He was the first to isolate the electron, for which he was awarded the Nobel Prize in 1923. (1868-).

Milne, Alan Alexander, British author and journalist. He was assistant-editor of *Punch* from 1906 to 1914; among his plays *Mr. Pin Passes By* and *The Ivory Door*, and of his children's books *When We Were Very Young* and *Winnet the Pooh* are the most famous. (1882-).

Milne, George Francis, first Baron, British field-marshal; served in the Sudan, the Boer War, and the World War; in 1916 he took command of the British troops in Salonika, and in 1917 was commander in Macedonia; in 1918 he was knighted, in 1926 was made a field-marshal and chief of the Imperial general staff, and was ennobled in 1933. (1866-).

Milner, Alfred, first Viscount, British administrator, Private Secretary to Goschen (1887-1889); Under-Secretary for Finance in Egypt (1889-1892); Chairman of the Inland Revenue Board, from 1892 to 1897, when he became High Commissioner in S. Africa, and in 1901 Governor of the Transvaal and Orange River Colony; was raised to the peerage in 1901; declined the Colonial Secretaryship in 1903; resigned in 1905, but in 1916 became a member of the War Cabinet, and in 1918 Secretary for War; transferring to the Colonial Office in 1920 he undertook a mission to Egypt. (1854-1925).

Milo, a celebrated Greek athlete, born in Crotona, said to have carried a live bullock 120 paces along the Olympic course, killed it with his fist, and eaten it at one repast; in old age he attempted to split a tree, but it closed upon his arm, and wolves devoured him.

Milo, or *Melos*, island in the Cyclades, group, belonging to Greece. There are mineral springs, and its wines are famous. It has sulphur, lead, silver and other mines. The statue of Venus de Milo, now in the Louvre, was found near the capital. Pop. c. 17,000.

Milreis, unit of currency in Brazil; its present exchange value (1938) is about 24d.

Miltiades, an Athenian general, famous for his decisive defeat of the Persians at Marathon, 490 B.C.; later he failed in a naval attack on Paros, was cast into prison, and died of his wounds.

Milton, John, English poet, born in bridge, and settled to write poetry at Horton, 1633; in 1638 he visited Italy after writing *Ulysses on the Nativity*, *L'Allegro*, *Il Penseroso*, *Comus*, a masque, and *Lycidas*, an elegy on his friend King, besides much Latin verse. On the outbreak of the Civil War he returned to London, married in 1643 Mary Powell, and became active as a writer of pamphlets on public questions, including his tracts on Divorce, a threatened prosecution for which elicited in turn the *Areopagitica*, a *Speech for the Liberty of Unlicensed Printing*. Under the Commonwealth he was "Secretary of Foreign Tongues," and successfully defended the execution of Charles I. in his Latin *Defence of the English People* and other works. He married in 1656 his second wife, Catherine Woodcock, who died two years later. His greatest work, *Paradise Lost*, was composed rapidly, after the Restoration, dictated to his daughters, and completed in 1663, but not published till 1667. 1671 saw *Paradise Regained* and *Samson Agonistes*. He had been blind since 1652; he married Elizabeth Minshull in 1663, who comforted him in his closing years, and in the Plague Year removed from London to Chalfont St. Giles. The richness, melody, and simplicity of his poetry, the sublimity of his great theme, and the adequacy of its treatment, place him among the greatest poets of the world. (1608-1674).



JOHN MILTON

Milwaukee, chief city of Wisconsin, Lake Michigan, 80 m. N. by W. of Chicago. Exports grain, iron ore, etc.; manufactures flour, machinery, and pig-iron. Pop. 578,000.

Mimeograph, an apparatus for the duplication of written or typewritten matter. A wax sheet into which the matter to be duplicated has been cut by hand or typewriter so as to form a stencil is placed over a sheet of paper, the facsimile or duplicate being obtained by passing an inked roller over the stencil and paper.

Mimes, dramatic performances among the Greeks and Romans, in comic representation of scenes in ordinary life, often in extempore dialogue.

Mimicry, a character found in certain animals and plants by virtue of which they take on a close resemblance to other natural objects in such a way as to appear harmless against possible enemies. Examples are the stick insects, which appear to be part of the plants to which they attach themselves, and various marine plants which, except on the closest inspection, are indistinguishable from the sea-bed.

Mimosa, a genus of leguminous herbs comprising about 400 species native to the warmer parts of America, a few only being found in Africa and Asia. The flowers are small globes growing directly from the stalks, and vary in colour from red to pale yellow. The leaves are feathery and in some species sensitive.

Mimulus, or **Monkey Flower**, a genus of hardy or half-hardy annuals or perennials of the order Scrophulariaceae, containing 80 species of world-wide distribution, including the common musk, *Mimulus moschatius*.



STICK INSECT

Minaret, in architecture, a tall, slim tower, ending in a spire or finial, and generally having several balconies at various stages; a minaret from which the muezzin calls the faithful to prayer is a feature of every Mohammedan mosque.

Minas Gerães, state of eastern Brazil, with extensive mineral wealth (hence its name, "general mines"), especially gold, lead, iron and manganese. Coffee, cotton, rice and sugar are grown. Cap., Belo Horizonte. Area, 221,900 sq. m. Pop. 5,888,200.

Minden, a town of Westphalia, Prussia, on the Weser, 40 m. from Hanover. It has a 13th Century cathedral in early Gothic style, and has manufactures of cigars, glass, chemicals and chicory. The allied British and Hanoverian Army defeated the French here in 1759. Pop. 27,900.

Minehead, seaport and market town of Somerset, England, on the Bristol Channel, 25 m. from Taunton. It has a pier 700 ft. long. Pop. 6,300.

Mineralogy, the classification and minerals, their origin and their distribution. One of the principal branches of mineralogy is crystallography, which deals with the form and structure of crystals; but the mineralogist examines also the chemical composition of his materials, as well as their specific gravity, fusibility, specific heat, etc. The classification of minerals is based on their chemical composition.

Mineral Waters, waters, either naturally or artificially impregnated with salts or gases. In the former, impregnation occurs by the flow of the water over mineral rocks. The waters contain carbonate or sulphate of calcium, ferrous carbonate, sodium chloride or other dissolved mineral substances. The mineral springs may be hot or cold. The curative properties of the different waters are useful for rheumatism, skin diseases, gastric and other affections. Mineral water baths exist in many countries, as in England at Bath, Harrogate and Droitwich. Artificial mineral waters are manufactured in imitation of the natural. The name is often applied to "soft drinks" of artificial manufacture with no special mineral constituents.

Miners' Federation of Great Britain, the federation of Trade Unions in the British coal-mining industry, founded in 1888, one of the strongest and most powerful of British labour organizations, with a membership in 1938 of about 560,000.

Minerva, the Roman virgin goddess of Greek Athena (g.v.); she was the special patroness of arts and trades.

Mines, explosive charges used for the destruction of enemy fortifications or shipping. In the World War modern chemical high explosives were first extensively employed in their preparation, and they were used on an enormous scale, particularly on the Western Front. The biggest single mining operation in the War was the explosion of one million pounds weight of explosives under the Messines Ridge over a 10-mile front, which was carried out by the British. In naval warfare, mines which consist of metal containers with sensitive projecting detonators are laid in the sea (usually anchored just below the surface) to destroy approaching enemy ships, or (at a depth) to block the passage of submarines. It is a task of the Navy to keep the sea free from enemy mines. Sweeping the sea for mines is performed by a wire stretched between two ships, the mine being exploded on reaching the surface.

Ming, a Chinese dynasty which reigned from 1368, after the expulsion of the invading Mongols, to 1644. Its founder was Hung Wu (Chu Yuan-chang), who moved the capital to Peking, and from whose time date several of the principal buildings of the city. The period was remarkable less for creative work in literature and the arts than for its loving interest in and care for the work of the past. During this period the first contacts of the modern West with China were made by the Portuguese mariners and the Jesuit missionaries who followed them. The Mings were overthrown by the Manchu dynasty.

Miniature, a small portrait, painted on vellum, paper, or ivory. The colour is applied in dots with the point of the brush. The earliest miniatures were the portraits of state or ecclesiastical dignitaries painted in the capitals of medieval manuscripts. Of secular miniature painting the first great exponent was Hans Holbein the younger (1495-1543).

Minimum Wage, a rate of pay between employers and workers, or by state action, below which wages may not fall. Attempts to secure such a wage in various industries began in the 19th Century; in New Zealand the first minimum wage legislation was enacted in 1894. In Great Britain an Act of 1909 enabled Trade Boards to be set up with power to fix minimum wage rates, and by 1921 over 50 such boards existed, covering 34 million workers. In the United States minimum wage legislation was a part of the National Recovery programme enacted under President Roosevelt in 1933. There are also Minimum Wage ordinances in many British Colonies.

Mining, the extraction of minerals from the crust of the earth. The two principal methods are by open workings, known as "quarries," and underground workings called mines. The principal substances obtained as a result are coal, the minerals from which metals are obtained, e.g., iron, lead, gold, etc.; building materials, salt, gems, etc. The method adopted depends upon the manner in which the material occurs in the earth's crust.

Before a mine can produce material much preliminary work is necessary. The probable extent of the deposit and its thickness must be ascertained, following careful prospecting work. The actual excavation work may be either by hand or by machinery, the motive power being steam, water, compressed air or electricity. Blasting by explosives is commonly used for hard deposits, especially coal and building-stone. In modern mining much of the heavy work is performed by machinery, such as rock drills for boring, cutting machines for coal cutting, etc.

Underground workings are reached by shafts which are vertical or steeply inclined passages or tunnels. After the breaking down of the material, the product is carried in suitable mine cars to the hoisting-shaft and then drawn up to the pit bank. Drainage and ventilation are of vital importance in underground mining. Modern mining is regulated by various statutes.

Owing to the dangers to life and health all operations are under strict inspection by the government Inspectors of Mines. The chief danger arises from escaping gases, the most important of which are methane (g.w.) and carbonic acid gas.

Minium, or Red Lead, a scarlet oxide of lead made by the carefully-regulated roasting of massicot (lead monoxide) in air. It is used in plumbing, in the manufacture of flint glass, and as a pigment, whence the term *miniature*, i.e., originally a painting executed in minium.

Mink, a name given to at least three species of animals of the weasel (*Putorius*) genus of Mustelidae and to the fur obtained from it. The vison (*Putorius vison*) is found in the neighbourhood of N. American rivers; its fur is dark brown, tail black, with patches of white on the throat, breast, and belly. In length it measures 15 to 18 in. without the tail.

Minneapolis, largest city of Minnesota, U.S.A., on both sides of the Mississippi, centre of the wheat and flour trade, with other manufactures, including motor cars, metal works, and food products. It has a university. Pop. 464,400.

Minnesingers (i.e., love-singers), a name given to the lyric poets of Germany during the latter part of the 12th and the first half of the 13th Centuries. The most famous was Walther von der Vogelweide.

Minnesota, one of the north central United States of America; admitted to the Union in 1858. It is largely prairie, with hundreds of lakes, and is chiefly a wheat-producing area; there are pine forests in the N., extensive iron mines, slate and granite quarries. The climate is dry, equable, and bracing. The state university is at Minneapolis; the capital is St. Paul; the largest city is Minneapolis; Duluth is a Lake port with extensive trade. The state is inhabited largely by descendants of Scandinavian and German immigrants. Area, 84,700 sq. m. Pop. 2,564,000.

Minnow (*Phoxinus phoxinus*), a small fish of the Carp (Cyprinidae) family, common in English and European rivers. It is very much like a small dace, is 3 to 4 in. in length, and in colour is brown and green though during the breeding season the male assumes gorgeous colours. It makes good eating and is often used as a bait.



MINNOW

Minorca, the second of the Balearic Isles, hilly, with stalactite caves and rocky coast; is less fertile than Majorca, from which it is 25 m. distant N.E. It produces oil, wine, and fruits, and makes boots and shoes. The capital Mahon, in the S.E., is strongly fortified, and has a good harbour. Pop. c. 40,000.

Minorities, people differentiated by race and culture from the bulk of the inhabitants of the territory within which they live. In the countries of Eastern and Central Europe especially, the problem of minority status became urgent as a result of the territorial changes consequent upon the treaties made subsequent to the World War. States members of the League of Nations have agreed to allow their minority peoples certain cultural and political rights; such rights were secured in the conventions that gave birth to new or enlarged states such as the Baltic republics and Czechoslovakia, but have not always been honoured. Among the principal "minority problems" at present (1938) are those of the Germans in Czechoslovakia (see *Sudeten Deutsch*), Croats in Yugoslavia, Hungarians in Rumania, Flemings in Belgium, and Jews in most Central and Eastern European countries.

Minos, an ancient king of Crete, fabled to have been appointed, with Æacus and Rhadamanthus, one of the judges of the dead on their descent into the nether world.

Minotaur, in the Greek mythology, a with a bull's head, monster, half-man half-bull of Crete, fed by the annual tribute of seven youths and seven maidens of Athenian birth, till he was slain by Theseus with the help of Ariadne.

Mint, an establishment at which coins are struck on behalf of the State. The United Kingdom has but a single Mint, the Royal Mint in London, established at Tower Hill since 1810, having previously been in the Tower buildings. The head of the Mint is the Chancellor of the Exchequer; branch Mints exist at Pretoria, Melbourne and Perth. By special arrangement the Royal Mint manufactures coins for a number of the Dominions and Colonies and for a few foreign States, in addition to British coinage.

Mint (*Mentha*), a genus of hardy herbaceous aromatic perennial plants of the order Labiales, of which there are 28 species, 6 being found in Britain. The familiar cultivated species, known as Mint or Spearmint is the *Mentha viridis*; height 2-3 feet, flowers mauveish, borne in August; the leaves are used for medicinal and culinary purposes. Other familiar species are water-mint, peppermint (*M. piperita*) and pennyroyal (*M. Pulegium*).

Minuet, a slow, graceful dance, set to music in 3-4 time, popular in the 17th Century; or a musical composition of like rhythm and tempo, frequently used in suites by Bach and Handel, and by Haydn and Mozart as a third symphonic movement.

Miocene, name given by geologists to the strata lying above the Oligocene and below the Pliocene. The British Isles were land during the period in which these deposits were laid down, and consequently no strata of this age are found. In Miocene times mammals developed towards their modern forms, and close relatives of existing species are found as fossils. There are large areas of Miocene deposits in North America, as well as in parts of Europe; the period was one of great earth movements.

Miquelon, small island off Newfoundland, land, with St. Pierre, a French possession. There are valuable cod fisheries. Area, 85 sq. m. Pop. 4,000.

Mirabeau, Gabriel Honoré Riquetti, Comte de, French revolutionary leader; visited England and Germany before the Revolution, and in 1789 was chosen a commons deputy of Aix to the States-General where he became the ruling spirit, using his great influence in favour of moderation, and seeking to reconcile the Court to the necessity of giving way to the reasonable popular demands; he might possibly have arranged an accommodation but for his early death. (1749-1791).

Miracle Plays, dramas founded on legends of the saints, and in a wider sense all those religious representations for the instruction of the people fostered by the Church of the Middle Ages, performed first in churches, afterwards in public places. They were common in England from the 12th Century, but the rise of the commercial drama led to their abandonment; they disappeared after the 17th Century, save for the famous Passion Play still acted periodically at Oberammergau, Germany. In recent years similar plays have been produced in England and elsewhere, often under the auspices of the Church authorities.

Mirage, an optical illusion common in sandy districts, caused by an image of some object or place below the observer's horizon being reflected back to him from an upper layer of the atmosphere.

Misdemeanour, any indictable crime which is neither a treason nor a felony. The distinction is no longer of great importance in English law, but generally speaking misdemeanours are the less serious offences, though they include libel, sedition, perjury and some other serious crimes. A delinquent

may not be arrested for a misdemeanour save by judicial warrant or by virtue of an express statute.

Misericord, a bracket on the under medieval churches, used as a support by the clergy when standing; they were often elaborately carved with grotesque figures. They are sometimes, but wrongly, called Misereres, a name taken from the first word of the Latin text of Psalm 51, during the chanting of which they were frequently used as explained.

Misprision, of a crime, is concealment of it by a third party who is cognisant of it but not accessory to it; the name is most frequently found in the phrase Misprision of Treason.

Missal, the book containing the text of the prayers and chants used in the Roman Catholic service of the Mass (q.v.); hand-written Missals of the Middle Ages with their illuminated capitals and borders were among the most beautiful artistic productions of that epoch.

Missions. Christian mission work has been carried on chiefly at five periods: (1) in the earliest days of the Church, under the apostles and earliest Christian teachers who followed them; (2) in the "Dark Ages," when the Teutonic peoples were converted by Roman and Celtic missionaries; (3) in the period when Europe first came into contact with the East at the time of the Tartar onslaughts, under the early Franciscans and Dominicans; (4) by the Jesuits at the time of the Counter-Reformation; and (5) since the beginning of the 19th Century, when the Protestant churches first took up large-scale missionary work. In recent times secular education and medical work have been hardly less important as missionary activities than definite religious teaching. Roman Catholic missions are controlled by the Congregation of Propaganda in Rome; great Protestant missionary organisations include the Church Missionary Society, the Society for the Propagation of the Gospel, the Wesleyan Missionary Society, the China Inland Mission, and the United Free Church Missionary Society.

Mississippi, state of the U.S.A., on the E. bank of the lower Mississippi, abutting on the Gulf of Mexico; has a hilly surface, traversed by numerous rivers, the Yazoo, a tributary of the Mississippi, forming a great fertile delta. The chief industry is agriculture, though many sheep and cattle are reared; cotton, corn, hay and fruits are the chief crops; virgin forests of hardwood cover much of the delta. Valuable deposits of pipe and ochre clays and of lignite are found; cotton is manufactured, and there is trade in lumber. More than half the population is coloured, and the races are kept distinct in the state schools. Jackson, the capital, Meridian and Vicksburg are the largest cities. Mississippi was colonised by the French in 1699, ceded to Britain 1763, admitted to the Union 1817, joined the South in 1861, but was readmitted to the Union in 1869. Area, 46,390 sq. m. Pop. 2,010,000.

Mississippi River, rises in Lake Itasca, Minnesota, and flowing S. for 2,500 m., enters the Gulf of Mexico by a large delta; its earlier course is through picturesque country, often in gorges, with rapids such as the St. Anthony Falls, the Des Moines and Rock Island Rapids. After receiving the Missouri, over 2,900 m. long, from the Rocky Mountains, at St. Louis, it flows through great alluvial plains, which are protected from its overflows by hundreds of miles of earth embankments, and is joined by the Ohio from the E., the Red and Arkansas rivers from the W., and many other navigable streams. The Mississippi is navigable by large

steamers for 2,000 m.: Minneapolis, St. Louis, Memphis, and New Orleans are among the chief ports on its banks. The river is liable to overflow its banks, and there have frequently been disastrous floods, as in 1927 and 1935.

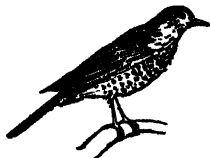
Mississippi Scheme, a financial scheme started in France in 1717 by John Law and the Government, ostensibly to provide money for developing the Mississippi basin, but really to ease the pressure on the exchequer; the rage of speculation that followed led to a financial crisis and the collapse of the company in 1720, with great consequent distress.

Missolonghi, a Greek seaport and fishing town, on the Gulf of Patras, chiefly noted for its two sieges in the War of Independence 1821-1826, and as the place of Byron's death 1824. Pop. c. 9,500.

Missouri, a central state of the U.S.A., traversed by the Missouri R. N. of that river the country is level, S. of it there rise the Ozark tablelands; the soil is very fertile, and the state principally agricultural. Immense crops of maize, oats, potatoes, cotton, hay and wheat are raised; coal, iron, lead, zinc, and other minerals abound, and there is a large cement manufacture. Boots and shoes and metal and food products are also largely exported. Admitted to the Union in 1821, Missouri was divided in the Civil War, but since then has been very prosperous. The capital, St. Louis, is one of the greatest commercial and manufacturing towns in the Union; Kansas City has great pork-packing establishments and railroad ironworks. Area, 69,500 sq. m. Pop. 3,630,000.

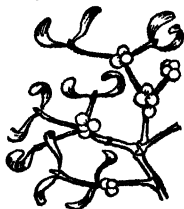
Mistle-Thrush (*Turdus viscivorus*), a familiar British bird of

the thrush (*Turdidæ*) family, so called on account of its fondness for mistletoe berries; also sometimes called Storm Cock since it sings loudest in storms. It is similar in appearance to the song-thrush, but rather larger, and with a much inferior song.



MISTLE-THRUSH

Mistletoe (*Viscum album*), an evergreen plant, parasitic chiefly on apple, more rarely on oak, pear, and hawthorn, the only green parasite found in England. In winter it bears white berries in the forks of the stems. Mistletoe played an important part in Druidical ceremonies, and in classical times was commonly thought to have both magical and medicinal properties.



MISTLETOE

Mitcham, borough of Surrey, England, 9 m. from London; mainly a residential London suburb, but some market-gardening is carried on, and lavender and tobacco were formerly cultivated. There is a well-known annual pleasure fair, much resorted to by Londoners. Pop. 67,000.

Mite, name given to various small arachnids, which with ticks form the order Acari, a subdivision of the Arachnida (spiders). Some are parasitic on animals, and frequently themselves hosts of parasitic protozoa; others are wandering predatory land or water forms. Among familiar species are the harmless house-mite, the itch-mite, harvest bugs (the young of velvet mites), cheese mites, gall mites, etc.

Mithras, a Persian divinity, originally a deity of the Zoroastrian pantheon, but became about the time of the Christian era the centre of a new creed which long competed for precedence with Christianity, which in a few respects may have borrowed from it. Mithraism was especially popular in the Roman armies, and traces of it have been found in Britain; the chief rite of the creed was a form of baptism in the blood of a newly-slain bull.

Mithridates the Great, surnamed Eupator, king of Pontus from 123 to 63 B.C.; fought a series of wars with Rome, but at last committed suicide after a defeat by Pompey on the Euphrates.

Mitrailleuse, a gun consisting of several, as many as 25, barrels from which a number of shots may be fired simultaneously or in rapid succession, used by the French in the Franco-Prussian War.

Mitre, bishop's liturgical headdress, a tall cap rising in front and behind to a peak, and elaborately embroidered, frequently with jewels. Two flaps fall from the back behind the shoulders. It is in use in both the Roman Catholic and Anglican churches.

Mnemonics, a system of memorizing dates, formulas, etc., based on the association of ideas, e.g., the substitution of letters for figures, the letters suggesting or spelling familiar words. The system originated in classical times, but modern educationalists prefer intelligent understanding as a basis for memorisation.

Mnemosynë, in the Greek mythology, the goddess of memory, and by Zeus, mother of the Muses.

Moa, an extinct family of large birds (the *Diornithidæ*), resembling the ostriches; formerly found in New Zealand. They were remarkable for the great size and development of their legs. The largest species was the *Diornis maximus* exceeding the ostrich in size. They were hunted by the natives as food and exterminated.

Moab, a pastoral region extending along the E. of lower parts of the Jordan and the Dead Sea, inhabited, according to the Book of Genesis, by the descendants of Lot.

Moabite Stone, a stone 1 ft. high found by Dr. Klein in 1868 among the ruins of Dibau, a town in Moab, and now in the Louvre at Paris. The inscription in the Phœnician characters describes a victory of the Moabites over the Israelites.

Mobile, seaport and second city of Alabama, U.S.A., 30 m. N. of the Gulf of Mexico; exports cotton and lumber. Pop. 68,200.

Mocassin, shoe worn by N. American Indians, generally made of deer-skin, either of one piece, or with sole and upper; it is often decorated with beads.

Mocassin Snake, N. American viper frequenting watery districts; one of the largest poisonous snakes in the U.S.A.; about 4 ft. long, and greenish-black.

Mocha, or Mokha, a fortified seaport on the Red Sea, in Yemen, Arabia, 55 m. NW. of the Strait of Bab-el-Mandeb. It has a small bay and formerly had a large export trade in coffee but its importance has declined. Pop. 5,000.

Mocking-Bird, the name of a family (the *Mimidæ*), all except the rose-breasted species of Colombia and Venezuela being of sober colours. Some of them are notable for their powers of mimicry, especially the Common Mocking-bird (*Mimus polyglottus*) and the Cat-Bird (*Galeoscoptes carolinensis*).

Modder, a river of South Africa, rising in the Orange Free State, near the E. boundary flowing into the Vaal. Its length is about 180 m. The British under Lord Methuen were defeated here in the Boer War, 1899-1900.

Modena, Italian town, 62 m. N. of Florence; has a cathedral, with noted campanile, a university, library, and art collections, and manufactures silk and leather; incorporated in the kingdom of Italy 1860. Pop. 96,300.

Moderator, the presiding minister in the courts of the Presbyterian Church—the Presbytery, Synod, and annual General Assembly. The Moderators are elected from the Elders, and hold office for one year. In the Assemblies they have only a casting, not a deliberative, vote.

Modernism, a comprehensive term religious movements which arose within the Roman Catholic Church in the 19th and early 20th Centuries, largely as the counterpart of the movement towards social freedom, and which were prompted by the wish to bring traditional Christian beliefs and practices more into accord with modern thought and knowledge. Among leaders of the movement were Baron Frederick Von Hügel, Alfred Loisy, and the English Jesuit Father Tyrrell. Modernism was finally condemned by the Pope in 1907 as a "synthesis of all heresies."

Mogador, a seaport of Morocco, standing on a promontory on the Atlantic, 120 m. SW. of Morocco City. Goat-skins, hides, olive-oil, and wax are included in its exports. Pop. 15,200, of whom 800 are Europeans.

Mogul, name applied to the Empire and dynasty set up in India by Baber, a descendant of Tamerlane, about 1536; its capital was Delhi. The last Mogul Emperor was pensioned off by the British after the Indian Mutiny, long before which his line had lost almost all its authority. "Mogul" is a form of the word "Mongol."

Mohair, wool obtained from the fleece of the Angora Goat, which has now been largely crossed with the common goat. There is a flourishing industry in the U.S.A., which imports it from Asia.

Mohammed, great prophet of the Islam, born in Mecca, the son of Abdallah, of the tribe of the Koreish; left an orphan, brought up by his uncle Abu Talib; became steward to a rich widow Kadijah (q.v.) whom he married at 26; spent much time in solitary meditation and prayer, and at last claimed to have received a series of special divine revelations on the basis of which he formed a religious system. His first convert was his wife Kadijah, but progress was slow, and he made only 12 converts in 3 years. His preaching gave offence to the chief people, and after 13 years a conspiracy was formed to take his life. He fled to Medina. In his fifty-third year, A.D. 622; his enemies had taken up the sword against him, and he now replied by declaring war against all idolaters and unbelievers. At the age of 64 he died of fever, and was buried at Medina. His beloved second wife, Ayesha, outlived him. By the time of his death all Arabia had accepted the new faith. His supposed revelations form the Koran (q.v.). (571-632).

Mohammedanism, or Islam, the religion based on the teachings of Mohammed (q.v.): its sacred book, the Koran (q.v.), which is regarded as literally inspired, is the official summary of the faith; its creed is "There is no God but God, and Mohammed is His prophet." It insists on prayer, fasting (in the month of Ramadan) and almsgiving as the three chief duties of the devout follower,

emphasizes ritual cleanliness, forbids alcohol, inoculates circumcision, and recognizes the divine origin of the teachings of the Old Testament and of Jesus, though it considers them as superseded by Mohammed's revelation. Its profession extends over North and much of Central and East Africa, Western and Central Asia, and much of the Malay countries and India. It has to-day some 220 million followers.

Mohawk, a tribe of American Indians, one of the most warlike members of the Iroquois League. They aided the British in the War of Independence and finally settled in Canada. The tribe gave its name, sometimes spelled Mohock, to a band of ruffians who infested the streets of London in 1711-1712.

Mohicans, an American Indian tribe, formerly located in Connecticut; took sides with the English settlers against the French and with the former against England.

Moh's Scale, a graduated scale of hardness of minerals, based on a classification of ten minerals arranged in such an order that each of them scratches all those below it, but cannot scratch any of those above it. The order is (1) diamond, (2) corundum and sapphire, (3) topaz, (4) quartz, (5) orthoclase, (6) apatite, (7) fluorite, (8) calcite, (9) gypsum, (10) talc.

Molasses, also called treacle, a by-product in the production of sugar, in appearance a thick brownish liquid; different qualities are used as human food, cattle food, and for alcohol manufacture.

Moldau, or Vltava, river in Czechoslovakia, rises on the N. of the Böhmerwald Mts. and joins the Elbe at Melnik after flowing 278 m. Prague and Budweis are on its banks.

Moldavia, a province of Rumania, between the Carpathians and the R. Pruth; its chief river is the Sereth, and its chief town Jassy (Iasi). It was before 1859 a separate principality. Area, 14,690 sq. m.; pop. 2,679,000. The name is also applied to a republic of the U.S.S.R. on the R. Dniester; capital Tiraspol. Area, 8,300 sq. m. Pop. 615,000.

Mole, a river rising in the Tilgate forest and flowing through Sussex and Surrey to the Thames at E. Molesey. Dorking, Leatherhead, and Cobham are on its banks.

Mole (*Talpa*), a numerous genus of small dark-grey mammals of the Insectivora order, native of Europe, N. America, and N. Asia. They burrow underground, throwing up "hills," under which are nests. They feed on worms and insects, and are remarkable for the smallness of their eyes, whence they are popularly supposed to be blind, and their spade-like forefeet adapted for digging. Their fur, which is valued, will lie equally well in either direction. One species, the Common Mole (*Talpa europaea*), is found in Britain.



COMMON MOLE

Mole Cricket. See Cricket.

Molecular Weight, in chemistry, is the number of times that the weight of a molecule of an element or compound is as heavy as one-sixteenth of the weight of the molecule of oxygen (or, roughly, the number of times its molecule is as heavy as the atom of hydrogen). The gram-molecular weight (G.M.W.) of a substance is its molecular weight expressed in grams; thus the molecular weight of oxygen is 32 and its G.M.W. is 32 grams. The G.M.W. of all gases at 0°C. and at a pressure of 760 mm. of mercury occupies 22.4 litres.

and this volume is known as the gram-molecular volume (G.M.V.).

Molecule, the smallest particle of an element or compound that normally leads a separate existence; in elements it may consist of only one atom, as in the case of helium, neon or mercury vapour, or of more than one, as in hydrogen (H_2), ozone (O_3), sulphur vapour (S_8). In the case of compounds, there seems no limit to molecular complexity; thus alcohol is C_2H_6O , naphthalene $C_{10}H_8$, cane-sugar $C_{12}H_{22}O_{11}$, and cocaine $C_{17}H_{21}NO_4$, while the molecules of starch, proteins, etc., are so complicated that their constitution is still unsolved.

Molière, the adopted name of Jean comic dramatist, born in Paris; turned from the bar to the theatre, and soon found his vocation as a writer of plays which heap ridicule on the weaknesses and pretensions of various social classes. His characters are rather abstract types of men than concrete individualities; his principal pieces are, *Les Précieuses Ridicules*, *L'École des Femmes*, *Tartuffe*, *Le Misanthrope*, *Georges Dandin*, *L'Avare*, *Le Bourgeois Gentilhomme*, *Les Fourberies de Scapin*, *Un Médecin Malgré Lui*, *Les Femmes Savantes*, and *Le Malade Imaginaire*. He died after a performance of the last-named play, and was refused religious burial. (1622-1673).

Mollusca, a main division of the animal kingdom, including many common shell-fish, such as oysters and cockles, and other bivalves, snails and slugs, and the soft-bodied cuttle-fishes and octopuses. Their bodies are unsegmented, and in the aquatic orders the blood is purified by gills. Five classes are recognized: *amphineura*, *cephalopoda*, *gastropoda*, *lamellibranchia* and *scaphopoda*. A muscular thickening, or foot, developed on the under side of the body, is the organ of propulsion or locomotion as may be seen in the crawling snail. Most molluscs possess a distinct head, bearing tentacles and eyes. The body is generally protected by a hard calcareous shell, which is sometimes internal. The central nervous system consists of a nerve ring surrounding the front end of the digestive tube, and thickened into swellings known as ganglia.



DOG WHEEL

Moloch, or **Molech**, name of a Semitic god, frequently mentioned in the Bible as a tribal deity of the Ammonites; his worship was accompanied by cruelties and human sacrifices, especially of children. By derivation the name Moloch means "king." The image of Moloch was of brass.

Moltke, **Helmuth Johannes Ludwig von**, German general. A nephew of the following, he served in the Franco-Prussian War, and was chief of the general staff when the World War broke out; on account of the failure to capture Paris he was superseded in Oct., 1914. (1848-1916).

Moltke, **Helmuth Karl**, Count von field-marshal, born at Parchim; trained for a military career in Denmark; assisted from 1835 in reorganizing the Turkish army; chief of the Prussian General Staff from 1858, was pre-eminent as a military strategist, planned and conducted the Prussian campaign against Austria in 1866, and the Prussian campaign against France in 1870-1872. (1800-1891).

Molton, South, borough and market-town of Devonshire, England, 12 m. SE. from Barnstaple, on the R. Mole, from which it takes its name. There are shirt and collar factories and corn mills. Pop. 2,800.

or **Spice Islands**, an archipelago of mountainous islands, in Dutch possession, mostly volcanic, between Celebes and New Guinea, in two main groups. In the N. the largest island is Jilolo, but the most important, Tidore and Ternate, export spices, tortoise-shell, and bees-wax. In the S. Burn and Ceram are largest, most important being Amboyna, from which come cloves. The people are civilized Malays. The islands are equatorial, tempered by sea-breezes, and healthy; discovered by the Portuguese in 1521, they have been in Dutch possession since 1607, except when held by Britain, 1810-1814. Area, c. 44,000 sq. m. Pop. 450,000.

Molybdenum, a metallic chemical element related to tungsten and uranium. Symbol Mo, atomic number 42, atomic weight 96.0. It is used as an alloy with steel for making high-speed drills, etc., which must retain their temper, and not soften, when heated.

Mombasa, town and seaport of Kenya Africa, on a rocky islet, close inshore, 50 m. N. of Pemba; the harbour of Kilindini is the finest in East Africa. Pop. c. 50,000.

Momentum, the property which a body possesses by virtue of its velocity, i.e., the power which it has of overcoming obstacles. It is measured by the product of its mass (m) and its velocity (v), i.e., is expressed mathematically as mv . If a force (F) acts on a body for a certain length of time (t), the impulse of the force = Ft , and this also represents the change of momentum.

Mommsen, **Theodor**, German historian, born at Garding in Schleswig-Holstein, professor at Leipzig, Zürich, Breslau and Berlin; his chief work is the *History of Rome*. (1817-1903).

Monaco, a small principality some 8 sq. m. in area, 9 m. E. of Nice, on the Mediterranean shore, surrounded by French territory and under French protection; has a mild, salubrious climate, and is a favourite winter resort. Area, 370 acres. Pop. 22,000. The capital, Monaco (Pop. 2,000) is built on a picturesque promontory, and 1 m. NE. stands Monte Carlo (q.v.).

Monad, in the Leibnitzian philosophy a name for the simple constituents of which all substance is built up; material objects are assemblages of monads, spiritual entities are simple monads, and the supreme monad is God.

Monaghan, an inland county in the province of Ulster, Eire (Ireland); is undulating, with many small lakes and streams; grows flax and manufactures linen, and has limestone and slate quarries. The chief towns are Clones and Monaghan, the county-town (pop. 4,000), which has an active produce market. Area, 499 sq. m. Pop. 61,300.

Monarchy, the rule over a state or a pure autocrat or as an executive subject to any degree of constitutional or legal control. See also King.

Monash, **Sir John**, Australian general, of Jewish race; born in Melbourne; by profession a civil engineer; in World War, commanded a brigade in the Gallipoli; Lieutenant-General, 1918; later was in supreme command of the Australian troops in France. (1865-1931).

Monasticism, a mode of life in which persons of either sex live apart from the world in communities dedicated to prayer, contemplation and the development of the spiritual faculties; is found in many religions, but is most highly developed in Buddhism and Christianity. The Christian monastery developed from the communities of hermits which sprang up in Egypt in the 3rd and 4th Centuries, and in

the West. St. Benedict (c. 480-544) drew up a religious rule which was eventually followed by almost all Roman Catholic religious communities until the rise of the friars in the 13th Century.

The Benedictine monasteries were centres of culture and civilization in Europe in the "Dark Ages," and were largely responsible for handing on the legacy of the classical world to modern times. Among the principal offshoots of the Benedictines, or *Black Monks* (so called from the colour of their habit) were the Cistercians (*White Monks*) and Cluniacs. The mendicant orders of friars, Franciscans, Dominicans, Carmelites, etc., which sprang up in the 13th Century, and the later religious communities of modern times, including the Jesuits, are not strictly monastic, as their members move from place to place as ordered by their superiors; but the general basis of their life is similar.

The English monasteries were suppressed under Henry VIII., but in the 19th Century the monastic life was revived in the Anglican Church, and there are now various Anglican and Roman Catholic monasteries for both sexes in the British Isles. Buddhist monasteries exist in large numbers in all Eastern countries, and have many points of resemblance to the Christian establishments of the West.

Monastir, or **Bitollj**, town in Yugoslavia, at the foot of Mt. Peristeri in Macedonia. The Turkish army surrendered here to the Serbs in 1912. The Serbs surrendered it to the Germans in 1915, retaking it in 1916. Its manufactures include carpets and skins. Pop. 33,000.

Moncton, a city and port of New Brunswick, Canada, 90 m. NE. of St. John. It has an excellent harbour, a timber trade, and manufactures woollen and cotton goods; oil and natural gas are found near by. Pop. 20,700.

Mond, **Ludwig**, technical chemist and inventor, born in Cassel, in Germany; was a pupil of Kolbe and Bunsen; settled in England from 1862, and made important additions to chemical-industrial processes and products; with Sir John Brunner he started the alkali firm of Brunner, Mond and Co., afterwards merged in Imperial Chemicals, Ltd. (1839-1909).

Mond Gas, a mixture of nitrogen, hydrogen, carbon dioxide, and carbon monoxide, obtained by the action of air and steam on coal dust; it is used for gas engines (q.v.).

Monel Metal, one of the principal alloys of nickel, contains 65 per cent. of nickel, 32 per cent. of copper, with small amounts of iron, manganese, carbon, sulphur, and silicon. It is essentially a solid solution of copper in nickel; it has great tensile strength, is not seriously weakened even at 400°C., can be cold-worked without becoming brittle, is not appreciably corroded by the air, and withstands the action of sea-water, alkalis and ammonia. It is therefore widely employed in a great variety of industries.

Monet, **Claude**, French artist. After studying under Gleyre, he joined the Impressionist group; visited England in 1870, met Constable and Turner, and painted several pictures of London scenery. Among his better-known works are "Le Bassin aux Nymphéas" and the "Sauls Pleureur." His work is represented in the Tate Gallery. (1840-1926).

Money, any form of token, usually in agreement as a means of exchange. The earliest form of money seems to have been the cowrie shell, still so used among some primitive peoples; but beads, stones, wheat, livestock, and anything with known and realizable value may be, and has been, so used. Coined money,

generally of copper, silver and gold, came into use among the peoples of the Near East before the classical epoch; and paper notes have been used in the Far East, especially China, for at least 1,500 years. But no theory of money was worked out until modern times.

Nowadays a monetary system is largely dependent on the manipulation of credit. Since, with the World War, gold coinage has practically disappeared from circulation, money is very rarely of the kind which economists call *full-bodied money* (i.e., coins the nominal value of which is practically equal to the actual value of the metal of which they are composed). The major part of the money in common use (i.e., legal tender) is token money, whether metal or paper. In addition to common money, consisting of legal tender of this kind, and also subsidiary money (i.e., shillings and pence), another class of money is bank money, or cheques, the quantity of which is regulated by the bankers.

The modern monetary system entails the proper management of the different kinds of money in accordance with established customs and laws. In Great Britain, for all practical purposes, the Government may be considered to have a monopoly in the printing and issue of paper money, which is governed strictly by the amount of gold and first-class securities held by the Bank of England, subject to a limited free issue called the fiduciary issue. The value of money fluctuates, but the structure of modern life, depending as it does largely on credit, is upset unless a certain degree of stability is maintained.

Moneylender, defined by law as a person whose business is that of moneylending or who advertises or announces himself or holds himself out in any way as carrying on that business. Moneylenders must register their names and addresses, and act only from the registered address. By the Moneylenders Act of 1927, moneylenders must have a licence, may not canvass, or send information by post except on request, may not charge compound interest, or interest exceeding 48 per cent. per annum, nor may they make charges on loans.

Money Market, a general name for the sphere of operations of lenders and borrowers of short-term loans, centralized round the Bank of England. The chief lenders are the Joint Stock Banks, and certain great discount and financial houses; the chief borrowers, the British Government, overseas Governments, and brokers engaged in buying and selling bills of exchange.

Money Wort, a name given to two orders of plants: (1) order *Primulaceae*, creeping Jenny or Loosestrife (*Lythrum salicaria*); has creeping stem, heart-shaped leaves, short one-flowered stalks, flowers bright yellow; (2) Cornish Moneywort, Pennywort or Pennywort (*Silene acaulis*), with small kidney-shaped leaves and pink flowers.

Mongolia, a large area of Central Asia of indefinite boundaries and uncertain political allegiance, S. of Siberia and NW. of China. It is mainly under Russian influence. Outer Mongolia (pop. about 600,000) being ruled by a Soviet government. Inner Mongolia is theoretically under Chinese control, but largely in fact under Japanese influence. The people of Mongolia are mainly Lamanist Buddhists. The chief town is Urga, with pop. about 100,000.

Mongols, a nomad people of the Central Asiatic steppes who first rose into prominence under their ruler Genghis Khan in the 12th Century; he commenced a career of conquest which made him master of all Central Asia; his sons divided his empire, and pursued his conquests. A Mongol emperor seized the throne of China in 1234, and

from this branch sprang the great Kublai Khan, whose house ruled an immense territory, 1291-1368. Another section pushed westwards as far as Moravia and Hungary, taking Budapest in 1241. A third but later movement was that of Baber, who conquered India, and founded the Great Mogul line, 1519. The surviving Mongoos, in Sinkiang and the lands bordering on Tibet, are Buddhists of the Lamaist school, and still largely tent-dwelling nomads.

Mongoose, a genus (*Herpestes*) of carnivorous animals native to India and Africa (especially Egypt). They are grey in colour, about 18 in. long and have a long tail, narrow head, and body like a weasel's. The most important species is the Egyptian Mongoose (*Herpestes ichneumon*) which preys on rats and snakes, eats eggs of crocodiles and birds, and is frequently domesticated. See also *Ichneumon*.



EGYPTIAN MONGOOSE

Monica, St., the mother of St. Augustine, as a result of whose prayers he became a Christian; patron saint of mothers. Festival, May 4.

Monism, the name given to the principles of any system of philosophy which resolves the phenomenal manifold of the universe into a real unity, in opposition to dualism (*q.v.*).

Monitor, a genus of amphibious (though usually in actual fact terrestrial), carnivorous lizards found in Africa, Australia and Asia, of which the several species include the Komodo of the Dutch East Indies, growing up to 7 and 8 ft. long; the Banded or Water Monitor (Bengal and Malay); and the Nile Monitor, supposed to give warning of the approach of crocodiles.



KOMODO MONITOR

Monitor Ship, a shallow, heavy-armed ironclad used for coastal bombardment and similar operations. Their guns are carried in revolving turrets on an open deck. The name is derived from a ship built for Federal use in the American Civil War. They played a considerable part in the World War, and the British Navy at present (1938) has three such ships in commission.

Monk, George, first Duke of Albemarle, British general and admiral, born in Devonshire; spent his youth in the Dutch wars, and returned to England to side with Charles I. against the Parliament, was captured in 1644, and spent two years in the Tower. Changing sides he fought at Dunbar in 1650, and was entrusted with the command of operations in Scotland afterwards. In 1653 he twice beat Van Tromp at sea. From 1654 till 1660 he was Governor of Scotland. After Cromwell's death he negotiated with Charles II., and at last brought him to England and set him on the throne; was Governor of London in the plague year, and was again admiral in the Dutch wars of 1666. (1608-1670).

Monkey, general name for the mammalian class Primates, other than man, the anthropoid apes, and lemurs. They are divided into two main families, distinguished by the formation of the nose, and named Cercopitheciidae and Cebidae. In the Cercopitheciidae, inhabitants of the warmer parts of Asia and Africa, the nostrils look downward and are set close together;

the head is oblong; and the anterior limbs which are longer than the posterior, have distinct thumbs; the tail is never prehensile, and in some species does not exist. The Cebidae, inhabitants of the New World, are characterized by long prehensile tails; the head is round and nostrils wide, separated by a broad cartilaginous septum, with the apertures directed outwards; the anterior limbs have no distinct thumbs.

Monkey Puzzle, or **Chile Pine** (*Araucaria imbricata*), an evergreen pine tree with sharp pointed leaves, native to Chile, widely grown in England as an ornamental garden tree, looking best in isolation.

Monkshood. See *Aconite*.

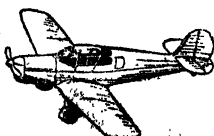
Monmouth, James, Duke of, illegitimate son of Charles II of Great Britain, born in Rotterdam; was admitted to Court after the Restoration, and received his title in 1663. His manners and his Protestantism brought him popular favour, and plots were formed to secure the succession for him. Forced to fly to Holland in 1683, he waited till his father's death, then planned a rebellion and landed in Dorsetshire, 1685, was soon overthrown at Sedgemoor, taken prisoner, and executed. (1649-1685).

Monmouthshire, county of the West of England, but for administrative purposes considered as part of Wales, lying N. of the Severn estuary, between Glamorgan and Gloucestershire; is low and flat in the S., but otherwise hilly, and is traversed by the Usk R.; more than half the surface is under permanent pasture; the Wye and Usk valleys are renowned for beautiful scenery; there are extensive coal and iron mines in the W.; the largest town is Newport, the county town, Monmouth (pop. 4,900). Area of county, 463 sq. m. Pop. 435,000.

Monophysites, a body of Christian heretics of the 5th Century, who maintained that the divine and human natures in Christ were united in one, so that He was neither wholly divine nor wholly human, but in part both; the Abyssinian, Coptic, Jacobite and Armenian churches of the present day are Monophysite in belief.

Monoplane,

an aeroplane with only one main supporting wing or plane surface, as opposed to a biplane or triplane, with two or three respectively. See *Aviation*.



MONOPLANE

Monopoly,

control of the supply of a commodity resulting from an agreement whereby the interests of buyers or sellers are unified; in either case it involves price control, subject to the discretion of either the buyers or sellers acting in concert. Pure monopoly is the direct antithesis of pure competition, but the consumers' power of substitution generally prevents a pure sellers' monopoly. The granting of monopolies was a feature of economic life in the later Middle Ages, but in more recent industrial developments, such as railways and oil, monopolistic tendencies have assumed larger proportions, legislation being necessary to protect the public interest.

Monothelism, belief in the existence of only one God, even though, as maintained by orthodox Christians, the Divine Essence is manifested in more than one person; Judaism, Islam and Christianity are the chief monotheistic religions.

Monotremata, or egg-laying mammals, the lowest order of mammals, consisting of two families only, the Echidnidae (the spiny ant-eaters) and the Ornithorhynchidae (Platypus), which hatch their young from eggs and in which the females suckle their young through bare patches on the skin, being devoid of mammae. They are confined to Australia and the neighbouring islands.

Monotype, a protected trade name for type-setting, by means of composing and type-casting machines worked by compressed air. Manipulation of the keyboard on the composing machine causes perforations to be punched in a roll of paper, each pair representing a letter. The paper is then unrolled on the caster. Compressed air passing through the perforations so adjusts the mechanism that each letter is impressed from the matrix on a new lead body, formed in a mould. There is also a device for justifying the line, i.e., equalising the spaces so that each line is the same length. About 150 spaces and letters may be cast per minute. See also **Typography**.

Monreale, a city of Sicily, 5 m. from Palermo. The local products include wines, oil, oranges, and lemons. Nearby occurred the massacre of the French on Easter Sunday, 1282, known as the Sicilian Vespers. Pop. 16,500.

Monroe, James, fifth President of the U.S.A., born in Virginia, of Scottish descent; left college to join Washington's army; entered Congress in 1783. He assisted in framing the Constitution, and sat in the Senate 1790-1794. His diplomatic career in France was marked by the purchase of Louisiana from that country in 1803. He was governor of Virginia thrice over, and Secretary of State till 1817; then followed two terms of the Presidency, which saw Florida acquired from Spain, 1819, the delimitation of the slave limit by the Missouri compromise, the recognition of the South American Republics, and the statement of the "Monroe doctrine" (q.v.). (1758-1831.)

Monroe Doctrine, the principle by President James Monroe (q.v.), that no extension of the influence or political systems of Europe in the affairs of the American continent can be allowed by the United States.

Monrovia, capital of the Republic of Liberia, on the African coast, at the mouth of the St. Paul R. Pop. 10,000.

Mons, a town in the province of Hainault, Belgium, on the R. Trouille, an important colliery centre. The first and last battles of the World War were fought here. On Aug. 23, 1914, the British Expeditionary Force met superior German forces and were compelled to retreat; the town was recaptured by the Canadians on Nov. 11, 1918, a few hours before the "Cease Fire." Pop. 28,600.

Monsoon, originally denoted a periodical wind in the Indian Ocean, which blows from SW. from April to Oct., and from NE. from Oct. to April; now denotes any wind regularly recurring with the seasons.

Monstrance, an article of altar furniture used in Roman Catholic (and some Anglican) churches, in which the reserved Host is exposed for veneration or carried in procession. It is made of gilded metal.

Montagu, Edwin Samuel, British statesman; entered Parliament as a Liberal in 1906, held minor government offices, and from 1917 to 1922 was Secretary for India, in which capacity he visited India and drew up a scheme for self-government embodied in the Montagu-Chelmsford report. (1879-1924).

Montagu, Lady Mary Wortley, English writer and traveller; a friend of Pope; best remembered for her *Letters*, written while travelling in the East, whence she introduced into England inoculation for smallpox (q.v.). (1689-1762).

Montaigne,

Michel Eyquem de, French author and moralist, born in the Chateau of Montaigne, Périgord; a lawyer by profession, lived mainly at Bordeaux. His fame rests on his *Essays*, in which he records his observations of mankind: a translation of these by Florio is the one book we know for certain to have been in the library of Shakespeare. (1533-1592.)



MICHEL
DE MONTAIGNE

Montalembert, Charles, Comte de, a French politician, born in London, son of a French emigrant; in French politics from 1835 to 1857, advocating educational reforms; author of several works on English, French and contemporary history, and of the *Monks of the West*, his chief work. His other works include a *Life of St. Elizabeth of Hungary*. (1810-1870).

Montana, NW. State of the U.S.A., on the Canadian border between Idaho and the Dakotas; has a mild climate, and a soil which, with irrigation, produces fine crops of grain and vegetables. Cattle-raising is profitable, and much wool is produced, but the chief industry is mining, in the Rocky Mts., which occupy a fifth of the State, especially for copper, zinc, coal and precious metals. The Missouri and the Columbia Rs. rise in Montana, and the Yellowstone traverses the whole State. The State was admitted to the Union in 1889, with Helena as capital. Area, 147,000 sq. m. Pop. 538,000.

Montanism, a Christian heresy which arose in the 2nd Century; derived its name from a Phrygian, Montanus, who insisted on the permanency of the spiritual gifts vouchsafed to the primitive Church, and a return to the severe discipline prevailing in it.

Montauban, town in dept. Tarn-et-Garonne, France; formerly a Huguenot stronghold; has a cathedral, and manufactures wool and silk. Pop. 28,900.

Mont Blanc, in the Graian Alps, in France, on the Italian frontier, the highest mountain in Europe (15,782 ft.), the upper half under perpetual snow; has 56 magnificent glaciers, including the Mer-de-Glace. It was first climbed by Balmat and Paccard in 1786, and since then has been many times ascended.

Montcalm de Saint Véran,

Louis Joseph, Marquis de, French general, born near Nîmes; after service on the continent, was sent in 1756 to command the forces in Quebec against the English. The capture of Fort Oswego and William Henry and the defence of Ticonderoga were followed by the loss of Louisburg and Fort Duquesne and the retreat on Quebec, where, surprised by Wolfe in 1759, he was totally defeated, and Canada lost to France; both generals fell, mortally wounded. (1712-1759).

Mont Cenis, an Alpine peak (12,000 ft.) on the Franco-Italian frontier and the adjacent pass, over which a road was constructed (1802-1810), and near which a railway tunnel was pierced (1857-1870) at a cost of £3,000,000.

Montebello, a village of Italy in the province of Pavia, where in 1800 the Austrians were defeated by the French under Bonaparte. Pop. c. 4,000.

Monte Carlo, town in Monaco, 1 m. N.E. of the capital; visited by 400,000 persons annually, largely for the sake of its Casino and gaming rooms. The Casino is held by a company, and stands on ground leased from the prince. Pop. 9,500.

Montenegro, a former Balkan State, less than half the size of Wales, lying in a wild, mountainous region between Herzegovina and Albania, and touching the Adriatic Sea with its SW. corner; joined Serbia in the World War of 1914, decided to enter the Kingdom of Yugoslavia, its king, Nicholas, being deposed. It had defended its independence against Turkey almost continuously since 1389.

Monterey, (1) a seaside resort in California, U.S.A., on Monterey Bay, 95 m. SE. of San Francisco. It was the capital of California when the State was a Mexican province. Pop. 9,140. (2) A city of Mexico and capital of the state of Nuevo Leon. It has smelting and brewing industries, and is a winter resort. Pop. 137,400.

Montespan, *Françoise, Marquise de*, a woman noted for her wit and beauty; bore the king seven children; was supplanted by Madame de Maintenon (*q.v.*); passed her last days in religious retirement. (1641-1707).

Montesquieu, *Charles, Baron de*, French philosopher, born in the Château La Brède, near Bordeaux; author of two still famous works, *Lettres Persanes* (1721) and *L'Esprit des Loix* (1748). (1689-1755).

Montessori, *Maria*, Italian educationist, born at Chiaravalle, near Ancona; the first woman to graduate (1894) as M.D. at University of Rome; Directress, 1898-1900, of the Scuola Ortofrenica, for feeble-minded children; here she first worked out her famous *Montessori* method of training young children, which has been successfully applied in schools in England. (1870-).

Monteverdi, *Claudio Giovanni Antonio*, Italian composer, born at Cremona; went to Venice in 1613, and was associated with the opera-house there from its opening, 1637. He was one of the founders of modern musical method. Operas: *Orfeo*, 1607; *Arianna*, 1608; *Il Ritorno d'Ulisse*, 1641; *Pompea*, 1642. (1567-1643).

Montevideo, capital and largest city of Uruguay, on the N. shore of the Río de la Plata, 130 m. E. of Buenos Aires; has an important harbour, and trades in wheat, wool and livestock. The main industry is beef-salting. There is a cathedral, a university, and a considerable British community. Pop. 683,000.

Montez, *Lola*, an adventuress of Spanish real name being Maria Gilbert; contracted a number of marriages, which were broken off one after another; took to the stage; attracted the attention of King Louis of Bavaria, who made her a countess; left Europe on political trouble arising, and settled in United States, where she took to lecturing, and ended by trying to reclaim fallen women, and died at Long Island. (1818-1881).

Montezuma II., the last of the Mexican emperors; ascended the throne in 1502; was imprisoned by Cortez on the latter's entry into Mexico city, but died the following year. (1466-1520).

Montfort, *Simon de*, son of a French count; came to England in 1230, where he inherited from his grandmother the earldom of Leicester; attached to

Henry III. and, married to the king's sister, he passed over in 1253 to the side of the barons, becoming a steadfast champion of popular liberties. After the King's breach of the Provisions of Oxford, he took up arms against the King's forces in 1263; defeated the king at Lewes, and taking him and his son prisoner, governed England for a year (1264-1265); he summoned a parliament, but the barons began to distrust him; Prince Edward, having escaped from captivity, joined them, and overthrew Simon at Evesham, where he was slain. (c. 1206-1265).

Montgolfier Brothers, French inventors of the balloon (see *Aeronautics*), who made their first ascent in Paris in 1783, *Joseph* (1740-1810), and *Etienne* (1745-1799).

Montgomery, capital of the State of Alabama, U.S.A.; an important centre of the cotton trade, with a manufacture of fertilisers. Pop. 66,000.

Montgomeryshire, a N. Wales, surrounded by Merioneth, Cardigan, Radnor, Salop, and Denbigh; is chiefly a stretch of mountain pasture land, which attains to 2,500 ft. at Plynlimmon, and in which the Severn rises; but in the E. are well wooded and fertile valleys. There are lead and zinc mines and slate and limestone quarries. There is some flannel manufacture at Newtown. Area, 797 sq. m. Pop. 48,462. The county town is *Montgomery*. Pop. 900. The largest, *Welshpool*. Pop. 5,600.

Month, a division of the year either the moon (the lunar month, of which there are 13 per year) or into twelve roughly equal parts. In the modern calendar each month has 31 days, excepting April, June, Sept. and Nov., each with 30, and Feb., with 28 (or in leap years 29). The lunar month is not constant in length; its average is 29.53 days.

Montmartre, a northern district of Paris, situated on a hill on the summit of which stands the church of the Sacré Cœur. The district is largely resorted to by foreign visitors to the city by reason of its many places of entertainment.

Montpellier, town in dept. Hérault, France, on the Lez, 30 m. SW. of Nîmes; has a cathedral and university, the latter famous in the 16th Century; it manufactures wine, confectionery, and chemicals. Pop. 90,800.

Montreal, largest city of Canada, in Quebec province, on an island in the St. Lawrence, at the confluence of the Ottawa R., 110 m. above Quebec; an important railway centre, and the world's largest inland port; ships grain, and has many manufactures, including foodstuffs, boots, shoes, clothing, machinery, paper and hardware; the population is mainly French-speaking; there is a cathedral, two universities (McGill, Protestant and Montreal, Catholic), and many other public institutions. Founded in 1642 by the French on the site of the Indian town of Hochelaga, first visited by Cartier, Montreal passed to Britain in 1760; in 1776 it was occupied for a short time by the revolting American colonies, and was for a while, until 1847, the capital of Canada. Pop. 819,000. (*Greater Montreal*, 1,000,000).

Montreux, district on Lake Geneva, Switzerland, at the foot of the Alps, 11 m. from Vevey. There are mineral springs, and it is a winter sports centre. The Dardanelles remilitarization conference was held here in 1936. Pop. 20,000.

Montrose, burgh and seaport of Angus, Scotland, 35 m. S. of Aberdeen; has important fisheries, carries on timber trade with Baltic and Canadian ports, and spins flax, makes ropes and canvas. Pop. 10,200.

Montrose, James Graham, first Marquis of, born in Old Montrose, and educated at St. Andrews; in 1637 he joined the Covenanters, and took up arms in their cause. Suspected of treachery, he was imprisoned for a year, 1641-1642, in Edinburgh Castle, whereupon he joined the side of the king. In 1644-1645 he defeated the Covenanters near Aberdeen, at Inverlochy and Kilsyth; but routed by Leslie at Philiphaugh he lost the royal confidence, and next year withdrew to Norway. An unsuccessful invasion in the Stuart cause in 1650 ended in his defeat at Invercarraon, capture, and execution. (1612-1650).

Mont St. Michel, islet off the Normandy coast, France, remarkable for the church of its ancient monastery, perched on top of the high rock, and one of the most remarkable extant specimens of medieval architecture.

Montserrat, island of the Leeward Indies, discovered by Columbus in 1493. The English colonised it in 1632 and the French took it in 1664, to return it to England in 1668. In 1782 it capitulated to the French, and became British again in 1784. Sugar and limes are produced. Area, 32 sq. m. Pop. 12,000.

Moody, Dwight Lyman, American evangelist, born at Northfield, Mass.; settled in Chicago, where he began his career as an evangelist, associated with Ira D. Sankey; visited Great Britain in 1873 and 1883 with considerable results. He assisted Sankey in the compilation of *Sacred Songs and Solos*. (1837-1899.)

Moody, Helen Wills, American lawn tennis player, born at Berkeley, California, winner of the Women's U.S.A. Singles Championship annually from 1923 to 1931 (except in 1926 and 1930), and co-winner of the Doubles Championship in 1924, 1925, 1928, and of the Mixed Doubles Championship in 1924 and 1928; winner of the Singles Championship at Wimbledon on seven occasions, the last in 1938. (1906-).

Moon, a satellite which revolves round a planet, especially the sole satellite possessed by the earth. Mercury and Venus have no moon, Mars has 2, Jupiter 11, Saturn 10, Uranus 4 and Neptune 1. The terrestrial moon is distant about 240,000 m. from the earth. It is a dead world, with a diameter of 2,160 m., and a surface pitted with craters, often of immense size; thus the crater Tycho is over 50 m. in diameter and 3 m. in depth. Whether these craters were formed by volcanic action in former ages is not definitely known; they may have been produced by the impact of meteors.

Since the moon revolves on its axis in the same time as that which it takes to revolve around the earth, it always presents the same face to us; but there is no reason to suppose that the hidden face is very different from that which we can see. The moon is devoid of air and water, and since the lunar day is roughly 4 weeks, there must be a very great difference between the temperature of the surface during the fortnight of illumination and that during the fortnight of darkness.

Another consequence of the lack of any atmosphere is that the sky, even during the day, must appear completely black except for the brilliant disc of the sun and the bright points of light of the stars, the latter being as easily visible by day as by night, owing to the fact that the solar light is not dispersed over the whole sky as it is upon the earth. When the moon enters the shadow of the earth, a lunar eclipse is caused, while when the moon passes between the sun and the earth a solar eclipse takes place. The moon is the chief agent in the formation of our tides, the waters being drawn towards it by gravitation.

Moon, Mountains of the, a range of mountains supposed by Ptolemy and early geographers to stretch across Africa from Abyssinia to Guinea, now variously identified as Mount Kenya, Kilima-Njaro, Ruwenzori, &c.

Moonstone, a variety of felspar, of an opaline appearance, its transparency being clouded by pearly reflections. It is often set as a gem.

Moore, George, Anglo-Irish author; after studying art in Paris, he produced his first volume of verse at the age of 22; followed by novels, plays, and books of memoirs, among them *Esther Waters*, *Hail and Farewell*, and *The Brook Kerith*. He was a prominent figure in the revival of Irish literature at the beginning of this century. (1853-1933).

Moore, Sir John, British general, born in Glasgow; served in Corsica, the West Indies, Ireland, and elsewhere, but is best remembered for his famous expedition to Spain in 1808, against the French, in which he was slain at Coruña. (1761-1809).

Moore, Thomas, Irish poet, born in Dublin, studied at Trinity College; went to London with a translation of *Anacreon*, which gained him favour and a valuable appointment in the Bermudas in 1803; began his *Irish Melodies* in 1807; in 1817 appeared *Lulla Rookh*, a collection of Oriental tales, and in 1818 a satiric piece, *The Fudge Family*, and he published a *Life of Byron* in 1830. (1779-1852).

Moorhen, an aquatic bird (*Gallinula chloropus*) found on rivers and ponds in the banks of which it nests. It is a diver, and can swim under water; not web-footed; colour, black or near-black with white head.



Moors, a general term for North African peoples, whether of Arab or Berber stock; Mohammedans since the Arab conquest of 647. Moorish peoples seized and settled in Spain early in the 8th Century, and introducing a civilisation further advanced than that in Europe generally with respect to science, art, and industry alike, maintained a strong rule till the 11th Century; after which the Christians gradually recovered the Peninsula in a series of wars, ending with the fall of Granada, the last Moorish stronghold, in 1492, the last Moorish inhabitants being banished from the country in 1609. In earlier English literature the word Moor was sometimes loosely used for any African or dark-skinned person of whatever race, especially if a Mohammedan by religion.

Moose, a large deer (*Alces machlis*) found in N. America, resembling the European elk. The neck is short, thick and maned, muzzle comparatively long, ears broad. The males are distinguished by spreading palmate antlers, terminating in short branches.

Moose Jaw, a city of Saskatchewan, Canada, on the Moose-jaw river. There are flour mills, steel works, and an airport. Pop. 19,300.

Moradabad, or *Muradabad*, a town in British India, about 380 m. from Allahabad. Products include metal goods, rice and cotton. Pop. 110,600.

Moraine, the debris deposited by a glacier, consisting of the fragments of rock which it has eroded; lateral moraines are those found at the edges of the glacier, terminal those deposited at the end, and medial those formed from the lateral moraines when two glaciers unite.

Morality (Play), a didactic drama, later in time than the miracle plays and mysteries, in which the places of saints and Biblical personages were taken by characters representing different virtues and vices, and the story was of an allegorical nature. Becoming popular about the end of the 14th Century, they were the immediate precursors of the English secular drama.

Moratorium, an agreement between creditors and debtors to postpone the payment of a debt; the term is usually applied to agreements regarding the debts of states or large corporations, as in the case of the moratorium granted to Germany in 1931 by her creditors for reparations payments.

Moravia, a territory now part of Czechoslovakia, lying between the Moravian and the Carpathian Mts., with Silesia on the N., Hungary on the E., Lower Austria on the S., and Bohemia on the W.; is mountainous, with lofty plains in the S., and is watered by the March, a tributary of the Danube; the valleys and plains are fertile; oats, rye, beetroot, flax and hemp are grown; cattle and poultry rearing and bee-keeping occupy the peasantry; sugar, textiles, and tobacco are the chief manufactures; there are coal and iron mines, graphite and meerschau are found; the capital is Brünn (Brno), with woollen and leather industries. Associated with Bohemia in 1029, Moravia passed with that country to Austria in 1526, and became part of Czechoslovakia on its formation after the World War in 1918; the inhabitants are two-thirds Slavs and one-third German, and are mostly Roman Catholic. Area, 86,000 sq. m. Pop. c. 3,000,000.

Moravians, **Herrnhuters**, or **United Brethren**, a Protestant Christian sect which traces itself back to a Bohemian community of the 15th Century, contemporary with Huss (q.v.). They have been foremost in mission work in many countries, and are represented in England to-day by about 3,500 members. Their position is strongly evangelical.

Moray (formerly Elgin), a northern Scottish county, fronting the Moray Firth and lying between Banff and Nairn, mountainous in the S. but flat to the N., watered by the Spey, Lossie, and Findhorn. Agriculture, stone-quarrying, distilling, and fishing are the staple industries; has some imposing ruins and interesting antiquities. Area, 477 sq. m. Pop. 40,800.

Moray, **James Stuart, Earl of**, illegitimate son of James V. of Scotland, and half-brother of Mary, Queen of Scots; was from 1556 the leader of the Scottish reformation party, and became Mary's chief adviser in 1561. On her marriage with Darnley he made an unsuccessful attempt at rebellion, and had to escape to England, 1565, and later to France in 1567. He was almost immediately recalled by the nobles and appointed regent during Mary's imprisonment; next year he defeated at Langside the forces which had rallied round her, but was shot when riding through Linlithgow. (1531-1570).

Morbihan, a department of France, in Brittany, bordering on the Bay of Biscay; its area is 2,736 sq. m. The district is hilly in the N.; much of the remainder is heath, on which horses, cattle and sheep are reared. The crops include grain, hemp, flax and apples. The capital is Vannes; the largest town Lorient. Pop. 542,250.

Mordant, one of various substances, e.g., alum, copperas, mixed into colour dyes, which in calico printing and similar processes serve to fix the colour to the fibrous material.

Mordecai, a Persian Jew of the 5th Century B.C., whose behaviour provoked Haman, the favourite of King

Ahasuerus, to plot the destruction of the Jews; but Mordecai gained Ahasuerus' favour by revealing a plot against him, and secured Haman's execution on the gallows the latter had prepared for Mordecai. The story is told in the Biblical book of Esther, and is commemorated by the annual Jewish feast of Purim.

More, **Hannah**, English authoress, born near Bristol; wrote dramas, a novel entitled *Cælebs in Search of a Wife*, and a tract, *The Shepherd of Salisbury Plain*. (1745-1833).

More, **Sir Thomas**, Chancellor of England, born in London; was the lifelong friend of Erasmus, and the author of *Utopia*, an imaginary commonwealth; succeeded Wolsey as Chancellor, but resigned because he could not sanction the king's action in the matter of the divorce, and was committed to the Tower for refusing to take the oath of supremacy. Thence after 12 months he was brought to trial and sentenced to be beheaded; one of the wisest and best of men, he was canonised by the Catholic Church in 1935. (1478-1535).



SIR THOMAS MORE

Morea, is the modern name of the ancient Peloponnesus, the peninsula, larger than Wales, which constitutes the southern half of Greece, and is joined to the mainland by the Isthmus of Corinth, less than 4 m. broad. Area, 8,514 sq. m. Pop. 1,045,000.

Moreau, **Jean Victor**, French general, born in Morlaix; served with distinction under the Republic and the Empire; was suspected of plotting against the latter with George Cadoudal, and banished; went to America, but, returning to Europe, joined the ranks of the Russians against his country, and was mortally wounded by a cannon ball at Dresden. (1761-1813).

Morecambe, port and holiday resort on Morecambe Bay. There are ship-breaking yards and fisheries. Pop. (with Heysham) 24,600.

Moresnet, a small territory on the Belgian after the World War in compensation for the destruction of her forests during hostilities.

Morgan, **Charles Langbridge**, English novelist and critic; served in the Navy from 1907; was interned in Holland from 1914 to 1918; in 1926 became dramatic critic to *The Times*. His remarkable novels *The Fountain* and *Portrait in a Mirror*, won him fame. (1894-).

Morgan, **Sir Henry**, British buccaneer and colonial governor; born in Glamorgan; a leader among the buccaneers of the West Indies, he ravaged Cuba, the Central American mainland, sacking Panama, 1671; was knighted by Charles II. and made lieutenant-governor of Jamaica. (1635-1688).

Morgan, **John Pierpont**, American financier. Wealthy by birth, he took early to finance and came to London as agent for an American company; he founded the firm named after him, carried through large industrial deals, including the establishment of the U.S. Steel Corporation and the Atlantic Shipping Trust, and was a patron of art and learning. (1837-1913).

Morganatic Marriage, a marriage between a male member of a reigning house and a woman of inferior social rank, which, though

legitimate, confers no right of succession on the children of the marriage, and no special social status on the wife. Such marriages were contracted on occasion by the princes of the former German Empire.

Morland, **George**, British painter, born in country life and animal subjects, of which his "Inside of a Stable" is in the National Gallery, while others, such as "The Gypsies," are popular as engravings. (1763-1804).

Morley, **John**, born in the W. Riding of Yorkshire, England, 3 m. N. from Batley. The manufacture of woollen goods is carried on. Pop. 39,800.

Morley, **Edward Williams**, American chemist; professor at the Western University, U.S.A.; carried out accurate determinations of the atomic weights of hydrogen and oxygen, and was associated with the Michelson-Morley experiment (q.v.). (1838-1923).

Morley, **Henry**, English man of letters; born in London; assisted Dickens on *Household Words* and *All the Year Round*; edited the *Examiner*; wrote several biographies, *English Writers* (1861), *A First Sketch of English Literature* (1873), edited Morley's Universal Library. (1822-1894).

Morley, **John Derry, 1st Viscount**, British author and politician. Born in Blackburn, Lancs., his early career was spent in journalism and authorship, writing lives of Burke, Voltaire, Rousseau, Diderot, and Cobden, and the editing of the *English Men of Letters* series. As an editor he exerted considerable influence on politics; in 1883 he entered Parliament, became Secretary for Ireland, and was a member of all the Liberal Cabinets till 1914, when, disagreeing with the majority of the Cabinet regarding participation in the World War, he retired. He was raised to the peerage in 1908. (1838-1923).

Mormonism, a religious system initiated about 1830 by Joseph Smith, an American "prophet," who claimed to have received revelations from heaven as a result of which he discovered the *Book of Mormon*, a set of engraved metal plates buried by an angel in a hill. This record he claimed to have translated with divine aid, and on the basis of its content gained numerous adherents and founded "the Church of Jesus Christ of Latter Day Saints." Eventually the body settled in what later became the State of Utah, forsook the polygamy which was a part of their original creed, and became a flourishing community, active in missionary work and now numbering some 700,000 members, with another 120,000 adherents of a "Reorganised" Church which seceded from the parent body in 1860. They have several places of worship in Great Britain. They maintain an elaborate hierarchy, forbid the use of alcohol, tobacco and tea, are financed by a system of tithes, and claim to represent the restored tradition of early Christianity.

Morocco, an empire under French, Spanish and international protection in the NW. corner of Africa, its coastline stretching from Algeria to Cape Nun, and its inland confines bordering on the French hinterlands. Two-thirds of the country is desert; much of the remainder is poor pasture land; the Atlas Mountains stretch from SW. to N.E., but there are some expanses of level, fertile country. On the seaboard the climate is delightful, with abundance of the rain in the season; among mountain extremes prevail; S. of the Atlas it is hot and almost rainless. The mineral wealth is great, and phosphates, iron and lead are worked; the exports are cereals, phosphates, fish and wool; the chief industries are the making of leather, "Fes" caps, carpets, and the breeding of horses; the religion is Mohammedanism; telegraph,

telephone, and postal service are in European hands.

The country was taken from the Romans by the Arabs in the 7th Century, and has ever since been in their hands, but Berbers, Spaniards, Moors, Jews, and negroes also go to make up the population. Throughout this century there has been constant friction between France and Spain and the tribes struggling for independence under various leaders, of whom Abdel-Krim (q.v.) proved the most successful. The French zone (area 200,000 sq. m.; pop. 6,250,000) covers all the country except the area north of the R. Moulouya, which is the Spanish zone (area, 13,130 sq. m.; pop. 800,000), and the international zone around Tangier (area, 225 sq. m.; pop. 60,000). The chief towns are Fes, in the N., a depot for caravans from the interior; Morocco, in the S., near the Tensift R., 240 m. SW. of Fes; and Casablanca, capital of the French zone.

Morocco, a fine-grained leather of the Arab, of skin of a goat or sheep, first prepared in Morocco; it is used for book-binding and the manufacture of slippers and fancy goods.

Morpeth, municipal borough and market town of Northumberland, England. There are remains of a medieval castle. Industries include brewing and malting and tanning and, in the neighbourhood, coal mining. Pop. 8,800.

Morpheus, in Greek mythology, the god of dreams, the son of Night and Sleep.

Morphia, or **Morphine**, an alkaloid prepared from opium, of which it is the active principle. Morphine hydrochloride is used in medicine as an anodyne, being of value in relieving pain and inducing sleep. It may be drunk in solution, or injected hypodermically, or as a suppository to relieve pulvic pain. Addiction to morphia as a drug results in general deterioration of the system.

Morphology, the branch of biology which deals with the structure of plants and animals.

Morris, **William**, poet, art-worker, and socialist, born in Walthamstow, near London, son and heir of a wealthy merchant; studied at Oxford, where he became the lifelong friend of Burne-Jones. He devoted his working hours to decorative art, in particular designing wall-papers; produced in 1858 *The Defence of Guenevere and Other Poems*, in 1867 *The Life and Death of Jason*, and from 1868 to 1870 his masterpieces, *The Earthly Paradise*. He rendered several Norse sagas into English; and was responsible for a great advance in the standard of English printing by his "Kelmscott Press," founded 1888. He was also in later life a pronounced socialist. (1834-1896).

Morris-Dance, a rustic merry-making, common in England after 1350 and recently revived as a "folk dance"; the chief characters, Maid Marian, Robin Hood, the hobby-horse, and the fool, execute fantastic movements and jingle bells fastened to their feet and dress. In origin it was a Moorish dance.

Morrison, **Herbert Stanley**, British politician and Labour leader, began life as an errand-boy; was, by turns, shop-assistant, telephone operator, and deputy manager of a newspaper's circulation department. Mayor of Hackney, 1920-1921. Entered London County Council as a member for E. Woolwich, 1922; so remained until, having become leader of the Council's Labour Party, he was made alderman, 1931. Leader of the Council since 1934. M.P. for S. Hackney, 1923-1924; 1928-1931; and from 1935. Minister of Transport, 1929-1931. Chairman, National Labour Party, 1928-1929. (1888-)

Morse, Samuel Finley Breese, American inventor, born in Charlestown, Massachusetts; he gained some distinction as a sculptor, and in 1835 was appointed professor of Design in New York; electrical studies were his hobby. Between 1832 and 1837 he worked out the idea of an electric telegraph — simultaneously conceived by Wheatstone in England — and in 1843 Congress granted funds for an experimental line between Washington and Baltimore. The "Morse code" used for telegraphic work and signalling is named after him. (1791-1872.)

Morse Code, the alphabetic code devised by Samuel Morse (q.v.) for the telegraphic system invented by him. The code is a combination of dots and dashes, a dash being three times as long as a dot. In telegraphy the dots or dashes are represented by electrical impulses of different duration.

Mortar, lime or cement mixed with sand and water, used in masonry to provide, primarily, a soft bed on which a stone mass can rest with evenly distributed weight; afterwards it hardens and acts as a binding agent. It also binds together walls consisting of small materials so that they form a solid mass. Cement mortar, containing both lime and cement, possesses greater resistance to frost and damp.

Mortar, Trench, a piece of ordnance capable of discharging shells at a high angle of elevation so that they fall almost vertically. They are often shorter than ordinary cannons, early mortars having a mouthpiece as wide as the length of the barrel.



TRENCH
MORTAR

Mortgage, a conveyance of property, usually land but sometimes chattels, as a security for debt, on condition that if the debt be discharged at the time and in the manner specified, the pledge shall be returned. Mortgages are classed as "legal," by which the property concerned is conveyed to the mortgagee, though the borrower or mortgagor usually remains in actual possession; or "equitable," by which a charge is created on the property concerned but the legal estate remains with the borrower. The same property may be subject to several mortgages, all those subsequent to the first being necessarily equitable mortgages, assuming the legal estate to have been conveyed by the first mortgage. The interest of the mortgagor is called the "equity of redemption." Formerly, when the mortgagee, after giving notice to the mortgagor to redeem the mortgage and repay the loan, foreclosed on the mortgagor's default, and sold the mortgaged property, the whole of the proceeds went to the mortgagee; but it has now long been the law that the mortgagor must be paid the residue of the proceeds after satisfaction of the loan plus interest. Recent legislation has also imposed various restrictions on the rights of mortgagees to enter into possession, or increase the rate of interest on mortgages. Building societies and insurance companies are now large holders of mortgages given by house purchasers, the mortgage being a mode of purchase by instalments of the price.

Mortmain ("dead hand"), a term used of property that has been bequeathed or granted to a corporate body, and was thus by feudal custom not subject to charges on transfer or inheritance. Various enactments in the Middle Ages restricted the right of granting or holding land "in mortmain," but under modern conditions these have largely been modified or have become obsolete.

Morton, James Douglas, Earl of, regent of Scotland; joined the Reforming party, was made Chancellor, took part in the murder of Rizzio, and was privy to the plot against Darnley; joined the confederacy of the nobles against Mary, fought against her at Langside, and became regent in 1572; became unpopular, was charged with being accessory to Darnley's murder, and beheaded in 1581.

Morton, John, English ecclesiastic, born in Dorset; Master of the Rolls from 1473; Bishop of Ely, 1479. Imprisoned by Richard III., he was taken into favour by Henry VII., and made Archbishop of Canterbury in 1486 and Lord Chancellor in 1487. His ingenuity in extracting "benevolences" from both the ostentatiously wealthy and the parsimonious originated the proverbial phrase of "Morton's Fork." (c. 1420-1500.)

Mosaic, the decoration of a surface by inlaying coloured marble, glass, etc., in small cubes ("tessellæ"), so as to form a geometrical pattern or a pictorial design. The art was developed by the Greeks and Romans, by the latter especially in Christian times, notably in the Eastern Empire; some of the first extant work is to be seen in the churches of Ravenna, and at Santa Sophia, Istanbul, where the mosaics, whitewashed over after the Turkish conquest, are now (1938) being uncovered. Mosaics have been largely used in the decoration of the Roman Catholic Cathedral at Westminster.

Moscow, on the R. Moskva, in the 370 m. SE. of Leningrad. Until 1713 it was the capital of Russia, and it was made so again in 1918. It is a great industrial and commercial centre; its manufactures include textiles, leather, chemicals, and machinery. Besides the great cathedral there are many churches, palaces and museums, a university, library, picture-gallery, and observatory, and the enclosure called the Kremlin (q.v.), in which are the headquarters of the Russian Government. Since the 1918 revolution the city has grown very rapidly, and been considerably modernised, an underground railway having been built; among its most famous "sights" is the tomb of Lenin in Red Square. Thrice in the 18th Century the city was devastated by fire, and again in 1812 to compel Napoleon to retire. Pop. 3,700,000.

Moseley, Henry, British physicist; whose work at Oxford in 1913-1914 led to the recognition of the importance of atomic numbers; studied X-rays in their relations to the atom; killed in action at Suvla Bay, Gallipoli, 1915. (1887-1915).

Moselle, river, rising W. of the Vosges Mts., flows NW. through Lorraine, then NE. to join the Rhine at Coblenz, 315 m. long, two-thirds of it navigable; it passes in its tortuous course Metz, Thionville, and Trèves.

Moses, great Hebrew lawgiver, whose story is told in the Biblical books of Exodus, Numbers and Deuteronomy; was abandoned as a child and brought up by an Egyptian princess; led the Israelites out of Egypt and governed them for nearly 40 years during their wanderings in the Sinai peninsula; drew up the code of laws associated with his name; died at Mt. Pisgah.

Mosley, Sir Oswald Ernald, sixth Bart., English politician; served in France during the World War; elected to Parliament for Harrow as a Conservative, 1918; became an Independent member in 1922; joined the Labour Party, and was elected M.P. for Smethwick in 1926; was Chancellor of the Duchy of Lancaster in the Labour Government of 1929, but left it and the Labour Party after disagreements on policy, and founded the "New Party" in 1931, subsequently heading the British Union of Fascists. (1896-

Mosque, a building erected by Mohammedans for purposes of devotion. Its essentials are a Kiblah, or niche showing the direction of Mecca; a fountain for ablutions; a pulpit; and a minaret for calling worshippers to prayer. No representations of living beings are permitted, but mosques are frequently beautifully decorated with geometrical designs and inscriptions in Arabic. Among the most famous mosques are the Mosque of Omar at Jerusalem and Santa Sophia at Istanbul. There are mosques in England at Woking and Southfields (London).



MOSQUE OF OMAR
(JERUSALEM)

Mosquito, the general name of the winged insects, of the Culicidae, or gnat family, of which many species exist, including a number in Britain. The larval stage is spent in water. Only the female adult is noxious, it being provided with a biting and sucking mouthpiece with which certain species (especially of the genus *anopheles*, q.v.) play a large part in the propagation of diseases such as malaria and yellow fever, the germs of which it injects into the blood stream. See also **Gnat**.

Mosquito Coast, a region in Honduras extending along the Atlantic coast and inland for about 40 m., at one time claimed by Great Britain and the United States. The chief town is Bluefields.

Moss, a class of plants which, with the bryophytes, compose the group Bryophyta, representing an early stage in plant development; they are higher than fungi owing to the presence of chlorophyll, but lower than ferns owing to the lack of fibrovascular tissue. Mosses are flowerless, reproducing themselves by spores. They are divided into three groups: the largest, Bryates, numbering over 500 species; an Alpine group, Andreaeaceae; and a third group represented by a single genus, Sphagnum or bog-moss.

Mossei Bay, a natural harbour between Port Elizabeth and Capetown, about 200 m. from the latter. The town is a port of call for steamers. Pop. 7,000.

Mosul, a city in Iraq, and capital of the liwa of the name, on the Tigris near the remains of Nineveh. It was held by Turkey until after the World War, and is chiefly important on account of its oil wells, connected by pipe-line with Haifa. Pop. (city) 97,000; (liwa) 393,000.

Moth, a sub-order of insects forming, with butterflies and skippers, the order Lepidoptera. There is no scientifically satisfactory distinction between butterflies and moths, although a general rule (to which, however, there are exceptions) is that the antennae of butterflies, but not moths, are enlarged at the tip. The antennae of moths are either fringed or thread-like. Most species fly only by night and are attracted by lights. When at rest, the wings of moths are not held upright, as are butterflies, but are wrapped round the body, or spread horizontally, or folded roof-like on the abdomen.

Mother-of-Pearl, or *Nacre*, a substance formed in layers against the inner side of the shell of the pearl oyster, being produced from the outer tissue of the mollusc during the formation of the pearl within this tissue or "mantle." It is used in the manufacture of buttons, knife handles, spectacles, etc., and for inlay work.

Motherwell (and Wishaw), a town of Lanarkshire, Scotland.

11 m. S.E. from Glasgow. It is an iron and steel manufacturing centre, and there are large bridge-building establishments. Pop. 61,700.

Motion, Laws of, the fundamental laws of dynamics, especially the three laid down by Newton, which are: (1) Every body continues in a state of rest, or of uniform motion in a straight line, except so far as it may be compelled by force to change that state; (2) change of motion is proportional to the force applied, and takes place in the direction of the straight line in which the force acts; (3) to every action there is always an equal and opposite reaction.

Motley, John Lothrop, American historian and diplomatist, (born at Dorchester, Mass., wrote the *History of the Dutch Republic*, which was published in 1856, the *History of the United Netherlands*, publishing the first part in 1860 and the second in 1868, and the *Life and Death of John Barneveldt* in 1874; was appointed the United States Minister at Vienna in 1861; and at St. James's in 1869. (1814-1877).

Motor Boats, boats driven by internal combustion engine.

In most small motor boats the engine used for propulsion is of the type used in motor cars (q.v.), but paraffin motors are occasionally used instead, and larger craft may be driven by Diesel engines. The propeller may be driven directly by the engine, but since the efficiency of a propeller decreases at speeds greater than about 1,000 revolutions per minute, a system of gears is frequently employed. The engine speed can then be greater, and, for a given power, a lighter motor can be built.

Cabin cruisers, 20 to 40 ft. in length, are usually driven at speeds up to about 10 knots, but if the fuel consumption is not an important consideration, much greater speeds (up to 80 knots or more) may be attained in specially designed racing boats. Outboard motor boats have their motors attached to the stern in such a manner that they are readily detachable. In racing boats the hydroplane principle is used, and the boats, when travelling at high speeds, raise themselves partly out of the water.

Motor Cars. Steam carriages ran in Paris before the end of the 18th Century, while they first appeared in London in 1803; these vehicles were not a practical proposition, and further experiment was discouraged by the law limiting the speed to 4 m.p.h. The modern motor-car dates from the invention of the petrol internal combustion engine by Daimler in 1884; further improvements in power and design were continuous from then onwards; in 1928 experiments were first made with motor vehicles having heavy oil engine, similar in type to the Diesel engine.

By far the greater number of power-driven vehicles in use on the road to-day are driven by internal combustion engines using petrol as a fuel. The energy used in driving a petrol engine is obtained by the combustion of a mixture of petrol vapour and air in the cylinders of the engine. After combustion has taken place the gases produced in the cylinder are at a high temperature and consequently at a high pressure, and this high pressure is applied to a piston, forcing it outwards. The motion of the piston is transmitted by means of a piston rod to a crankshaft, and thence by a system of gears to the driving axle of the vehicle.

The combustible mixture of air and petrol vapour is obtained by means of a carburettor. In this device the air which is flowing to the cylinders passes a narrow jet, evaporates, and is carried along by the stream of air. Each cylinder has two valves—an inlet valve through which the mixture of petrol vapour and air is introduced and an exhaust valve through which the

products of combustion are allowed to escape after they have done work in moving the piston.

Most petrol engines employ the four-stroke cycle. During the first stroke the piston travels downwards, leaving the space above the cylinder at a pressure lower than that of the atmosphere, and a mixture of air and petrol vapour is forced into the cylinder through the inlet valve. During the second stroke both valves are closed, and the piston moves upwards towards the top of the cylinder, compressing the mixture. When the piston has nearly reached the top of its stroke the mixture is ignited by means of an electric spark, which is passed between two electrodes in a sparking plug let into the head of the cylinder.

Both valves remain closed during the third stroke, and as the mixture burns, it exerts a high pressure on the piston, forcing it downwards. At the end of this stroke the exhaust valve opens, and as the piston returns to the top of the cylinder during the fourth stroke it sweeps out the products of combustion. The whole cycle is then repeated. The heat transferred from the hot gases to the cylinder and piston must be removed to prevent them becoming overheated. This is accomplished by surrounding the cylinder walls by a water jacket through which water, cooled in a radiator, is caused to flow.

Since power is transferred to the crankshaft during only a part of each cycle, a single cylinder engine runs less smoothly than one where a number of cylinders are used, each giving a power stroke in turn. Four, six, eight or twelve cylinders are commonly used. The high voltage current required to produce sparks at the spark plugs is given by an ignition coil, operated by current drawn from the car battery. The battery is charged while the engine is running by means of a small electric generator driven by the engine.

Motor Cycle, a bicycle propelled by engine. The engine resembles that of a motor car, but is lighter and simpler. It is generally of $\frac{1}{2}$ to 3 h.p., and frequently carries a side-car attachment. The four-stroke engine is gaining in popularity at the expense of the two-stroke.

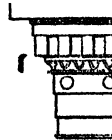
Mottistone, John Edward Bernard Seely, first Baron; served in the South African and World Wars; entered Parliament as a Liberal in 1900; Secretary for War, 1912 to 1914; in 1919 Under-Secretary for Air; received a peerage, 1933. (1868-).

Mould, the popular name for various fungi, consisting of *hyphae* or threads. Moulds are known scientifically as *Hypomyces*, and there are some 5,000 species; many of these are simply the conidial (spore) stage of more fully-formed fungi. They increase rapidly in the presence of damp, frequently attacking plants and food substances.

Moulding, in architecture a decorative band formed by cutting, casting or modelling the building material into a pictorial design, or conventional pattern.

Moulmein, seaport of Burma and capital of the province of Tenasserim on the Salween, 30 m. from its mouth. It has steamer communication with Calcutta, distant about 930 m. Rice, fruit and teak are exported. Pop. 61,000.

Mountain Ash, town of Glamorgan, W. Wales, 18 m. from Cardiff in the Aberdare valley. It is a coal-mining district. Pop. 35,300.



MOULDING

Mountain Ash, popular name for the Rowan tree (*Pyrus Aucuparia*), a hardy tree, found in high altitudes; native of Britain. The leaves resemble those of the ash but are longer, the leaflets being smaller and more numerous. The flowers are creamy-white; the berries red.

Mountains. The highest mountain in the Himalayas is Mt. Everest, 29,141 ft., in the Himalayas; in South America the highest is Illimpu, 25,248 ft.; in N. America the highest is McKinley, 20,300 ft.; Mt. Elbruz in the Caucasus, on the borders of Europe and Asia, is 18,526 ft.; Mont Blanc in the Alps is 15,781 ft. The highest mountain in Scotland is Ben Nevis, 4,406 ft.; Snowdon in Wales is 3,560 ft.; Sea Fell in England is 3,210 ft.; Carrantuehill in Eire is 3,414 ft.

Mounts Bay, a bay on the S. coast of which stands Penzance; it contains St. Michael's Mount, an island of granite rock 270 ft. in height, surmounted by a castle.

Mount Vernon, the residence and burial place of George Washington, in U.S.A., on the Potomac R., 15 m. from Washington; the Washington mansion is an American national monument.

Mouse, a small rodent quadruped of the family Muridae, including a number of species, distributed over the whole world. Mice are characterized by long and practically hairless tails, and short legs; they have 3 pairs of rooted teeth in each cheek-jaw. British species are the house mouse (*Mus musculus*), the field mouse (*Apodemus sylvaticus*), the harvest mouse (*Micromys minutus*), and the dormouse (*Muscardinus arctomarius*).

Mouth, the aperture in the head of an animal through which food is taken into the body. In the higher animals it is used for mastication, the emission of sound or voice, deglutition and taste. In many lower animal types there is no real mouth. Protozoa take food into the interior of the body by ingestion, any portion of the body surface being used for the purpose. In radially symmetrical animals, such as the starfish and polyps, the mouth is central.

Moynihan, Berkeley George, first Baron, British surgeon; Hunterian Professor at the Royal College of Surgeons, 1924, and President from 1927; an expert in the treatment of abdominal complaints, on which he wrote several treatises; served with the R.A.M.C. in the War. (1865-1936).

Mozambique, Africa, or Portuguese East Cape Delgado and Delagoa Bay on the mainland, opposite Madagascar; the Zambezi divides it into two. The coast is low and wet, inland are richly wooded plateaux; the soil is fertile, and minerals abound. The country is administered partly by the Government and partly by a trading company. Sugar, maize, cotton, copra and gold are produced and exported. The chief towns are Lourenço Marques, Mozambique and Beira. Area, 297,700 sq. m. Pop. 4,000,000.

Mozart, Wolfgang Amadeus Chrysostom, German-Austrian musical composer, born in Salzburg; was distinguished for his musical genius as a boy, and produced over 600 musical compositions, among them three great operas, *The Marriage of Figaro*, *Don Giovanni* and *The Magic Flute*, as well as many symphonies (including the famous *Jupiter*) and shorter works. His Requiem Mass was his last work, and he died at Prague on the evening of its rehearsal. (1756-1791).

Mucilage, a solution in water of a liquid vegetable gum, such as that obtained from the acacia, *Astragalus gummifer*, elm cherry, or from plants such as marsh-mallow, or made by boiling linseed,

seaweed and various seeds and roots. Mucilaginous gums are used in medicine and pharmacy, especially as soothing substances. Gum tragacanth, for instance, prepared from the *Astragalus gummifer*, is used for this purpose, and also in the preparation of pills. Linseed mucilage is used for making varnishes.

Mucous Membrane, a delicate secreting membrane which lines those cavities and canals of the human body which connect with the exterior.

Mudfish, a name given to various fresh-water fish, especially the bowfin or lung-fish of N. American lakes, and the lepidosiren of S. America and Africa; also a species of S. American killifish (*Pundulus heteroclitus*), which buries itself in mud during drought.

Mudros, a town on the S. coast of the island of Lemnos in the Greek Archipelago. It was a British base of operations against the Turks in the Gallipoli campaign in the World War, and the Armistice between Turkey and the Allies was signed here by the Turks in 1918.

Muezzin, an official, often blind, attached to a Mohammedan mosque, who summons the faithful to prayer by a chant from a minaret.

Mui Tsai ("multai"—little sister), a system prevalent in China whereby children, especially young girls, are sold or pawned by poor parents. It has been defended as a form of adoption of children into more wealthy families, but often amounts in practice to slavery and sometimes leads to prostitution. In recent years the British government has taken steps towards eradicating the custom in Hong-Kong, by instituting a system of registered Mui Tsai, and later the Shanghai Municipal Council instigated measures to suppress the system in the International Settlement.

Mukden, town in S. Manchuria, of the capital; now cap. of the province of Fengtien, and an industrial centre of increasing importance; textiles and metal goods are produced. The Japanese invasion of 1894-1898 was directed towards it. Pop. 535,000.

Mulatto (Spanish and Portuguese, "mixed breed"), the offspring of a white man and a negress, or of a white woman and a negro, in whom negro characteristics generally appear predominant. A quadroon is the offspring of a mulatto and a white person, an octoroon of a quadroon and a white person.

Mulberry, the common name of the (ceae) of deciduous trees, native to Central Asia; introduced to Europe in early times; first brought to Britain probably by the Romans. The White Mulberry (*Morus alba*) is cultivated for its fruit and as a garden tree, hardy in S. England. The Black Mulberry (*Morus nigra*) is also in cultivation, the leaves being used as food for the silk-worm. The Red Mulberry (*Morus rubra*) is of little value for either purpose.

Mule, the offspring of a male ass and a mare (the hybrid bred from a stallion and a female ass is technically called a *hinny*, but the term *mule* is used popularly without this distinction). The mule combines the strength of the horse with the hardihood and surefootedness of the ass, and is bred as a pack animal and for use in mountainous parts. The mule is usually incapable of breeding. Mules have been extensively used in the past in the British army.



BLACK MULBERRY

Mule, or Mule-Jenny, a spinning-machine invented by Samuel Crompton in 1779; so named from being a combination of the features of Arkwright's spinning frame and Hargreaves' spinning jenny. The machine is capable of first spinning a length of yarn, the material being fed into it from riving bobbins, and then winding the yarn upon a spindle. The original mule possessed 20 spindles, but modern machines have over 1,000 spindles.

Mulheim am Rhein, a town in province of Prussia, now a part of Cologne. Manufactures include textiles, machinery and beer. Pop. 65,000. **Mulheim an der Ruhr**, a town in the Rhine province of Prussia, in the district of Düsseldorf. It has ironworks and manufactures of leather, paper, etc., and in the district coal is mined. Pop. 99,500.

Mulhouse, a port on the Rhône-Rhine canal in a fertile district on an island formed by the R. Ill, in the Haut-Rhin dept., France. It is a manufacturing centre and its products include cotton and woollen goods, printing, machinery and chemicals. Pop. 99,500.

Mull, large island in the NW. of Argyllshire, Scotland, third of the Hebrides; is mountainous and picturesque, with greatly indented coast-line; the highest peak is Ben More, 3,169 ft., the largest inlet Loch-na-Keal; the soil is best adapted for grazing. Tobermory, in the N., is the only town. Area 350 sq. m.

Mullah, The Mad, name by which two known, who incited risings against the British, one in Surat, India, 1897-98, the other in Somaliland, 1899-1910. A mullah is a Mohammedan judge versed in sacred law.

Müller, Hermann, German politician. Before the World War editor of a Socialist paper, he was sent in vain in 1914 by German Socialists to confer with French workers on means of preventing the World War. In 1916 he became a member of the Reichstag, was appointed Foreign Secretary in 1919, attended the Peace Conference and signed the Treaty of Versailles, and for a short time in 1920 was Chancellor (1876-).

Mullet, name of two fishes, the red mullet, mullet (order Percomorpha) found in tropical seas, and the grey mullet (order Mugilidae), a coast fish. Both are edible.

Mullingar, a town in the province of Westmeath, Eire (Ireland), 48 m. from Dublin. It has a recently constructed cathedral.

Mullion, in architecture,

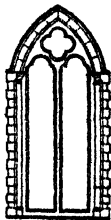
a thin vertical structure, which serves to divide an opening, particularly a window, either for decoration, or to give additional support; it may thus divide an arch, carrying two supporting arches

Mulock, Dinah Maria (Mrs. Crank), English novelist, born at Stoke-on-Trent, authoress of *John Halifax Gentleman*, and other novels. (1820-1887).

Mulready, William, genre painter, born in Ennis, Ireland, illustrated the *Vicar of Wakefield* and other works; designed the first penny postage envelope in 1840. (1786-1863).

Multan, city in the Punjab, British India, near the Chenab R., 200 m. SW. of Lahore; has manufactures of silks, carpets, pottery, and enamel ware, and considerable trade. Pop. 119,400.

Multiple Stars, groups of at least 3, inter-related stars; a group of 2 stars is described as a binary or double star. Multiple stars probably arose



from the fission of stars originally single. Among the chief multiple stars is Castor (in the constellation Gemini), which consists of a group of 6 stars in 3 pairs. The members of multiple star groups may sometimes be distinguished through the telescope, but more frequently spectroscopic evidence is the sole reason for assuming their existence.

Mumbles, or **Oystermouth**, a seaside resort in Glamorganshire, Wales, on Swansea Bay, 5 m. SW. of Swansea, with noted oyster fisheries.

Mummy. See **Embalming**.

Mumps, an infectious disease, caused by the parotid gland, which remains swollen for about a week. Early symptoms may be headache, chilliness, nose-bleeding. It commonly attacks children, and patients should remain in bed for at least 10 days and be isolated for 3 weeks. The incubation period is 12 to 26 days, quarantine 26 days.

Münchhausen, **Karl Friedrich**, Baron von, a cavalry officer in the service of Hanover famed for the extravagant stories he used to relate of his adventures and exploits, which, with exaggerations, were collected by one Raspe, and published in 1785 under Münchhausen's name. (1720-1797)

Munich (**München**), capital of Bavaria, Germany, on the Isar, 440 m. by rail SW. of Berlin; is a city of magnificent buildings and rare art treasures, and is still the art centre of Germany; it has several palaces, a fine cathedral, and other historic buildings; there are galleries of sculpture and ancient and modern painting, a university, colleges and libraries; the industries include stained glass, lithography, bell-founding and scientific instrument-making, and there are enormous breweries. Munich was the city in which the Nazi movement took its rise. Pop. 735,000.

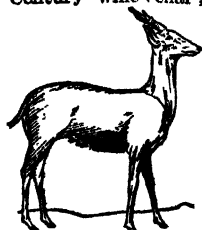
Municipality, a self-governing town or city, or the body which governs it; in England a borough or urban district council, consisting of a body of elected councillors presided over by a chairman (in a borough, called Mayor) with, in the case of a borough, a number of "aldermen" co-opted by the councillors. The powers of municipalities are laid down by various statutes, but generally they may do only those things which they are expressly permitted to do by law. They have the power of making by-laws for good government, enforceable under penalty, and may sue or be sued in the courts. Many of them undertake trading in the form of the supply of certain public services, gas, water, electricity, local transport, housing, etc., while some manage markets or savings banks. They are under the general supervision of the Ministry of Health. In many American and some Irish towns the executive powers of municipalities are now entrusted to "city managers," the elected councils confining themselves to a general direction of policy and the settlement of a local rate.

Munnings, **Alfred**, British artist. Studying at Norwich and Paris, he first exhibited at the Royal Academy at the age of 20, making turf and horse pictures his speciality; his "Epsom Downs" is his best-known work. During the World War he painted a series of war pictures for the Canadian government. Made an A.R.A. in 1919; R.A. in 1925. (1878-)

Munster, a province of Eire (Ireland), in the SW. of the country, comprising the counties of Clare, Cork, Kerry, Limerick, Tipperary and Waterford. In ancient Ireland it was a separate kingdom often divided into the two regions of Desmond (in the N.) and Thomond (in the S.). It has an area of 9,317 sq. m. and a population of 941,400. The largest town is Limerick.

Münster, city of Prussia, Germany, in Westphalia, a mediaeval-looking town, 100 m. by rail N. of Cologne; has textile, paper and printing industries; there is an old cathedral of the 12th Century, a town hall, castle, and 16th Century wine-cellar; there is a university, founded in 1780; here arose the Anabaptist movement of 1535. Pop. 122,000.

Muntjac, the name of a genus (*Cervulus*) of small deer of Eastern Asia, with short, single antlers growing from the ends of its lengthy frontal bone; reddish-brown in colour with white marks on the throat.



MUNTJAC

Muntz Metal, or **Yellow Metal**, a non-ferrous alloy, consisting of copper (60 per cent.) and zinc (40 per cent.). It is used in boat-building.

Murat, **Joachim**, King of Naples, born near Cahors, France, the son of an innkeeper; entered the army, became Napoleon's aide-de-camp and eventually his brother-in-law; for his services under the Empire was rewarded with the crown of Naples in 1808; he had to fight in the end on his own behalf in defence of his crown, and was defeated, taken prisoner, and shot. (1767-1815).

Murchison, **Sir Roderick Impey**, geologist, born in Ross-shire; after army service in the Peninsular War, explored many parts of Europe, predicted the discovery of gold in Australia, was President of the British Association in 1846, was knighted the same year. He founded the Chair of Geology in Edinburgh University in 1870. His fame rests on his discovery and establishment of the Silurian system; his book on *The Silurian System* is the chief of several works. (1792-1871).

Murcia, province and town in Spain, the city being about 290 m. SSE. of Madrid. It has a university and is a winter sports centre. There are preserving factories for the products of the district. Spices, olives and fruit are grown and silk worms bred. Pop. (town) 166,000; (prov.) 648,200. Area of province 4,453 sq. m.

Murder, the unlawful killing of another person with malice aforethought: it is under English law necessarily punishable with death. Accessories before the fact to a murder are liable to the same punishment as the principal; and attempted murder may be punishable with penal servitude for life. In the United States degrees of murder are recognised, according to the circumstances of the offence, murder in the first degree alone being punished with death.

Mürger, **Henri**, French novelist and distinguished as the author of *Scènes de la Vie de Bohème*. Many of his songs and lyrics were translated into English by Andrew Lang. (1822-1861).

Murillo, **Bartolomé Esteban**, Spanish painter, born in Seville. His subjects were drawn partly from low life and partly from religious themes, such as "Moses Smiting the Rock" the "Miracle of the Loaves and Fishes," etc.; the "Immaculate Conception" in the Louvre is his masterpiece. He is represented by several works in the National Gallery, London. Died from a fall from a scaffold while painting an altar-piece at Cadiz. (1618-1682).

Murmansk, area on the N. coast of the Kola Peninsula, Russian Lapland. The chief town, an ice-free port,

has the same name. In 1918-1919 an Allied force operated from here as a base against the Bolshevik Government.

Murray, Sir David, Scottish painter, born 1905, and studied in Glasgow; R.A., 1905. President, Royal Institute of Painters in Water-colours, 1917. Knighted, 1918. Two of his realistic landscapes are in the Tate Gallery. (1849-1933).

Murray, George Gilbert Aimé, English scholar and author, born in Sydney, N.S.W.; Professor of Greek at Glasgow from 1889 to 1890, and at Oxford from 1908 to 1936; Professor of Poetry at Harvard, 1926; best known for his translations of Greek plays, and for several works on Greek literature, life and religion; he is also a famous internationalist, being chairman of the League of Nations Union from 1923. GILBERT MURRAY (1866-).



Murray, Sir James Augustus Henry, British lexicographer, born at Denholm, Scotland; from 1879 editor of the *New English Dictionary*, later known as the *Oxford English Dictionary*. (1837-1915).

Murray River, the chief river of long, rises at the foot of Mt. Kosciuszko, in New South Wales, flows NW. between New South Wales and Victoria; receives the Lachlan and Darling on the right, and entering S. Australia turns southward and reaches the sea at Encounter Bay.

Murrumbidgee, a river of New South Wales, rising in the N.E. of the Australian Alps and flowing in a westerly direction joins the Lachlan before flowing into the Murray R. It is about 1,350 m. in length and is navigable for about 500 m. in the rainy season.

Muscat, capital of Oman, in Eastern Arabia, on the Gulf of Oman; is an ill-built, unhealthy city, with a trade of diminishing importance. It was in Portuguese possession from 1508 to 1658. Pop. 4,500.

Muscatel, from the name given to the grapes French and Italian wines are made; also to the wine itself. Muscatel grapes are also dried for use as a dessert fruit.

Muscle, tissue in higher animals which enables movement to be made, either voluntarily or involuntarily, this distinction being marked by a rough classification into "striped" and "unstriped" muscle. Voluntary or "striped" muscle exists mainly for movement of the skeleton at the command of the will. It consists of bundles of fibres, each bundle contained in a fibrous sheath called *epimysium*. Each muscular fibre is itself enclosed in a sheath of elastic tissue by which it is contracted or extended. Involuntary or "unstriped" muscle consists of similar bundles of muscular fibres, but they are not divided and sheathed in epimysium. The heart muscle, although involuntary, is partially striped muscle.

Muscovy, a name properly applying to Moscow, but used in the 16th and 17th Centuries to mean the whole of Russia.

Muses, the, in Greek mythology, goddesses of the arts, daughters of Zeus and Mnemosyné. They were nine in number: Clio presided over history, Euterpe over music, Thalia over comedy, Melpomene over tragedy, Terpsichore over choral dance and song, Erato over erotic poetry and elegy, Polyhymnia over lyric poetry, Urania over astronomy, and Calliope over eloquence and epic poetry.

Museum, a building in which objects of logical interest are stored, classified and exposed for study. Some of the world's most important museums are general in the character of their contents; such as the British museum, London, or the Louvre in Paris. Others confine themselves to a special subject or the antiquities of a special area or period. Among the best-known and largest museums are the British Museum in London, the Louvre in Paris, the Metropolitan Museum of New York, the Vatican Museum at Rome, and many in other great European and American capitals. Other museums in Great Britain include the Victoria and Albert, Science, and Natural History Museums at Kensington; the London Museum, the Imperial War Museum, the Wallace Collection (Hertford House), the National Maritime Museum, all in London; the Fitzwilliam Museum at Cambridge; the Scottish National Museum at Edinburgh. Most provincial towns of any size have museums of local antiquities and objects of interest, some of them of first importance.

Mushroom (*Agaricus campestris*), an edible fungus, of which there are several varieties; cap 3-6 in. across, globose in shape, opening out nearly flat, dry, and in colour whitish or yellowy grey; flesh becomes red-brown when broken; gills crowded, turning from pink to blackish-brown. Mushrooms may be grown under frames or in caves, sheds, etc., in an even temperature, 48°-75° F.; spawn obtained in bricks is broken up and distributed in beds of fresh stable manure with admixture of straw. See also *Agaricus*.

Music, the sound obtained by combining sequences or groups of notes of different pitch so that they become acceptable or intelligible to the listener. The origins of music are variously ascribed to the purely æsthetic impulses of primitive man, to his need for a means of expressing emotion, and to a natural propensity for imitation. The scientific study of music began in the 6th Century B.C. with the discovery by Pythagoras that there are definite numerical relationships in the number of vibrations per second set up in the air by the production of notes of different pitch, the tone relationship of octave, fourth and fifth being respectively 2:1, 3:2, and 4:3.

Within the octave, which is universally recognized as the basis of musical composition, there is an infinite number of intervals. Many of these are utilized in Eastern music, which is purely melodic, i.e., constructed of sequences of single notes, combined into various modes each used for the expression of a different mood or emotion. The development of Western music has been towards harmonic composition, i.e., progressions of groups of notes produced simultaneously in chords, and this development necessitated the elimination of many dissonant intervals, the regularization of the scale and the reduction of the modes to two, major and minor.

This process was not completed until the beginning of the 17th Century, and only after this was musical notation simplified and standardized into its present form. Before the 17th Century, composition was confined mainly to sacred works, and in the secular sphere to madrigals and canzonets. The Italian Palestrina ranks first among composers of polyphonic music, the precursor of harmonized composition as we know it to-day. In the 17th Century, the first exponent of the new technique was Monteverdi, famous for his dramatic works. Purcell in England and Lully in France are other outstanding figures of this century.

The golden age of music was the 18th Century, in which Germany produced six of the world's most famous musicians: J. S.

Bach (1685-1750) pre-eminent for his masterly development of the fugal form, and numbering among his compositions the famous 48 Preludes and Fugues, numerous orchestral works and above all his sacred music, culminating in the *B. Minor Mass*; **Handel** (1685-1759), the composer of numerous operas and oratorios, including the *Messiah*; **Gluck** (1714-1787), a writer of opera; **Haydn** (1732-1809), who developed the sonata form, the basis of much musical composition; **Mozart** (1756-1791), who introduced the opera-buffe, including among his many compositions the delightful *Nozze di Figaro*; and finally, standing alone among musicians, **Beethoven** (1770-1827), the master of achievement in every form, sonata, symphony, concerto, "chamber music" and choral.

In Beethoven music passed beyond the bounds of classicism and became a vehicle for the expression of an infinite range of thought and emotion. The century of Romanticism, the 19th, brought Schubert, the master of song composition, Wagner, who was both musician and dramatist, Berlioz and the beginnings of programme music, and the national music of Chopin, Liszt and others. Romanticism passed to modernism with the subtle tones of Debussy, and the emphatic opposition to convention of the Russian school, initiated by Mussorgsky. Among 20th Century composers of note are Debussy, Ravel, Hindemith, Béla Bartók, Arnold Bax, Rutland Boughton, and Arthur Bliss.

Musk, name given to various plants, especially to the common musk (*Mimulus moschatus*) of the order Scrophulariaceae, a creeping perennial formerly much cultivated in greenhouses but in less favour now since it unaccountably lost its smell.

Musk-Deer (*Moschus moschiferus*), a hornless deer, inhabiting Tibet and Nepal; height less than 2 ft., colour grey or red-brown. The musk of commerce is obtained from a gland situated behind the navel of the male deer.

Musket, a firearm discharged by a percussion lock, lighter in weight than a rifle (*q.v.*); the original matchlocks and flintlocks were also called muskets. The term *musketry* survives in the army as the name for the department of drill dealing with the theory and use of small arms, *e.g.*, the revolver, carbine, rifle and machine-gun.

Musk-Ox (*Oribos Moschatus*), sheep-like ox, with brown, long-haired, shaggy coat, inhabiting the northern parts of Canada. The horns of the male form a practically continuous line over the forehead. It sometimes emits a musk-like odour.

Muslin, a woven cotton material, light in weight, soft, and of open weave. It may be bleached or dyed, and will take colour-printing. It is said to have been first made at Mosul in Mesopotamia and it is much used as a dress material, especially in the East.

Musquash, or **Musk-rat**, a N. American aquatic rodent (*Fiber zibethicus*), brown or black in colour with greyish underfur, and partly webbed feet, with a scent-gland giving off a musky odour. Its skin is used for clothing.

Mussel, the common name of a family of bivalve molluscs of the order Filibranchia. The common British mussel (*Mytilus edulis*) has a small foot with whose aid, when young, it has a limited power of locomotion, later fixing itself permanently to a rock. It is used both as a food by man and as a bait for deep-sea fishing.

Musselburgh, town on the coast of Midlothian, Scotland, 6 m. E. of Edinburgh, with golf links, and paper, nets, and tanning industries, and famous for Loreto school. Pop. 17,000.

Musset, **Alfred de**, French poet and littérateur, born in Paris. After publishing several plays and poems, he followed George Sand to Italy, returning on the collapse of his liaison with her in 1835. His best-remembered works are *Confessions d'un Enfant du Siècle*, published in 1836, the play *Un Caprice*, of 1847, and *Les Nuits*, a series of lyrical poems. (1810-1857).

Mussolini, **Benito**, Italian statesman and Fascist dictator, the son of a working man in Romagna province; born at Predappio, near Forlì. In early life he studied at home and in Switzerland, became a Socialist, and when quite a young man he was made editor of the principal Socialist organ, *Avanti!*. In 1915 he went to the front as a corporal, and returned wounded to continue work on his paper. After the World War he resigned his editorship and his membership of the Socialist party, and founded his own daily paper, *Popolo d'Italia*.

Having abandoned the Socialist party, he formed the first Fascist group as an anti-Bolshevist activity. This new party rapidly grew, and at its Congress in 1922, demanded that Mussolini be installed as head of the Government. The march on Rome followed, and, the king siding with the marchers, Mussolini was installed as premier and dictator. Suppressing the liberty of the Press and Parliament, he nevertheless succeeded in restoring his country's finances and industrial power.

Disputes with Greece and France, the seizure of Corfu (*q.v.*), and the signing of the Lateran Treaty were outstanding events of the following years, during which repeated attempts were made on Mussolini's life. In 1935 he embarked Italy on a war of conquest in Abyssinia (see *Abyssinia*) which led among other things to strained relations with Great Britain consequent upon the expansion of Italian power in the Mediterranean. His policy has brought him into sympathy with Hitler, and he made no protest when, in 1938, Germany occupied Austria. (1883-).

Mussorgsky, **Modest Petrovich**, Russian composer; born at Karev, and died at St. Petersburg. His masterpiece is the opera *Boris Godunov*, first performed in 1874. He was closely associated with the group of Russian "nationalist" composers, including Borodin and Rimsky-Korsakov. (1839-1881).

Mustard Gas, or **Dichlorethyl-sulphide**, a poisonous gas used in the World War. It is absorbed by the skin, causing painful inflammation, which is often fatal.

Mutation, in biology, a slight variation in individuals of a species, which may ultimately give rise to a fresh species. The causes of mutations are obscure.

Mutiny Act, a statute first passed by Parliament in 1689 in order "to punish mutiny and desertion," and for "the better payment of the army and their quarters," permitting the maintenance of a standing army. It established military law on a statutory basis, and was re-enacted annually until 1879, in which year it was superseded by the annual Army Act.

Mweru, a lake of Central Africa on the border of the Belgian Congo and Northern Rhodesia. It is 75 m. long by 25 m. broad, and some 3,000 ft. above sea level. It was discovered in 1867 by David Livingstone.

Mycenae, city of ancient Greece, in the N.E. of the Peloponnese; in pre-classical times one of the centres of the



MUSK-OX

so-called Mycenaean culture, which, apparently in close contact with Crete, preceded that of classical Greece. Extensive excavations begun by Schliemann in 1876 have brought to light many archaeological treasures.

Myelitis, a disease affecting the spinal cord by inflammation. In acute myelitis the nervous tissue disintegrates, but recovery is possible. In chronic myelitis the nervous tissue is slowly replaced by a hard fibrous connective tissue. A variant of the disease, *polio-myelitis*, destroys the nerve cells in the grey matter of the spinal cord, and causes infantile paralysis.

Myers, **Frederic William Henry**, English research, born at Keswick. He is remembered for his poem *St. Paul* (1867) and for *Human Personality and its survival after Bodily Death*, published posthumously, 1903. He was one of the founders of the Society for Psychical Research. (1843-1901).

Myna, or **Grackle**, a genus of birds of the starling tribe, having dark-brown plumage with white markings on tail and wings. Some of them can be taught to talk.

Myopia, or **Shortsightedness**, the inability to see distant objects distinctly owing to the eye, or surface of the cornea, being too long, so that parallel rays of light are brought to a focus in front of the retina. This structural defect is rectified by the use of concave lenses.

Myriapoda, a class of air-breathing Arthropods, divided into *Chilopoda* (Centipedes) and *Chilognatha* (Millipedes); the body is segmented, various species having from 2 to 200 segments, each furnished with two legs.

Myrmidons, "ant-men," so-called because in Greek legend Zeus was said to have peopled Thessaly, from which originally they came, by transforming ants into men.

Myrrh, a gum-resin, containing an essential oil, obtained from the bark of certain trees in Arabia and Abyssinia, especially the *Balsamodendron myrrha*. It is used in medicine as a tonic, and in the manufacture of incense. In Biblical history it was an ingredient in the holy anointing oil, was used in fumigation, for perfumes, and in preparing the dead for burial.

Myrtle (*Myrtus communis*), an evergreen leafy shrub, growing to a height of 10-12 ft. and bearing sweet-scented white flowers in July and August, yielding an aromatic oil; abundant in S. and E. Europe, introduced probably from Persia; was known in England in the 16th Century. Among the ancient Greeks the myrtle was sacred to the Goddess of Love.



COMMON MYRTLE

Mysore, a native State of India, embedded in the Madras Presidency, occupies a lofty, broken, but fertile tableland. The upper waters of the Kistna and Kaveri are used for irrigation purposes. Betel-nut, coffee, cotton, rice and silk are exported; cloth, wheat and precious metals are imported. The climate is healthy and pleasant. Under British government from 1831, it was restored to its prince in 1881, under British protection. Area, 29,300 sq. m. Pop. 6,537,000. The capital is Mysore, a prosperous well-built town, with a university. Pop. 84,000.

Mysteries, sacred rites and ceremonies among the Greeks and Romans in connection with the worship of particular divinities, to which only the initiated were admitted; the name is also applied to the miracle plays (q.v.) of the Middle Ages.

Mysticism, the claim that one has, direct relations with God or the world-soul by meditation and contemplation. It is a feature of all highly-developed religions, though not necessarily bound up with religion; famous religious mystics include St. Teresa, Jacob Boehme and Richard Rolle.

Myth, a tale or tradition handed down from ancient times, usually as a story about a god or hero, or an ancient belief regarding the processes of nature. Mythology, the scientific study of myths, only became possible with the discovery of ancient Assyrian and Egyptian literature, and the opening-up of Sanskrit literature. Modern study of anthropology and folklore shows that the same myths were widely distributed.

N

Naas, county town of Kildare, Eire (Ireland), 20 m. from Dublin. Pop. 3,400.

Nablus, town of Palestine, the Shechem of the Bible, 33 m. N. of Jerusalem. Soap making from olive oil is the chief industry. It was the scene of Jewish-Arab riots during 1937 and 1938. Pop. 17,000.

Nabob. See **Nawab**.

Nacre. See **Mother-of-Pearl**.

Nævus, or **Mole**, a birth-mark formed by a cluster of dilated blood-vessels; when large, it is known popularly as a "port-wine stain." The piece of skin affected by a nævus may be excised, or the skin removed by electrolysis.

Nagasaki, town and port of Japan, on the NW. of Kyushu Island; has a beautiful and extensive harbour; industries shipbuilding, engineering, pottery manufacture. Pop. 212,000.

Nagoya, city on the island of Honshu, Japan, the most important commercial centre of S. Japan; noted for its manufacture of porcelain and lacquer. It has textile and many other industries. Pop. 1,020,000.

Nagpur, or **Nagpore**, capital of the Central Provinces of British India, and of a district and division of the same name; a great cotton-spinning and weaving centre, with a university; trades in grain and salt. Pop. 215,000.

Nahum, seventh of the minor prophets of the Old Testament; appears to have been a contemporary of Isaiah, and to have prophesied after the destruction of Samaria and the defeat of Sennacherib before Jerusalem, in the reign of Hezekiah. His short book predicts the fall of Nineveh.

Naiads, in Greek mythology nymphs of streams, endowed with prophetic power; are represented as lovely maidens in a nude or semi-nude state.

Nairn, county town of Nairnshire, Scotland, prettily situated at the entrance of the Nairn into the Moray Firth, 16 m. N.E. of Inverness; a summer holiday resort. Pop. 4,300.

Nairne, *Carolina Oliphant, Baroness*, Perthshire; wrote many songs, among them the famous *Land o' the Leal, Bonnie Charlie's noo awa, Callie Herrin'*, and *The Auld House*. Her songs first appeared in *The Scottish Minstrel* (1766-1845).

Nairnshire, small northern county of Firth, Scotland, fronts the Moray Firth, between Elgin on the N. and Inverness on the W. and S.; the surface, rugged and mountainous in the S. and E., slopes towards the Firth, and is traversed by the rivers Nairn and Findhorn; mainly pastoral, with some agriculture and granite quarrying. Area, 163 sq. m. Pop. 8,300.

Nairobi, the capital of Kenya Colony, British East Africa; an important station on the Uganda railway. Pop. 47,000 (white, 8,000).

Namaqualand, territory included in the Cape Province, South Africa, and in SW. Africa, which takes its name from a Hottentot tribe, the Namaquas, who inhabit it.

Name Day, term used on the Stock Exchange for the second of the periodical settling days, on which a ticket bearing the name of stocks sold is passed from the buyer to the seller, enabling the latter to make arrangements for the transfer.

Names. Surnames arose in Europe and England about the 11th and 12th Centuries, and were frequently taken from professional or place names or from some physical peculiarity, e.g., Baker, Hastings, Whitehead. Before they came into vogue, such forms as "John of Tooting," "William the Baker" were in use for purposes of distinction. In many, if not most, countries patronymics were the first "family" names, and such names as O'Donnell, McDonald, Johnson, Pritchard (Welsh, ap Richard, "son of Richard") are examples of such names. Roman citizens usually bore three names, the *prænomen* (personal name), *nomen* (clan name) and *cognomen* (family name), as Caius Julius Caesar. In Chinese names the family name is placed first: thus Tang Leang-Li should be referred to as Mr. Tang.

Namur, capital of a province of the same name, in Belgium; is situated at the junction of the Meuse and the Sambre, 35 m. S.E. of Brussels. The town is strongly fortified; it fell to the Germans in August, 1914, after a six-day siege, part of the town being burnt. The citadel, the cathedral, and the Jesuit church of St. Loup still stand. Cutlery, firearms, etc., are manufactured. Pop. 32,000. The province skirts the N.E. border of France between Hainault and Luxembourg. Area, 1,412 sq. m. Pop. 357,000.

Nanaimo, a town and seaport of Vancouver I., British Columbia, Canada. It is the terminus of the island railway and the centre of a coalmining district. Pop. 10,000.

Nana Sahib, native leader in the capital of the dept. of Meurthe-et-Moselle, N.E. France, on the R. Meurthe, 220 m. E. of Paris; has a cathedral and 16th Century palace, and a university. Industries include brewing and textile and machinery manufacture. It was the scene of a French victory over the Germans in August, 1914. Pop. 121,000.

Nancy, capital of the dept. of Meurthe-et-Moselle, N.E. France, on the R. Meurthe, 220 m. E. of Paris; has a cathedral and 16th Century palace, and a university. Industries include brewing and textile and machinery manufacture. It was the scene of a French victory over the Germans in August, 1914. Pop. 121,000.

Nankeen, calico stuff dyed buff by a tanning solution; originally made at Nanking in China, from which place it takes its name.

Nanking, since 1928, and before the 16th Century, the capital of China, is situated on the Yangtse R., 130 m. from its mouth; between 1853 and 1864 its finest buildings were destroyed by the Taiping rebels. It is China's cultural centre and manufactures silk goods, textiles and machinery; there is a university. The city was heavily bombed from the air, with large loss of life, by the Japanese in the autumn of 1937, the Chinese government in consequence moving the capital inland as a temporary measure, to Hankow. At the end of the year Nanking was occupied and looted by the Japanese, who, in the following March, established there a so-called "New reformed Government of China," sponsored by themselves. The seat of government was later moved to Chungking.

Nansen, Fridtjof, Norwegian explorer. His first voyage was to Greenland in 1882.

He tried in 1895 in the *Fram* to reach the North Pole, but succeeded only in reaching what was then the record of 86° N. He assisted in promoting the separation of Norway from Sweden, and from 1906 to 1908 was Norwegian Minister in London, afterwards returning to exploration. After 1920 he was active in war relief work for refugees and others, receiving a Nobel Peace Prize in 1922. (1861-1930).



FRIDTJOF
NANSEN

Nan-Shan, a range of mountains in Central Asia, N. of the Kun Lun range, between the Koko Nor and the Chinese province of Ninghsia; they attain a height of 16,000 ft.

Nantes, capital of the dept. of Loire-Inférieure, NW. France, on the Loire, 35 m. from the sea. Its fine streets, handsome buildings, and historical associations make it one of the most interesting cities in France; the cathedral and the ducal castle date from the 15th Century. Shipbuilding, sugar-refining, and hardware are the staple industries. Pop. 137,000.

Nantes, Edict of, edict issued by Henri IV. of France, in 1598, allowing to Protestants religious liberty and political enfranchisement, and confirmed by Louis XIII. in 1614, but revoked by Louis XIV., Oct. 23, 1685.

Nantwich, market town in Cheshire, England, on the R. Weaver, 24 m. from Chester; formerly a great salt-producing centre; has brine baths beneficial in cases of rheumatism and gout. The principal industries are the manufacture of clothing and boots, and tanning. Pop. 86,000.

Nap, or **Napoleon**, a card game for from 2 to 6 players, each holding five cards from a full pack. Each player bids, a bid of 5 tricks being *Nap*; *Nap* is over-bid by *Wellington*, *Wellington* by *Blucher*; the bidding player undertakes to pay double or treble stakes if losing his game. The highest bidder leads, the suit led being trumps.

Naphtha, a mixture of liquid hydrocarbons, carbons of an inflammable nature, found in petroleum.

Naphthalene, a cyclic hydrocarbon oil fraction of the distillate from coal-tar. It is a white crystalline solid, and is familiar in the form of *moth-balls*, the odour of which is popularly supposed to be repugnant to clothes-moths. It is inflammable and burns with a luminous smoky flame; it is insoluble in water, but readily dissolves in benzene or alcohol. In industrial chemistry it is im-

portant as a raw material in the synthetic preparation of indigo and other dyes.

Napier, town in the Hawkes Bay province of North I., New Zealand, 210 m. NW. of Wellington; it exports wool and preserved meat. Pop. 18,900.

Napier, Sir Charles James, British general, the conqueror of Sind, born at Westminster, was present at Coruña, served in the Peninsular War, was in 1841 made commander-in-chief of the Bombay army, defeated the Sikhs at Meeanee in 1848 in a brilliant engagement; went again to India in 1849 on the outbreak of a second Sikh War, but finding it suppressed, returned in 1851. (1782-1853).

Napier, John, Scottish mathematician, born at Merchiston Castle, near Edinburgh; in 1611 published his invention of logarithms; he also invented the computing device known as *Napier's Bones*. (1550-1617).

Napier, Sir William, brother of the conqueror of Sind; entered the army at the age of 15, served all through the Peninsular War, and wrote, besides the *Conquest of Scinde*, a *History of the Peninsular War*. (1785-1860).

Napier of Magdala, Robert Cornelis

Napier, first Baron, British military engineer officer, born in Ceylon; distinguished himself at the sieges of Multan, Delhi, and Lucknow; commanded an expedition in Abyssinia, stormed and took Magdala in 1868, for which he received a peerage; was commander-in-chief in India, 1870-1876; and governor of Gibraltar 1876-1882. (1810-1890).



NAPIER OF
MAGDALA

Naples, city in Italy, on the bay of Vesuvius, one of the most beautifully situated towns of Europe. To the E. lies the old town with its historic Via di Roma and narrow crowded thoroughfares; the newer portion on the W. is more sparsely laid out. The museum, rich in Pompeii relics, the university, (founded in 1224), the cathedral, and the four medieval gateways are the chief architectural features. Large quantities of wine, olive-oil, chemicals, perfumery, etc., are exported, while wine, macaroni, chemicals, musical instruments and textiles are manufactured. Naples became incorporated in the kingdom of Italy in 1861, having previously been included in the Kingdom of the Two Sicilies. Pop. 866,000.

Napoleon, a French gold coin worth 20 francs, no longer in use; it was named after the Emperor Napoleon I.

Napoleon I., Emperor of the French, born in Ajaccio, Corsica, second son of Charles Bonaparte and Letitia Ramolino; trained at the military schools of Brienne and Paris; distinguished first as a captain of artillery at the siege of Toulon in 1793; elected general of brigade in the Italian campaign of 1794; he fell under suspicion, but was soon after invested with the supreme command of the army there and the conduct of the war. On his return to Paris he was placed in charge of the expedition destined to strike at English power through Egypt, sailed thither in 1797, and conducted it with successes and reverses till, in 1799, the threatened fall of the Directory called him back.

He thereupon accomplished his *coup d'état* of the 18th Brumaire (Nov. 9, 1799), when a consulship of 3 was established, himself First Consul, and eventually in 1802 Consul for life. His administration in this capacity was marked by his regard for the re-establishment

of law and order, but his personal ambition was unsated, for by a Concordat with the Pope, he so attached the Catholic Church to the State as to secure its support for his ambitious projects, and was able, on May 18, 1804, to get himself invested with the imperial dignity.

From this date began that long array of wars against the rest of Europe, distinguished by the victories of Austerlitz, Jena, Eylau, Friedland, Eckmühl, and Wagram, which contributed to inspire all the nations around with a sense of the terror of his name; but with the unfortunate expedition to Russia, in 1812, Napoleon's glory began to wane and the tide to turn. After the battles of Lützen and Bautzen, he might perhaps have signed an honourable peace, but he declined the terms offered, and was defeated at Leipzig (Oct., 1813) by the Allies, who invaded France and entered Paris, upon which he was compelled to abdicate at Fontainebleau and retire to Elba, April 20, 1814.

On his return from his retreat and re-entry into Paris on March 20 following, the Powers, with England and Prussia at their head, league against him and crushed him at Waterloo. By this defeat he had forfeited the throne, and was compelled to abdicate, but, unable to escape from France, he delivered himself up to Captain Maitland of the *Bellerophon*, and was shipped off to St. Helena, where he died, May 5, 1821. His body was disinterred and buried with great pomp under the dome of the Hôtel des Invalides, Dec. 15, 1840. (1769-1821).

Napoleon III., nephew of Napoleon I., born at Paris, brought up at Augsburg and in Switzerland; became head of the family in 1832. He began a Bonapartist propaganda, and set himself to recover the throne of France. An abortive attempt in 1836 ended in a short exile in America and London, and a second at Boulogne in 1840 landed him in the fortress of Ham under sentence of perpetual imprisonment. Escaping in 1846 he spent two years in England, returning to France after the Revolution of 1848. Elected to the Constituent Assembly and the same year to the Presidency, he assumed the headship of the Republic and posed as the protector of popular liberties and national prosperity. Struggles with the Assembly followed; he won the favour of the army, filled the most important posts with his friends, dissolved the Constitution in 1851 (Dec. 2), was immediately re-elected President for ten years, and a year later assumed the title of Emperor. He married the Spanish Countess Eugénie in 1853, and exerted himself to strengthen his hold on the populace. In the Crimean War (1854-1856) and the Lombardy campaign (1859) he was supported by Britain; in 1860 he annexed Savoy and Nice; ten years later he plunged into the disastrous Franco-Prussian War of 1870; disaster followed disaster. The Emperor surrendered to the Germans at Sedan, Sept. 2, 1870; a prisoner till the close of the war, he came to England in 1871 and resided with the Empress at Chislehurst till his death. (1808-1873).

Narbada, or **Nerbudda**, a river of India; has its source in the Deccan, and flows westward through the great valley between the Vindhya and Satpura Mts., reaching the Gulf of Cambay after a course of 800 m., the last 50 of which are navigable.

Narcissus, in Greek mythology, a youth who disdained the addresses of Echo. She pined away and died, and he, as a penalty, was doomed to fall in love with his own image, which he kept beholding in the mirror of a fountain, till he too pined away and died, his corpse being changed into the flower that bears his name.

Narcissus, a numerous genus of bulbous plants, mostly natives of Europe and belonging to the natural order Amaryllidaceae. The species which are numerous, and from their hardness, delicate shape, gay colour and smell have long been popular objects of cultivation, include the daffodil (*Narcissus Pseudo-Narcissus*), the jonquil (*N. Jonquilla*), and the narcissus (*N. poeticus*).



NARCISSUS
(*poeticus*)

Narcotics, general name for taken in more than minute quantities produce sleep or stupor. They are used in medicine both for soporific purposes and to alleviate pain. The narcotic qualities of opium have been known since ancient times; others are hashish (Indian hemp), chloral, and lidodonna.

Nares, Sir George Strong, British explorer; he was engaged in the search for Franklin, 1852-1854; commanded the Challenger scientific research expedition, 1873-1876. (1831-1915).

Narses, a statesman and general of the Byzantine empire; fought in Italy with Belisarius, and later defeated the Goths at Tazinae, recovering the city of Rome for the empire. (c. 475-573).

Narthex, a space near the porch in the basilica type, raised off from the rest, for catechumens and penitents.

Narwhal, a calcareous mammal found from 12 to 20 ft. in length. The body is whitish or grey in colour and spotted with dark patches; there is no dorsal fin. The incisors are sometimes developed into projecting tusks. Its food consists chiefly of molluscs and it yields blubber and ivory. It is closely related to the white whale.

Naseby, a village in Northamptonshire, England, where the Royalists under Charles I. and Prince Rupert were defeated by the Parliamentary forces under Fairfax and Cromwell in June, 1645.

Nash, John, English architect, born in London; besides planning the old Regent Street and Portland Place in central London, was the architect of Buckingham Palace and Brighton Pavilion. (1752-1835).

Nash, Paul, British water-colour artist; he first exhibited in 1911, and in the World War served in France as one of the official war artists, producing a number of striking water-colours illustrating the effect of modern warfare on nature. (1889-).

Nash, Richard. See *Beau Nash*.

Nash, Thomas, English satirist, born in Lowestoft, a Cambridge University wit; wrote plays, but is remembered for his picaresque *Jack Wilton* and *Pierre Penitence*. (1567-1601).

Nashville, capital of Tennessee, U.S.A., on the Cumberland R., 185 m. S.W. of Louisville. It is an important railway and educational centre, the seat of four universities (two for coloured students), and is engaged in the manufacture of cotton, tobacco, flour, paper, oil, etc. Pop. 154,000.

Nasmyth, James, Scottish engineer, born in Edinburgh; invented the steam-hammer and a steam pile-driver. (1808-1890).

Nassau, chief town and seat of Government of the Bahamas, British West Indies, on New Providence I.; it exports pearls, tomatoes and other fruits, and sponges. Pop. c. 11,000.

Nassau, till 1866 a duchy of Germany province of Hesse-Nassau (q.v.).

Nasturtium, a genus of plants of the Cruciferae family, comprising 50 species of world-wide distribution, 4 of which are found in Britain, including the watercress (*Nasturtium officinale*). The Nasturtium grown in gardens and yielding a pungent fruit finding use in pickles is a species of Geraniaceae (sometimes placed in an order Tropaeolaceae), belonging to the *Tropaeolum* genus. Various species are known. All bear showy orange flowers. This plant is also known as Indian Cress.

Natal, province of the Union of South Africa, fronts the Indian Ocean on the E., having a foreshore of 360 m.; the Drakensberg Mts. form its western boundary; has an excellent and fertile climate. Along the coast the sugar-cane is largely cultivated, with tea, tobacco, etc., while all kinds of fruits flourish; the rising ground inland produces good cereals, and large numbers of sheep and cattle find excellent pasturage on the plains and mountain slopes on the W. Excellent coal is mined in large quantities, and iron and copper are found; wool, sugar, hides, feathers, and ivory are the principal exports, and are shipped mainly at Durban. Pietermaritzburg (q.v.) is the capital. Natal was discovered in 1497 by Vasco da Gama, and after being annexed to Cape Colony in 1844, was declared, 11 years later, a separate colony until the formation of the Union in 1910. Zululand was incorporated in 1897. Area, 35,250 sq. m. Pop. 1,917,000.

National Convention, the revolutionary assembly of France, consisting of 749 members chosen by universal suffrage, which on Sept. 22, 1792, supplanted the Legislative Assembly, proclaimed the Republic and condemned Louis XVI. to the guillotine. In spite of its perplexities and internal discords, it was successful in suppressing the Royalists in La Vendée and the south, and repelling the rest of Europe leagued against it, not only in arms, but in the field of diplomacy. It laid the foundation of several modern French institutions, and dissolved itself in favour of a Directory of Five on Oct. 20, 1795.

National Debt. The national debt of a country is the gross capital sum which its Central Government owes to those, whether its own subjects or foreigners, from whom it has borrowed money (usually for purposes of war). The development of national debts dates roughly from the middle of the 17th Century, though in earlier times rulers on occasion borrowed money during emergencies when the revenue fell short of requirements.

The origin of the British National Debt was bound up with the foundation in 1694 of the Bank of England (q.v.), which was, indeed, founded upon a perpetual loan of £1,200,000 to the State. The debt grew rapidly during the wars of the 18th and 19th Centuries, increasing from £21½ millions in 1697 to £52 millions in 1713, to £138½ millions at the end of the Seven Years War in 1763, and over £742½ millions in 1814 when Napoleon was banished to Elba.

Before the World War the bulk of the debt (£586 millions) was funded debt. This term originally signified debt the interest of which was charged upon definite taxes, revenues, or funds, but with the improvement of credit it became customary to charge interest upon the general revenue of the country and funded debt came to mean the permanent debt in respect of which interest only had to be paid. The counterpart of funded debt is unfunded or floating debt, particularly treasury bills and advances on Ways and Means certificates. During the World War British Government borrowing took the form of redeemable debt (unfunded debt). Of the

total debt of \$8,097 millions in 1919, about half was due for repayment within from five to sixty years.

In peace time the British Government normally aims at reducing the debt by redemption from a Sinking Fund made up by devoting sums annually to the service of the debt. The most important post-war measure affecting the debt was the Government conversion operation (see Debt Conversion) in 1932 when \$2,000 million War Loans at 5 per cent. was transformed into a 3½ per cent. loan. Apart from war purposes an increasing amount has been borrowed for the purposes of economic development.

National Debt contracted abroad and expressed in foreign currencies is called external debt, while that incurred within the country itself is called internal debt. During the war Great Britain contracted a large external debt, mainly to the U.S.A. Government, and the European Allies contracted external debts to the British Government and to that of the U.S.A. The net National Debt of the United Kingdom in 1933 was \$8,026,127,000, and interest charges amounted to some \$211 millions.

National Defence Contribution (N.D.C.), a tax imposed for the first time under the Budget of 1937, chargeable upon the profits of businesses carried on by firms or individuals in the United Kingdom. No tax is payable on profits of less than \$2,000; the tax is at the rate of 5 per cent. for companies, or 4 per cent. for individuals or partnerships, on profits above that amount, certain deductions being allowed when the profits are less than \$12,000. The tax does not apply to statutory undertakings or to businesses of a "professional" nature.

National Gallery, the National Gallery, situated in Trafalgar Square, London, originated in a collection formed by John Julius Angerstein (1735-1823), which was purchased in 1824 for \$60,000 as the nucleus of a national gallery. It now comprises over 1,200 pictures, by both foreign and British masters. In 1855, \$70,000 was voted by Parliament for the purchase of the "Ansidea Madonna" of Raphael, together with \$11,000 for Vandyck's "Charles I. on Horseback." Bequests include that of Vernon in 1847, a collection of 157 works, and that of the famous artist J. M. Turner in 1851. The National Gallery of British Art, now renamed the Tate Gallery, on the Thames Embankment at Millbank, presented to the nation by Sir Henry Tate in 1897, and much extended by the generosity of Lord Duveen, contains British masterpieces and works by modern foreign artists.

National Government, the British Government set up in 1931 on the fall of the second Labour Government consequent upon the economic crisis of that year. It was headed by J. Ramsay MacDonald, the ex-Labour Premier, as Prime Minister, seconded by the Conservative Leader, Stanley (afterwards Earl) Baldwin, and had the co-operation of a part of the Liberal Party under Sir John Simon. At the General Election held immediately afterwards, it secured a majority of 425 over all other parties; in 1935 a second General Election maintained it in office with the reduced majority of 247 seats over the combined Opposition total. In June of that year Baldwin succeeded MacDonald as Premier, to be in his turn succeeded in 1937 by Neville Chamberlain. Its entry into office in 1931 was marked by a programme of drastic economies, which involved heavy cuts in social service expenditure and in the salaries of Government

employees. As the depression lightened somewhat these cuts were to some extent restored, the main interest of the Government being turned in the direction of a vast re-armament programme, financed by loans and increased taxation.

National Guard, The, a French citizen militia, first organized in Paris in 1789, with Lafayette as commandant, but suppressed in 1827; it was twice revived, but finally suppressed in 1872 after taking the part of the Paris Commune in 1871.

National Insurance. See Health Insurance, Old Age Pensions, Unemployment Insurance, Insurance.

Nationalization, the acquisition of industrial and distributing organizations by the State; a policy advocated in this country by the Labour Party, especially as regards mines and railways, and according to their more recent policy, of banks. Schemes of pure nationalization have, in recent years, been less popular than the creation of statutory bodies—such as the London Passenger Transport Board—which provide for a continuance of private ownership under a system of public management and profit limitation.

National Mark, a grading mark and other products, placed on foodstuffs and other products, authenticating their British origin. It was initiated by the Agricultural Products Act of 1928, and its use is controlled by a National Mark Committee. It consists of a map of England and Wales (or Scotland) with the slogan "Buying Begins at Home."

National Physical Laboratory, a State institution under the Department of Industrial and Scientific Research established at Teddington, Middlesex, in 1901; its work consists of the standardization of instruments and general research on materials in connection with pure physics, engineering, aerodynamics, electricity, radio, metrology and metallurgy. The President of the Royal Society is Chairman of the General Board.

National Portrait Gallery, home of the principal English collection of portraits of persons of historical importance in our island story; established originally at St. Kensington, and removed in 1896 to its present home adjoining the National Gallery. Scotland has its own National Portrait Gallery at Edinburgh.

National Registration, a system in 1915 under which all inhabitants of the British Isles between the ages of 15 and 65 had to register in order that they might, if necessary, be called upon for war service. In 1938, its revival was suggested in some quarters as part of a campaign of preparedness against possible future wars.

National Trust, a society formed in 1895 and incorporated in 1907, for the purpose of preserving and administering places of historic interest or natural beauty. Among the areas acquired for preservation are many breeding grounds for birds which might otherwise become extinct, among them the famous Blakeney Point, where a well-known ternery protects terns, and the Farne Is. The Trust has done valuable work in saving beauty spots in the Lake District and elsewhere for the nation and in preventing the loss of amenities through commercial exploitation. Its properties, which are available for public enjoyment, are continually being added to by gift, bequest or purchase, and are now spread over all the British Isles.

Natron, a naturally-occurring mineral form of sodium carbonate (soda). It is found in Egypt, Kenya, Mexico, and elsewhere. Natron effervesces, with evolution of carbon dioxide, when a dilute acid, such as vinegar, is added to it.

Natural Gas, a product which almost always occurs in association with oil-borings; it consists largely of methane (g.v.), or marsh gas. It also contains some of the olefine series of hydrocarbons (g.v.), such as ethylene. It is collected and used, especially in U.S.A., for the lighting of towns and as a source of heat.

Natural History, that department of knowledge which includes the sciences of zoology, botany, chemistry, natural philosophy or physics, geology, paleontology and mineralogy. In a popular sense it is usually restricted to botany and zoology, or the study of vegetable and animal life.

Naturalization. See *Allen*.

Natural Selection, name given by Darwin to the process by which those plants and animals most fitted to contend with their environment survive at the expense of others less fitted.

Nautch Girl, a female dancer in the Nautch or religious ballet dances of India, also employed as a temple attendant. The dances consist for the most part of posturing the body with swaying arm movements, and little motion of the feet.

Nautilus, a genus of cephalopod molluscs with

spiral shells, the chambers being the successive residences of the animal, which forms new ones as it grows, the last only being inhabited by the living animal. The nautilus inhabits tropical seas; there are only three or four species. They have 2 pairs of gills and many small retractile tentacles without suckers.



NAUTILUS

Navajos (*Navahos*), a once warlike tribe of N. American Indians of the western U.S.A., now numbering about 30,000, settled in reservations in New Mexico and Arizona.

Naval Cadet. After passing a qualifying examination a candidate wishing to enter the executive branch of the Navy is termed a cadet. He then spends a period of elementary instruction in the Royal Naval College at Dartmouth, after which he is sent to sea for a term of years, when he passes through special finishing courses of instruction at the various naval educational establishments, such as the gunnery, torpedo, and pilotage schools and the Royal Naval College, Greenwich, at each of which he undergoes an examination. He then becomes a midshipman.

Naval Reserve. The British Naval Reserve consists of the Royal Naval Reserve, formed from officers and men of the mercantile marine holding guarantees of seafaring competence according to their rank or rating, who attend periodical courses of instruction in naval matters, and the Royal Naval Volunteer Reserve, composed of Volunteers not professionally connected with the sea, who also attend for periods of annual training. Both classes are liable for service in the event of hostilities. Time-expired men of the Navy are also organised in a Royal Fleet Reserve.

Navan, market town of Co. Meath, Eire (Ireland), 30 m. NW. of Dublin, at the junction of the Blackwater and Boyne. It is a hunting and fishing centre, and makes woollens. Pop. 3,600.

Navarino, a bay on the SW. coast of the ancient Pylos, Morca, Greece, close to the scene of the naval victory of the Athenians over the Spartans, 425 B.C., and of the annihilation of the Turkish and Egyptian navies by the combined fleets of England, France, and Russia, under Codrington, Oct. 20, 1827, the battle which heralded Greek independence.

Navarra, province of N. Central Spain, comprising by far the greater portion of the old kingdom of Navarre, which lasted up to 1512, the remainder of which now forms the French dept. Basses-Pyrénées; the Spanish province is very varied in surface and climate; in the N. the people are chiefly Basques; maize, red wine, silver and copper are the chief products. Area, 4,055 sq. m. Pop. 352,500.

Nave, in architecture, the principal body of a church, so called because of its resemblance in shape to an inverted ship. It is frequently flanked on each side by aisles, and crossed at about the middle by transepts.

Navigation, the science of directing the course of a seagoing vessel from place to place and of ascertaining its position at any given time. Until the introduction of the mariner's compass as a result of contacts with the Near East just before the Renaissance, sailors had no means of guiding their vessels save observation of the heavens, and were usually therefore compelled to keep within sight of land. The compass enabled Columbus to cross to America, although at that time ignorance of the Magnetic Pole made full reliance on this instrument hazardous.

To-day the navigator has numerous alternative methods of checking his position. The Patent Log gives him his speed and the distance covered through the water. The sounding machine tells him the depth and nature of the sea-bottom. Astronomical observation by means of the sextant will confirm to a high degree of accuracy, when conditions permit, the conclusions arrived at by other means. The gyroscopic compass always points to the true North, as opposed to the Magnetic North. Audible warnings from fog-horns, bell-buoys, etc., are being superseded as warnings to ships approaching the land by more modern devices. Directional wireless will give highly accurate information on a ship's position, and the Leader System by means of an electric cable on the sea-bed enables a ship with the necessary apparatus to follow the fairway into the harbour.

Navy. The British, was traditionally the creation of Alfred the Great in 897, and since his day some kind of national war fleet has existed almost continuously. Steam was first used in 1840, the first ironclad was built in 1860, and the first submarine in 1901. During the World War the principal naval battles were those of Heligoland Bight, Coronel, and the Falkland Isles (1914), the Dogger Bank (1915), and Jutland (1916). The present-day British Navy consists of (a) capital ships, carrying armaments varying from 8 guns of 13-in. calibre to 8 of 15-in., and ranging in size from 20,000 to 40,000 tons, and in speed from 21 to 31 knots. (b) Cruisers. These carry armaments varying from five 6-in. guns to seven 7-in. and range in size from 3,750 tons to 7,500 tons and in speed from 23 to 31 knots. (c) Surface torpedo craft. These include flotilla leaders and ordinary destroyers. All are fitted with depth charges for destroying submarines. (d) Submarines. These are fitted with four to eight torpedo tubes, and some carry a 12-in. gun. There are other classes of ships for auxiliary duties, such as merchant cruisers, sloops, mine-sweepers, patrol craft, and aircraft ships. The whole control and administration of the British Navy is theoretically in the hands of

the Lord High Admiral, but the actual duties are carried out by Lords Commissioners of the Admiralty, headed by a cabinet minister, the First Lord. The Washington Treaty of 1922 between the chief Naval Powers, supplemented by a later agreement in 1930 and 1935-1936, limits by agreement the number and armament of the ships of the signatory powers.

Navy League, a body founded in 1895 to interest the public in the Navy, disseminate information concerning it, and advocate its maintenance on the strongest possible lines as a guarantee of Britain's status.

Nawab, a viceroy of a province in the Mogul empire, applied also to a Mohammedan chief in India; in the form Nabob, was frequently applied in the 19th Century to an Englishman who had returned home after acquiring wealth in India.

Naxos, Greek island of the Cyclades, in the Aegean Sea, famed for its marble; it exports wine, fruits and emery powder. Pop. c. 17,000.

Nazareth, town in Galilee, Palestine, 65 m. N. of Jerusalem; the childhood home of Jesus Christ. Pop. c. 10,000.

Nazarites, or **Nazirites**, persons among the ancient Jews who took a vow to abstain from strong drink and from cutting their hair, either for a limited period or for life; the vow was made as an act of special religious devotion.

Naze, the headland of NE. Essex, England, 5 m. S. of Harwich.

Nazis (from German *national*), the popular name for the National Socialist Party of Germany, organised from 1922 by Adolf Hitler (q.v.) as a political fighting machine. After 10 years' rapid growth it secured in 1933, complete ascendancy in the German State, and its leader became Chancellor of the Reich and, later, President of the Republic, under the self-bestowed title of Führer (leader). The Nazi party, in the eyes of its members, symbolises the revival of the *Nationalgeist* or national spirit of Germany. It has adopted the Swastika (q.v.) as its distinctive emblem. See also **Aryan**; **Germany**; **Hitler**, **Adolf**; **Jews**.

Neagh, large lake in Northern Ireland, touching all its counties except Fermanagh; is the largest lake in the British Isles; area, 153 sq. m.; is 18 m. long, and has an average breadth of 10 m. and a greatest depth of 102 ft.

Neanderthal Man, typical representative of a supposed race of early near-human beings, named from some remains found near Neanderthal, Prussia, in 1856. Neanderthal man, a cave-dweller of a very low type of development, probably died out about the end of the last ice age. His culture was of the variety known as Mousterian; he was probably unacquainted with the use of fire.

Neath, a borough and river port of Glamorganshire, Wales, 6 m. N.E. of Swansea; is an old town, and has interesting ruins of an abbey and of a castle (burned 1231); has copper, tin, iron, and chemical works. Pop. 33,000.

Nebraska, one of the west central States of the U.S.A. There are large sandy stretches in the N., and much prairie land in S. and E.; maize and other grains, hay, sugar, apples, potatoes, etc., are grown, and there are large potash deposits. Omaha and Lincoln (capital) are the chief centres of the manufacturing industries.

The climate is dry and bracing; wolves, foxes, skunks, etc., abound, chiefly in the Bad Lands of the N. Nebraska was incorporated in the Union in 1867. Area, 77,500 sq. m. Pop. 1,378,000.

Nebula, a celestial phenomenon seen from the earth as a patch of light that cannot be resolved by the telescope into single stars. They can be divided into *dark nebulae*, or great clouds which obscure part of the Milky Way, appearing as voids in the heavens; *diffuse luminous nebulae*, like the great nebula in Orion, which are clouds of fine dust or rare gas, owing most of their luminosity to neighbouring stars; *planetary nebulae*, like the ring nebula in Lyra, which have in most cases a central bright star, and are probably novae in a late stage of development; *spiral nebulae*, like that in Andromeda, considered to be "island universes" outside our system.

Nebular Hypothesis, a theory of the origin of the solar system published by Laplace in 1796. He imagined that the system started as a hot gaseous nebula which cooled and contracted, leaving rings of material which condensed to form the various planets. The theory has now been discarded as untenable.

Necker, Jacques, French financier, born in Geneva; became in 1777, Director-General of Finance in France, and attempted, by borrowing and retrenchment, to restore public credit, but after 5 years was dismissed; was twice recalled after 1788, but finally resigned in 1790, after the outbreak of the Revolution, retiring to Switzerland. (1732-1804).

Necromancy, the attempt to obtain events by conjuring up the spirits of the dead, a practice followed at various times by nearly all civilised and uncivilised peoples, including the ancient Jews and Greeks. Classical instances are the raising of Saul's spirit by the Witch of Endor, referred to in the Bible, and the raising of the shade of Tiresias by Odysseus, referred to in Homer's *Odyssey*.

Necropolis, literally "city of the dead," a name originally applied to a suburb of Alexandria devoted to the reception of the dead, and hence extended to any cemetery. The London Necropolis, with a crematorium, is situated at Brookwood, Surrey, and was established in 1889.

Nectar, in Greek mythology, the drink of the gods, which, with ambrosia (their food) nourished the ichor (their blood) and kept them ever in immortal youth.

Needles, a group of curious chalk rocks off the W. end of the Isle of Wight, separated from the mainland by sea's stack. A lighthouse stands on one of the rocks.

Nefertiti, wife of Sakere, King of Egypt in the 18th dynasty, 14

Centuries B.C. A remarkable sculptured and coloured stone head of the queen, one of the finest extant specimens of Egyptian art, was discovered at Tell el-Amarna, and is now preserved at Berlin; reproductions have made her perhaps the most real to this generation of all the great beauties of the past.

Negative, in photography, a picture of an object in which the lights and shadows are reversed, so that the shady part appears white and the light in it appears dark.



NEANDERTHAL MAN



NEFERTITI

Negligence. The general rule of English law respecting negligence is that everyone is bound to exercise due care towards his neighbours in his acts and conduct, and omits or falls short of it at the peril of having to pay damages in an action of negligence. In some cases this ground of liability may co-exist with a contractual liability towards the same person arising out of the same facts, though the tendency is to hold that facts which constitute a contract cannot have any other legal effect.

Liability in specific cases of negligence is largely determined by precedents covering a particular category of cases. In order that a man's negligence may entitle another to a remedy against him, the negligence must be a proximate cause of the damage; hence, if the plaintiff could, by the exercise of due care at the decisive moment, have avoided harm, his contributory negligence, as it is called, may disentitle him to damages. In criminal law whatever constitutes murder when done by fixed design, constitutes manslaughter when it arises from culpable negligence.

Negotiable Instrument,

a form of credit, such as a bank note, cheque, debenture bond payable to bearer, exchequer bill, dividend warrant, promissory note, etc., which may be passed from the owner to another person for a consideration, or for cash. A negotiable instrument may be sued on by the holder, and the property passes by mere delivery. The holder in due course of a negotiable instrument is not affected by defects in, or lack of title of, his transferor or previous holders. The crossing of a cheque or postal order renders it not negotiable within certain conditions. A postal order may be marked "not negotiable" to protect the true owner.

Negrin, Juan, Spanish statesman, Premier and Minister of Finance in the Spanish Republican Government from 1937; has represented Spain on the League of Nations and made repeated appeals for the enforcement of neutrality in the Civil War on the part of the European Powers.

Negrito, name originally given to a dwarfish negro-like people of the Philippine Is., and applied later by extension to negro races of small stature found in Africa, Melanesia and parts of the East Indies.

Negro, Rio, river of northern South America, rising as the Guainia in the republic of Colombia, and flowing E. and S. though a course of 1,350 m. to meet the Amazon near Manaos.

Negroes, one of the main ethnological groups of the human race, distinguished in general by dark skin, fuzzy hair, broad nose, and protruding lips; they originated probably in a primitive Central Asiatic stock which spread SW. to Africa and E. to the Indies and Melanesia in successive waves of migration. In early times the mixture of negro and Semitic stocks produced, in the Nile valley, the first great civilisation, that of the Egyptians. In Africa, there were in early times various centres of culture—along the Gulf of Guinea, culminating in the S.E. at Zimbabwe, and among the tribes of the interior, whence came the Bantus who conquered most of South Africa.

Out of the conflicts between Moslem and Negro in the 15th Century arose the practice of enslaving the conquered African. From the immigrant slaves has descended a large negro population in the U.S.A., especially in the S.E. states, now amounting to over 12 millions, the problem of whose status has not yet been completely solved. In Africa itself the partition of the country between European powers and the economic exploitation of the negro have tended to destroy native

culture. Of late years, however, education has improved, combined with a better understanding of the negro himself. A keen interest in negro art (particularly Nigerian) has also arisen, and efforts have been made to prevent its extinction. The estimated number of negroes in Africa is 210,000,000.

Nehemiah, Jewish leader sent by Persia, to rule Jerusalem and restore its worship after the Babylonian captivity; his story is told in the Biblical book bearing his name.

Nehru, Motilal, Indian politician, by establishment of "dyarchy" in 1919 he forsook European ways, joined Gandhi in the non-co-operation movement, and gave up his splendid house to the use of the Indian National Congress. In 1928 he produced the Nehru Report, recommending Dominion status for India, and took part in "civil disobedience." Sentenced, 1930, to six months' imprisonment; but soon released on account of illness. Died at Lucknow. (1861-1931).

Neilson, Julia, English actress, born in London; made her first stage appearance at the Lyceum in 1888; first American appearance, 1895, at New York. With her husband, Fred Terry, she managed London theatres, 1900-1930. (1869-).

Neilson-Terry, Phyllis, English actress, born in London, daughter of Julia Neilson and Fred Terry. First appearance at Blackpool in 1909; played in London, 1910. Her first American appearance was made in New York, 1914. (1892-).

Nejd, formerly an independent emirate of Arabia, now part of the Kingdom of Saudi Arabia. An inland district, it is mainly a lofty plateau, desert save for the fertile valleys and oases. Its people, mainly Bedouins, rear horses and camels, which are exported. Other products are dates, hides and clarified butter. Riyadh, one of the two capitals of the kingdom, and Rufeif are the largest towns. Pop. 3,000,000.

Nelson (1) borough in Lancashire, England, 3 m. N.E. of Burnley; manufactures cotton goods. Pop. 36,500. (2) provincial district in N. of South Island, New Zealand. Area, 10,870 sq. m. Pop. 59,600. Its capital of the same name, which manufactures textiles and preserves, has a pop. of 13,700. (3) town in British Columbia, Canada, on Kootenay Lake, with a lumber trade. Pop. 6,000.

Nelson, river of Manitoba, Canada, running from Lake Winnipeg N.E. to Hudson Bay, which it enters by Port Nelson. Navigation is obstructed by rapids. Length, c. 460 m.

Nelson, Horatio, first Viscount, English admiral, born at Burnham Thorpe, Norfolk. Entering the navy in 1770,

in 1780 he headed the expedition against San Juan, and in 1781 acted under Lord Hood in American waters. He met and married in 1787 a Mrs. Nesbit. After living for five years in retirement, in 1793 he was again summoned to active service, and in command of the *Agamemnon* assisted in the Mediterranean operations of Lord Hood, having his right eye injured during the storming of Calvi, in Corsica (1794).

The engagement with the Spaniards off Cape St. Vincent (1797) brought him promotion to the rank of rear-admiral; in the same year he lost his right arm at Santa Cruz, and in the following year annihilated the French



LORD NELSON

fleet in the Bay of Aboukir, for which he was raised to the peerage as Baron Nelson, and created Duke of Bronte by the king of Naples.

At this time he began his lifelong liaison with Lady Hamilton (*q.v.*). As vice-admiral, nominally under Sir Hugh Parker, he in 1801 sailed for the Baltic and inflicted a signal defeat on the Danish fleet off Copenhagen; for this he was made viscount and commander-in-chief. On Oct. 21, 1805, he crowned his career by a memorable victory off Trafalgar over the French and Spanish fleets under Villeneuve, being mortally wounded at the height of the battle. (1758-1805).

Nelson's Column, a monument in memory of Lord Nelson in Trafalgar Square, London, begun in 1840 and finished in 1867; designed by William Railton. It is a copy of a Corinthian column of the Temple of Mars Ultor at Rome, and is 170½ ft. in height.

Nemesis, the ancient Greek personification of the idea of the remorseless retribution attached to every evil act; it was conceived as the divine vengeance for *hubris*, or man's insolent self-confidence in the face of the gods.

Nen, or *Nene*, river of England, running N.E., mainly N.E. through Northamptonshire, Cambridgeshire and Lincolnshire to the Wash. It passes Northampton, Peterborough, and Wisbech. Length, 90 m.

Nenagh, market town of co. Tipperary, Eire (Ireland), 24 m. N.E. of Limerick. It is an agricultural centre and has slate quarries. There are remains of a Norman castle. Pop. 4,500.

Neodymium, a metallic chemical element belonging to the group of rare-earth metals. Symbol Nd; atomic number 60; atomic weight 144.3.

Neolithic, or *New Stone Age*, the stage in man's development in which he used worked and polished implements of stone, before discovering the use of metals. It is so called in opposition to the paleolithic (old stone) age, when the stone was merely chipped off without further working.

Neon, a non-metallic chemical element belonging to the group of the rare gases. Symbol Ne; atomic number 10; atomic weight 20.18. It occurs in minute traces in the air, where it was discovered by Sir William Ramsay and Professor M. W. Travers in 1898. At low pressures, it emits a fine reddish-orange glow when subjected to electric discharge, a fact turned to commercial account in the popular neon-tube advertisements.

Neo-Platonism, a system of philosophy in Alexandria at the beginning of the 3rd Century, from the combination of Eastern, especially Persian and Semitic, religious ideas with the philosophy of Plato. Its principal exponents were Plotinus, Porphyry and Iamblichus; it saw man as the incarnation of an emanation from the divine reason or Logos, linked with the absolute through a graded hierarchy of spiritual beings. Their thought largely affected the development of Christian theology.

Nepal, small Himalayan kingdom to the north of India, occupying a narrow, mountainous territory along and including the southern slopes of the Himalayas, which separate it from Tibet; consists mainly of valleys and intervening mountain ridges. The Gurkhas (*q.v.*) are its ruling race; Hinduism and Lamaist Buddhism the dominant religions. Capital, Kathmandu. Area, 64,000 sq. m. Pop. 5,900,000.

Nephrite, jade, an alternative name for a native silicate of calcium and magnesium. It occurs in Iran (former Persia), China, Siberia and New Zealand.

Nephritis, inflammation of the kidneys, of which desquamative nephritis or Bright's Disease is an acute or chronic form; both are characterised by the presence of albumen in the urine. It may result from exposure to cold, intemperance, or as a complication of erysipelas or diphtheria. The kidneys become congested with blood, and dropsy is a frequent concomitant. Waste products normally voided by the kidneys may poison the system with fatal results.

Neptune, a Roman god, specially of the sea and marine affairs, identified with the Poseidon of the Greeks; is represented with a trident in his hand.

Neptune, with the exception of Pluto, discovered in 1830, the outermost planet of the solar system. It revolves round the sun at a distance of 2,800 million miles in a period of 165 years; its period of rotation on its axis is uncertain, but is believed to be either 7½ or 15½ hours. Its diameter is 4 times and its mass 17 times that of the earth. It was discovered by Adams and Leverrier in 1846, after calculations based on the irregularities of the orbit of Uranus. It has 1 satellite.

Nereids, in Greek mythology, nymphs of the Mediterranean Sea, daughters of Nereus, 50 in number, and attendant on Poseidon.

Neri, St. Philip, Italian priest, born in Florence, founder of the Congregation of the Oratory; did much to revive religion in Rome, of which he is a patron saint. His heart is said to have burst in his breast from the excess of his love of God. Festival, May 26. (1615-1595).

Nero, Roman emperor from A.D. 54 to 68, born in Antium. After the murder

of Claudius, instigated by his wife Agrippina, Nero's mother by Cn. Domitius Ahenobarbus, Nero seized the throne, excluding Britannicus, the rightful heir. After reigning without serious blame for 5 years, he became a tyrant, killed Britannicus and his own mother and wife, and persecuted the Christians, on a trumped-up charge of having caused the great burning of Rome, suspicion of which rested, probably unfairly, on Nero himself. After he had executed Seneca (*q.v.*) and others for conspiracy, and killed his second wife Poppaea, rebellion broke out. He fled from Rome and committed suicide.



NERO

Nerva, Roman emperor from 96 to 98, elected by the Senate; ruled with moderation and justice; resigned in favour of Trajan. (32-98).

Nervous System, the complex of organs, and connecting tissue, commonly known as "the nerves," which convey sensations from the various parts of the body to the brain and responsive impulses from the brain to the rest of the body. Efferent nerves conduct impulses from, and afferent nerves to, one of the various nerve centres, of which the chief is the brain, supplemented by the spinal cord. The cell, together with its processes, is known as a neuron or nerve-unit. The nerves are grouped into 3 great systems, the cerebro-spinal system, centring on the brain and spinal cord, and the sympathetic system, centring on ganglia adjoining the spinal cord, and controlling the life processes, such as digestion, respiration, and blood circulation, which are not under voluntary control.

Ness, Loch, the second largest loch in Scotland, in Inverness-shire, is 22½ m. long and has an average breadth of

1 m. and an extreme depth of 280 ft.; in recent years has been famous for the alleged appearances of a supposed "Loch Ness Monster," which the less credulous have suggested may be a school of otters.

Nessus, in classical legend, a Centaur Dejanira, Hercules' wife, was shot by Hercules with an arrow dipped in the blood of the Hydra (q.v.), and who in dying handed to Dejanira his shirt or mantle, dipped in his poisoned blood, as a charm to regain her husband's affections should he prove unfaithful.

Nestor, in Greek legend, king of Pylos, the oldest, most experienced, and wisest of the Greek heroes at the siege of Troy.

Nestorianism, a Christian heresy named after Nestorius, a Syrian, Patriarch of Constantinople from 428 to 431, when he was deposed by the Council of Ephesus. It maintained that Christ's human and divine natures were distinct, and therefore denied to the Virgin Mary the title "Mother of God." After the Nestorians had been expelled from the Church they continued to exist as a sect in Palestine and Syria, and sent out missionaries to Central Asia and even China, where a flourishing Nestorian Church existed until about the 16th Century. Nestorian communities, now called Chaldeans, still exist in the neighbourhood of Kurdistán.

Net Ball, a ball game, popular in girls' schools, whose object is to propel the ball, which resembles a football, with the hand into a netted ring attached to a goal-post. The team is of seven players, of whom only one, the "shooter," may score a goal. The ball must not be carried, but "passed" from one member of the team to another. The court is 50 ft. by 100 ft.

Netherlands, The, historically and Holland, a small maritime country of W. Europe, bordered on its N. and W. by the North Sea, and having Germany on its E. and Belgium to the S. It comprises, besides the mainland, 2 island groups, 1 in the N. and 1 in the S. Much of its flat surface lies below the level of the sea, and where there are no natural sandhills, is protected from inundation by enormous dykes, 365 ft. thick; much of the soil has been reclaimed by draining lakes and by pushing back the sea walls, the size of the country having thus been much increased since 1833. The most recent extension has consisted of the draining of parts of the Zuider Zee (q.v.) completed since the War. Canals traverse the country in all directions.

The climate is for the most part similar to that of England, but greater extremes of heat and cold are experienced. Farming is the staple industry; butter and cheese are the most valuable products, and are largely exported; the fisheries, coast and deep sea, are also of much importance. Manufactures are retarded by the want of coal, but wind supplies motive power for textile factories (cotton, woollen, and silk), gin distilleries, pottery works, margarine and cocoa factories, etc. Holland still maintains a busy carrying trade with all parts of the world, especially with its many rich colonies in the East and West Indies.

The government is a limited monarchy; the legislative power is seated in the States-General, an assembly of 2 chambers, the one elected (for 4 years) by direct suffrage, the other (for 6 years) by provincial councils. Primary education is free and compulsory. No religion is established, but rather more than half the people are Protestants, the remainder Roman Catholics. The birth of Holland as an independent European power took place in the 16th Century, when, after an heroic and protracted struggle, it freed

itself from the yoke of Spain, then the most powerful nation in the world. Area, 16,770 sq. m., of which about 2,570 sq. m. are coastal waters. Pop. 8,390,000.

Netley, village in Hampshire, England, on the shore of Southampton Water, 3 m. S.E. of Southampton; at its military hospital Army nurses are trained; there are ruins of a Cistercian abbey. Pop. c. 1,500.

Nettle, a genus of plants (*Urtica*), consisting chiefly of neglected weeds, having opposite or alternate leaves covered with fine stinging hairs which contain an acrid and caustic fluid. The species are mainly herbaceous. *Urtica dioica* is the Common Nettle. The Dead Nettles (q.v.) are species of Labiate.



Nettlerash, or *Urticaria*, a DEAD NETTLE irritating eruption in the skin.

causing a sensation like the stinging of nettles. It may be acute or chronic, frequently caused by errors of diet.

Nettle Tree (*Celtis australis*), a deciduous tree of the Elm (Ulmaceae) order, with simple and generally serrated leaves, resembling those of the nettle, but without the sting. It grows in Europe and has a sweet, fleshy, edible drupaceous fruit.

Neuchâtel, a western canton of Switzerland, lying between Lake Neuchâtel and France; the surface is diversified by the Jura Mts.; the greater part of the inhabitants are French Protestants. Coal and iron are found, stock-raising and agriculture are engaged in, but the great speciality of the canton is watchmaking. Neuchâtel was incorporated in the Swiss Confederation in 1815. Area, 310 sq. m. Pop. 124,300. Neuchâtel, capital of the canton, on the NW. shore of the lake, 86 m. N.E. of Geneva, is chiefly engaged in the manufacture of watches, jewellery, etc.; it has a university. Pop. 22,700. Lake of Neuchâtel is a beautiful sheet of water, 25 m. in length, and from 3 to 6 m. in breadth.

Neuilly-sur-Seine, a suburb of Paris, N. of the Bois de Boulogne, where in 1919 the treaty of peace between Bulgaria and the Allied Powers was signed.

Neukölln, town of Prussia, Germany, a S.E. suburb of Berlin, in the district of Potsdam. Its many industries include the making of textiles. It is now a part of the city of Berlin. Pop. 237,000.

Neuralgia, a spasmodic or continuous pain occurring along the course of one or more distinct nerves, and by this localisation distinguished from other pains. A common form, neuralgia of the chief nerve of the thigh (sciatic nerve), called sciatica, affects the buttocks and back of the thigh down to the knee, as well as the front, back, and outside of the leg and foot. Neuralgia invariably indicates a weak state of the general system. The primary cause may be inflammation of the nerve, a swelling upon it, or irritation produced by an ulcer.

Neurasthenia, a condition of nerve weakness, or exhaustion, due as a rule to overwork or anxiety, intemperance or errors of diet. The symptoms include melancholia, depression, headaches, insomnia and muscular weakness; but the condition is often largely subjective, and accompanied by little physical disability.

Neuritis, inflammation of the nerve, attacking either the nerve-sheath, the interstitial tissue, or the fibres.

Prolonged pressure may induce acute neuritis of a single nerve, while inflammation extending from an injured part is also a contributory factor. An unhealthy condition of the blood is another cause. Multiple neuritis is generally due to the toxins of various diseases, e.g., diphtheria, influenza, etc.

Neurosis, a term in pathology to denote not attributable to organic disease: they give rise to morbid fancies and a neurotic and hysterical temperament. Their treatment is undertaken by psycho-therapy (q.v.), including hypnotism and autosuggestion. Those measures, however, do not remove the cause, and are in most cases merely agents of relief. According to Freud (q.v.) most neuroses are due to some cause associated with sex repression.

Neutrality, the condition of a state in a war between other states. A neutral state may conduct normal relations with belligerent states, provided that no direct aid is given in the prosecution of the war. The present rules governing neutrality are contained in the Hague Conventions of 1899 and 1907. While a neutral state is bound to maintain impartiality, the belligerent states are compelled to respect the inviolability and sovereignty of a neutral state. The capture of a belligerent ship by another belligerent ship or an attempt to exercise a right of search by belligerent warships within the territorial waters of a neutral state is a violation of neutrality. Belligerent vessels are, however, permitted to enter neutral ports for purposes unconnected with war, but a belligerent is not permitted to arm vessels or to recruit within neutral jurisdiction. The export of arms from a neutral state, as part of private commerce, is legitimate, the goods, however, being subject to seizure as contraband. The rules of neutrality are at present in a somewhat chaotic state, having been in some respects re-interpreted between 1936 and 1938 in relation to the Civil War in Spain.

Neutrodyne, a special type of circuit receiving set, designed to prevent oscillation.

Neutron, constituents of matter, a particle with the mass of a proton (q.v.) but no electric charge. It is perhaps a combination of a proton with a negative electron. Neutrons may be obtained by the bombardment of (e.g.) beryllium by alpha particles, that is, rapidly-moving helium atoms which have lost two negative electrons and are therefore charged with 2 units of positive electricity.

Neuve Chapelle, village in the France. The advancing German army occupied it in Oct., 1914, and it was the scene of an important battle in March, 1915, when British troops captured the village with heavy casualties.

Neva, a river of Russia issuing from the SW. corner of Lake Ladoga, flows westward past Leningrad, and discharges into the Bay of Cronstadt, in the Gulf of Finland, after a course of 40 m.

Nevada, western state of the U.S.A., the most thinly populated of all the states; between the Rocky Mountains on the E. and the Cascades and the Sierra Nevada on the W. Elevated, cold, dry, and barren, it offers little inducement to settlers. The great silver discoveries of 1859 brought it first into notice, and mining for silver, copper and gold still remains the chief industry. Virginia City and Carson (capital) are the chief towns. It was admitted to the Union in 1864. Area, 110,800 sq. m. Pop. 81,050.

Nevinson, Christopher Richard Wynne, British artist. He studied in London and Paris and first exhibited in 1910.

He was an official artist during the World War, in which he served in the army for two years. His work shows Cubist and Futuristic influences. (1889-).

Nevis, an island in the Leeward group (q.v.) with capital Charlestown (Pop. 1,158); colonised in 1628; exports cotton, coconuts, and fruits. Area, 50 sq. m.

Nevis, Ben. See Ben Nevis.

Newark, town and borough of Nottinghamshire, England, with machinery manufactures and trade in coal and corn. King John died in its castle, now a ruin. Pop. 19,500.

Newark, largest city of New Jersey, U.S.A., 7 m. W. of Jersey City. It has extensive tanneries, and manufactures machinery, chemicals, and leather. (Pop. 442,000).

Newbattle, village of Midlothian, Scotland, land on the South Esk, near Dalkeith, the site of Newbattle Abbey, formerly seat of the Marquess of Lothian.

New Bedford, city of Massachusetts, U.S.A., once the seat of important whale fisheries; now a manufacturing centre for cotton goods, machinery, oil, and boots and shoes. Pop. 113,000.

Newbolt, Sir Henry John, British author and poet; in 1893 he published his first novel, but it is chiefly his poems that made his reputation, notably *Drake's Drum* which appeared in his *The Island Race*. He was knighted in 1915. (1862-1938.)

New Britain, largest island of the British West Pacific, formerly a German protectorate under the name New Pomerania, now under Australian mandate; copra is produced. Chief town, Rabaul. Area, 14,600 sq. m. Pop. c. 100,000.

New Brunswick, a SE. province of Canada, facing the Gulf of St. Lawrence on the NE. and the Bay of Fundy on the SE., joined on the E. to Nova Scotia by the isthmus of Chignecto. It has many lakes, magnificent forests of pine and other woods, and the fertile valleys of the Rs. St. John, Restigouche and Miramichi. Timber is the chief export; fisheries are of great importance. The minerals, though plentiful, are little worked, though coal is mined in good quantities. Many of the inhabitants are of French origin, for New Brunswick formed part of the old French colony of Acadia. Capital, Fredericton (pop. 8,800); largest towns, St. John (47,500) and Moncton (20,600). Area 27,985 sq. m. Pop. 408,200.

Newbury, borough and market town of Berkshire, England, 17 m. SW. of Reading. It is an agricultural centre, has racing stables and holds race-meetings. Here two battles took place during the Civil War, one a Royalist defeat, the other indecisive. Pop. 14,500.

New Caledonia, an island of the South Pacific belonging to France, the most southerly of the Melanesian group, lying about 800 m. E. of Australia; is mountainous, produces the usual tropical fruits, and exports some nickel, cobalt, coffee, etc.; is used by the French as a convict station; discovered by Captain Cook in 1774 and annexed by France in 1853; Nouméa, on the SW., is the capital. Area, 8,550 sq. m. Pop. 53,300.

Newcastle, Henry Pelham-Clinton, fifth Duke of, British politician, held office under Peel, and in 1844 became Chief Secretary for Ireland. He later served at the Colonial Office, and was in charge of the War Office at the outbreak of the Crimean War, resigning in 1855, but returning to the Colonial Office from 1859 to 1864. (1811-1864.)

Newcastle, Thomas Pelham Holles, first Duke of, British statesman; created Duke in 1715, he became a Secretary of State nine years later, and in 1754 succeeded his brother, Henry Pelham, as Prime Minister, retaining office until 1756, and resuming it the following year to resign in 1762. (1693-1768).



Newcastle-under-Lyme,

borough and market town of Staffordshire, England, 40 m. S. of Manchester; is a well-built town, actively engaged in brewing, malting and pottery. Pop. 61,000.

FIRST DUKE OF
NEWCASTLE

Newcastle-upon-Tyne, a city and county town of Northumberland, England; has a cathedral, and a college of Durham University; situated on the N. bank and 10 m. from the mouth of the Tyne, 275 m. N. of London; four bridges (including Robert Stephenson's famous High Level Bridge) connect Newcastle with Gateshead. It is the chief centre of the English coal trade, and its industries include shipbuilding, engineering and metal manufactures of all kinds. Pop. 299,400.

Newchang, town and port of Manchuria, in the Liao-tung peninsula. Bean-oil and bean-cake are made and exported and there are extensive fisheries. Pop. 137,000.

Newcomen, Thomas, English inventor, born in Dartmouth. A blacksmith by trade, he invented a steam-engine in which the piston was raised by steam and driven down by the atmosphere after the injection into the cylinder of a squirt of cold water. It was superseded by the steam-engine with separate condenser later invented by Watt. (1663-1729).

New Deal, the inclusive term for the social and economic programme on which Roosevelt fought and won the presidential elections in the U.S.A. in 1932 for the Democratic party, and the social and economic legislation introduced by him to mitigate the effects of the continued economic depression and to promote recovery. See **National Recovery Act**, under **N.R.A.**

New England, a name given in 1614 by Captain John Smith to the eastern portion of the United States, comprising the present states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. The inhabitants, known distinctively as Yankees, are largely of Puritan and Scottish descent.

New Forest, a district in the SW. of Hampshire, made a royal forest by King William Rufus. One-fourth of the area consists of enclosed plantations, chiefly of oak and beech, roamed by "New Forest ponies." Lyndhurst is the principal town.

Newfoundland, the oldest island of Britain, situated at the mouth of the Gulf of St. Lawrence, N. America; is triangular in shape, the northern apex running close in to the coast of Labrador, part of which is politically united to Newfoundland. Inland the country is bleak, sparsely populated, and ill-cultivated; lakes and rivers abound. The deeply indented coast provides excellent harbours for the large fishing fleets that frequent it. Minerals are found, including coal, iron, lead and copper; agriculture and timber felling are important activities, but the

fisheries—cod, salmon, herring and—form the staple industry. St. John's is the capital.

Discovered in 1497 by John Cabot, seized by the English in 1583, and finally ceded to Britain by the French (who retained certain fishing rights) in 1713. After a serious economic crisis the island's Dominion government was in 1933 superseded by consent of the people, and temporarily replaced by a governing Commission of six members, three from the island and three from the United Kingdom, who advise the Governor. Area, 42,730 sq. m. Pop. 289,600.

Newfoundland Dog, a large,

long-coated breed, originally introduced into Great Britain from Newfoundland. Its thick, curly hair is either black or black and white in colour, dogs of the latter colouring being called "Landseers" after that artist's well-known picture. The dog is a good retriever, swims well and is noted for its courage and fidelity.



NEWFOUNDLAND DOG

Newgate, a former London prison, at the W. entrance to the City, in existence as early as 1218. Destroyed in the Great Fire, it was rebuilt in 1770 but ceased to be used in 1877, and in 1904 was demolished, the Central Criminal Court being built on its site.

New Guinea, large island N. of which it is divided by Torres Strait (90 m. wide); is an irregular, mountainous, well-rievered territory, the western half in Dutch possession, the East administered by Australia, partly (the SE.) as a territory of the Commonwealth (Papua), partly (the NE.) under a mandate, this latter portion having until 1914, when it was captured by the Australians, been a German colony. Gold and tropical produce are exported. A good deal of the interior is still almost unexplored. Dutch New Guinea has an area of 160,500 sq. m. and a pop. of 200,000; NE. New Guinea (the mandated territory), area 93,000 sq. m., pop. c. 800,000; Papua, area 90,500 sq. m., pop. c. 300,000.

New Hampshire, north-eastern U.S.A., in New England, on the Atlantic, from the beauty of its lake and mountain scenery called the "Switzerland of America"; has considerable agriculture, and manufactures boots and shoes and cotton goods. Manchester, on the Merrimac, is the largest city; the capital is Concord. Area, 9,340 sq. m. Pop. 465,800.

Newhaven, seaport of Sussex, England, on the Ouse, 4 m. SE. of Lewes; the terminus of a cross-channel service to Dieppe. Pop. 7,400.

New Haven, chief city and seaport of Connecticut, U.S.A., 73 m. NE. of New York; the seat of Yale University, founded 1701; is an important manufacturing centre, producing rifles, ironware of all kinds, carriages, clocks, etc. Pop. 162,700.

New Hebrides,

a group of some 30 volcanic islands (30 inhabited) in the Western Pacific, lying W. of the Fiji Islands and NE. of New Caledonia; administered jointly by Great Britain and France, and inhabited by cannibals of the Melanesian race. Some copra and coffee are exported. Area, 5,700 sq. m. Pop. c. 43,000 (including c. 1,000 whites).



New Ireland, island of the Pacific, in the Bismark Archipelago, formerly called New Mecklenburg. A mountainous, fertile island, it grows mainly coconuts. Formerly a German protectorate, it is now administered, under mandate, by Australia. Area 3,000 sq. m. Pop. c. 42,000.

New Jersey, one of the 13 original States of the U.S.A., on the Atlantic between New York State on the N. and Delaware Bay on the S.; has valuable forests and fisheries, and grows cereals, potatoes and fruit, but is mainly manufacturing, producing textiles, machinery, chemicals, leather goods, etc. Capital, Trenton; largest cities, Newark and Jersey City. Area, 8,220 sq. m. Pop. 4,041,000.

Newlyn, seaport and fishing village of Cornwall, England, 1½ m. SW. of Penzance. It is popular among artists and attracts summer visitors. Pop. 4,000.

Newman, John Henry, English ecclesiastic and author, born in London, obtained a Fellowship at Oriel College, Oxford, in 1823. Becoming vicar of St. Mary's, the university church of Oxford, in 1826, he started the Tractarian Movement in 1833, and wrote 24 of the celebrated *Tracts for the Times* in advocacy of High Church teaching, including the famous *Tract XC.* In 1845 he left the Church of England and became a Roman Catholic. Shortly after this he visited Rome, was ordained a priest, and on his return became head of the Birmingham Oratory in 1849, where he spent over 40 years; was made a cardinal in 1879. His *Apologia pro Vita Sua*, his hymn *Lead, Kindly Light*, and his poem, *The Dream of Gerontius* are still famous. (1801-1890).

Newmarket, market town of Cambridgeshire, partly in Suffolk, chiefly known as a racing centre. The Jockey Club headquarters are here. Pop. (rural district), 18,900.

New Mexico, southern inland state of the U.S.A., on the Mexican border, admitted to the Union in 1910; was until 1848 part of Mexico; mainly a farming state, with rich mineral resources including gold, silver, copper, coal and lead. Capital, Santa Fé; largest city, Albuquerque. Area, 122,630 sq. m. Pop. 423,300.

Newnham College, a college for women at Cambridge, founded in 1875, and associated with the University since 1881; since 1922 women have been admitted to degrees of the University of Cambridge.

New Orleans, the capital and largest U.S.A., on the Mississippi, 107 m. from its mouth; founded in 1718, it was the capital of the old French territory in the S.; great cotton port and sugar market; is the chief trade emporium of the surrounding states, and the main outlet for the produce of the Mississippi Valley; has many interesting old Spanish and French buildings. Pop. 458,800.

Newport, (1) town of the Isle of Wight, in its vicinity is Carisbrooke Castle, where Charles I. was imprisoned. Pop. 18,800.

(2) largest and county town of Monmouthshire, England, at the mouth of the Usk, engaged in manufactures of various kinds, and in exporting iron and coal. Pop. 97,200.

(3) city of Rhode Island, U.S.A., a holiday resort and naval station. Pop. 37,600.

Newport News, city and seaport at the mouth of James R., with a fine harbour, ship-building industry, and manufactures of iron goods, lumber products, etc. It has a population of 34,400.

Newport Pagnell, and market town of Buckinghamshire, England, 4½ m. S. of Olney, with a fine old church. Its former strong castle was destroyed in the Civil War. Pop. 4,000.

New Plymouth, seaport on the W. Island, New Zealand, capital of Taranaki province, and centre of a dairy-farming and cattle-raising district. Pop. 18,800.

New Providence, island of the Indies, in the Bahamas, measuring 19 m. by 10 m. It is the most densely populated island of the group, and produces pineapples and other fruit. Nassau is on its N. coast. Pop. 13,000.

Newquay, urban district and seaside resort of N. Cornwall, England, 11 m. N. of Truro. It has a shipping trade and fishing is carried on. Pop. 7,850.

New River, an artificial stream, 27 m. in length, which carries water from springs in Chadwell and Amwell in Hertfordshire, to London for domestic water supplies. The work was carried out by Sir Hugh Myddleton in 1609. It is now controlled by the Metropolitan Water Board.

Newry, town and seaport of co. Down, Northern Ireland, one of the chief ports of Ulster. Brewing, distilling, flax-spinning, etc., are carried on. Pop. 18,500.

New South Wales, "mother colony" and constituent state of the Commonwealth of Australia, until 1840 a convict settlement; fronts the Pacific for 700 m. on the E. between Queensland (N.) and Victoria (S). Mountain ranges (including the Australian Alps) running parallel with the coast, divide the narrow littoral from the great plains of the W. and the interior, and are the source of many large rivers (e.g., the Darling, Murrumbidgee, and the Darling). The climate is warm and everywhere healthy; rain falls plentifully on the coast-lands and mountains, but is scarce in the W. The mineral wealth is very great—gold, first discovered in 1851, and silver are found in large quantities, as also copper, tin, iron, etc., but coal is the most abundant mineral product. Cereals, fruits, sugar, tobacco, and vines, are cultivated, but wool is the chief product of the State. Sydney is the capital and chief port. Area, 309,430 sq. m. Pop. 2,682,000.

Newspapers, in anything like the modern sense, were unknown before the 17th Century, when small daily "news-letters" were printed and circulated in coffee-rooms, clubs, etc., and sent by mail-coach from London to the provinces. Their development was much retarded by the Stamp Act of 1712, requiring them to carry a government stamp, at first of 1d. a sheet. The first of the modern English national newspapers to be born was the now defunct *Morning Post*, founded in 1772. *The Times*, at first known as the *Daily Universal Register*, followed in 1785. In 1814 the latter was first printed by steam presses, and from that time forward development in various directions was rapid.

The popular 1d. paper came on the scene in 1896, with the founding of the *Daily Mail*, followed by the *Daily Express* in 1900. The illustrated daily paper first appeared in the early years of the 20th Century. In the years immediately preceding, and during, the World War a number of old-established morning and evening dailies disappeared or were incorporated with more successful competitors.

The founding of the *Daily Herald* marked the rise of Labour as a political power; at first a struggling organ under direct trade

union control, it rose in the 'twenties and 'thirties of the 20th Century to a first-rank position among British national dailies. At present (1938) 8 great daily morning newspapers with national circulations are issued in London, as well as 3 evening and a number of Sunday papers: there are also a few other dailies catering for special interests, such as finance, the licensed trades, and sport.

Newstead Abbey, an abbey near Nottingham, founded by Henry II. by way of atonement for the murder of Thomas à Becket. It was given at the dissolution of the monasteries to an ancestor of Lord Byron, who lived in it and sold it, since when it has been restored.

Newt, or Eft, a genus (*Molge* or *Triton*) of the salamanders, the family Salamandridæ.

They have 4 legs, eyecloids and tooth. Their life history is similar to that of the frog. The young are tadpoles with gills. The adults are strict air-breathers and are terrestrial, going to ponds where they lay their eggs, only at breeding times. They have a soft, warty skin, and the tail is laterally compressed. The food consists chiefly of larvæ, aquatic insects, etc. They are all native to Europe and Northern Asia; 3 species, including the Crested Newt, the Smooth Newt, and the Palmate Newt are found in Britain.



COMMON SMOOTH NEWT
(MALE)

New Testament, the second part of the Bible (q.v.) of the Christians, composing 27 books, namely, the 4 Gospels, relating the life-story of Jesus Christ; the Acts of the Apostles; a number of Epistles by St. Paul and other apostolic writers; and the Revelation of St. John, or Apocalypse. The books were written at various dates in the 1st and 2nd Christian Centuries; modern scholarship has cast serious doubt on the traditional attributions of authorship in several cases, as the Gospel of St. John and the Epistle to the Hebrews. The language of the originals was in all cases Greek. Further details are given in the articles on the separate books.

Newton, Sir Isaac, English natural philosopher, sophist, born at Woolsthorpe, Lincoln; entered Trinity College, Cambridge, in 1661, where he applied himself specially to the study of mathematics, invented the method of fluxions (q.v.) and began to theorise on gravitation; graduating in 1667, and becoming professor of Mathematics in 1669. Falling at first in his attempts to establish the theory of gravitation as explaining the motions of the earth and moon, he set himself to construct telescopes, and evolved the Newtonian theory of light. Later he renewed his study of gravitation, and communicated his theory in a series of papers to the Royal Society, in 1687, giving the complete demonstration in his *Principia* to the world. In 1695 he was made Warden of the Mint, and afterwards Master, a post he held till his death. His numerous works dealt not only with physics, but also with prophecy. (1642-1727).



SIR ISAAC NEWTON

Newton Abbot, urban district and market town of Devon, England, at the head of the Teign estuary, 20 m. SW. of Exeter, with locomotive works and local clay diggings. William of Orange was here proclaimed King. Pop. 15,000.

Newton-in-Makerfield,

or **Newton-le-Willows**, urban district of Lancashire, England, 5 m. E. of St. Helens. It has railway workshops, iron foundries and sugar refineries, glass and paper are made and coal mined. Pop. 20,000.

Newtownards, market town of co. Down, Northern Ireland, 9 m. E. of Belfast. Its chief industry is the making of gingham, embroidered muslins, handkerchiefs, etc. Pop. 12,000.

New Westminster, city of British Columbia, Canada, 12 m. E. of Vancouver, on the Fraser R. It has salmon canneries and lumber industries. Pop. 17,500.

New York, an original state of the U.S.A., first in population and importance and twenty-ninth in area; between the Atlantic and the Great Lakes; was Dutch territory from 1609 to 1664; mountainous in E., flatter in centre and W.; watered principally by the Hudson; has great agricultural and mineral wealth, besides being one of the world's greatest industrial centres. The Hudson, Oswego, Genesee, and Niagara (with its famous waterfall) are the principal rivers, while the St. Lawrence forms part of the northern boundary. One-half of the area is under cultivation; the vine flourishes, hops and tobacco are grown, and market-gardening prospers near the large cities; but manufacturing is the chief industry, and the transit of goods is greatly facilitated by the many waterways and network of railways. Was finally occupied by the English in 1664, after the expulsion of the Dutch. Capital, Albany; largest cities, New York and Buffalo. Area, 49,200 sq. m. Pop. 12,588,000.

New York City, U.S.A. and competitor with London for the title of largest in the world, comprises the five boroughs of Brooklyn, Manhattan, Bronx, Richmond, and Queens. The centre of the city is Manhattan Island, at the confluence of the Hudson and East R., at the head of Long Island Sound, joined with Brooklyn by bridge. The harbour is one of the finest and busiest in the world. The city is regularly laid out, its confined situation giving rise to its most striking feature, its many skyscrapers, including the Empire State and Chrysler buildings, the tallest in the world. Among its world-famous streets are Fifth Avenue, Broadway, and the financial centre, Wall Street. Industries of every kind are carried on; there are Roman Catholic and Anglican cathedrals, and many scientific and educational institutions. Pop. 7,434,300; (Metropolitan area, 10,901,400).

New Zealand, a British Dominion lying 1,200 m. ESE. of Australia; comprises North I. (44,280 sq. m.), South or Middle I. (58,090 sq. m.), Stewart I. (670 sq. m.), and a number of islets. The two main islands, separated by Cook Strait, are in no part broader than 150 m., and are traversed from end to end by a great and partly volcanic mountain chain, the range in South I. being known as the Southern Alps (highest peak Mt. Cook, 12,350 ft.), and that in North I. as the Ruahine Range and the Tararua Mts.

Everywhere rivers abound. Waitato (North I.) and Clutha (South I.) being the largest; there are numerous lakes (Lake Taupo, six times the size of Loch Lomond), fertile valleys and well-grassed plains; while the climate, temperate and healthy, is warmer and more equable than in Great Britain. Almost all the animals have been imported, as well as the grains and fruits. Great forests of indigenous kauri pines exist; sheep-farming, agriculture, and mining (gold and coal) are the leading industries, wool, meat and butter being among the chief exports.

Auckland, the largest, and **Wellington**, the capital, in North I., and **Dunedin** and **Christchurch** in South I., are the chief towns. Discovered in 1843 by **Tasman**, the islands were first surveyed by **Cook** in 1769; their formal cession to the British crown took place in 1840. Pop. 1,573,800, including 82,300 Maoris (q.v.), the original inhabitants of the island.

Ney, **Michel**, marshal of France, born in the army in 1797; distinguished himself by his bravery in the wars of the Revolution and the Empire, and earned for himself the title of the "bravest of the brave." On the emperor's abdication in 1814 he attached himself to **Louis XVIII.**, but on **Napoleon's** return from **Elba** he joined his old master, and stood by him during the hundred days. In the second Restoration he was arrested and shot. (1769-1815).

Niagara, a section of the **St. Lawrence R.** in N. America, extending between **Lakes Erie** and **Ontario**, the Falls, preceded and succeeded by rapids, being among the largest in the world. The Canadian, or **Horse Shoe Fall**, is 2,600 ft. wide, with a descent of 158 ft., and the **American Fall** one-half the width of the Canadian, with a descent of over 162 ft.

Niagara Falls, (1) city of **Ontario**, **Niagara R.**, 2 m. below the Falls, which supply power for its factories. Pop. 15,000. Across the river in **New York State** is (2) the U.S. city and port of **Niagara Falls**, where the largest electric power plant in the world supplies power to foundries, machine shops, paper and flour mills, electro-chemical works, etc. It is the seat of **Niagara university** and a tourist centre. Pop. 75,000.

Nibelung, king of the **Nibelungen**, a mythical Burgundian tribe, the fabulous possessor of a hoard of wealth so inexhaustible that "twelve waggons in twelve days, at the rate of three journeys a day, could not carry it off." This treasure he bequeathed to his two sons on his deathbed, by the vanquishing of whom the hoard fell into the hands of the redoubtable hero **Siegfried**.

Nibelungenlied (i.e., Lay of the **Nibelungen**), an old German epic, of date, it is presumed, earlier than the 12th Century. It consists of two parts, the first ending with the murder of **Siegfried** by **Hagen**, his wresting of the hoard (see above) from his widow, **Chriemhild**, and burying it at the bottom of the **Rhine**; and the second relating the vengeance of **Chriemhild** and the annihilation of the whole Burgundian race, **Chriemhild** included, to whom the treasure had originally belonged. To the latter part the name of the *Nibelungen Not* (or Distress) has been given. The story is told in both the **Elder** and the **Younger Edda**, and was retold by **William Morris** in his poem "Sigurd the Volsung."

Nicaea, an ancient town of Asia Minor, in **Bithynia**, at which was held in A.D. 325 the first (**Nicene**) Council of the Christian church, which condemned **Arianism** and drew up the **Nicene Creed**. The modern name is **Iznik**.

Nicaragua, the largest republic of Central America, stretches across the isthmus between **Honduras (N.)** and **Costa Rica (S.)**. The **Cordilleras** traverse the heart of the country, and the two great southern lakes **Nicaragua** and **Managua**, which are studded with volcanic islands, lie on the W. of the country. Gold and copper are mined and bananas, coffee, cotton, sugar and tropical timbers are exported. **Managua** is the capital. **Nicaragua** asserted its independence from Spain in 1821, and has since been rent by countless revolutions. Area, 60,000 sq. m. Pop. 1,123,600.

Nice, capital of dept. of **Alpes-Maritimes**, France, charmingly situated on the Mediterranean coast near the Italian border. Terraced hills shelter it on the N., and its genial and equable climate makes it a favourite winter resort. **Castle Hill**, with ruins and pleasure gardens, the cathedral, art-gallery, etc., are features of interest. **Olive-oil** is the chief export, and artistic pottery, perfumery, etc., are manufactured. Pop. 242,000.

Nicene Creed, a statement of the Christian belief drawn up at **Nicaea (q.v.)** against **Arianism**; it is recited in the services of the Eastern Orthodox, Roman Catholic and Anglican churches.

Nicholas, the name of five Popes: **N. I.**, St., surnamed the Great, Pope from 858 to 867. **N. II.**, Pope from 1058 to 1061; **N. III.**, Pope from 1277 to 1280; **N. IV.**, Pope from 1288 to 1292; **N. V.**, Pope from 1447 to 1456, after the capture of **Constantinople** by the Turks, took the exiled Greek scholars under his protection, fostered the learning of the East, and laid the foundation of the Vatican Library by the collection of over 5,000 Greek and Latin MSS.

Nicholas, last ruler of **Montenegro** (q.v.); born at **Njegos**, nephew of **Prince Danilo II.**, whom he succeeded on his assassination in 1860. He went to war with Turkey in 1876-1878, throwing off Turkish rule and gaining territory. In 1910 he took the title of King. After the World War, when **Montenegro** decided to enter the **Yugoslav Kingdom**, he fled to Italy, dying at **Antibes**. (1841-1921).

Nicholas I., Russian Czar, born in **St. Paul I.**, ascended the throne in 1825 in succession to **Alexander I.**, his eldest brother; suppressed with rigour a formidable conspiracy on his accession; captured **Erivan** from Persia, and struggled against both the Poles and the Turks till his overbearing policy provoked France, England and Sardinia to embark on the Crimean War, which was still going on when he died. (1796-1855).

Nicholas II., Czar of Russia, eldest son of **Alexander III.**, whom he succeeded in 1894. His reign saw the abortive rebellion of 1905, the Russo-Japanese war, the growth of industrial and political unrest, the World War, and the revolution. A weak monarch in the hands of his advisers, notably **Rasputin (q.v.)**, he was forced to abdicate in March, 1917, was later arrested and sent to **Tobolsk**, and thence to **Ekaterinburg**, where in July, 1918, he was murdered, with his wife and other members of his family. (1868-1918).

Nicholas, St., bishop of **Myra**, in Lycia, Asia Minor, under the emperor **Diocletian**; patron saint of children and sailors; is generally represented in bishop's robes, and has either three purses or three children as his attributes, in reference to a legend that he gave dowries to three girls otherwise condemned to a life of shame; is the original of the *Santa Claus* beloved of children.

Nicholson, John, British military officer in India, born in Dublin; served in the Sikh Wars, and at the outbreak of the Mutiny in 1857 in the Punjab helped to crush it at the outset. As brigadier-general, he led the attack at the siege of **Delhi**, Sept. 14, but fell mortally wounded as the storming party were entering the **Kabul Gate**. (1821-1857).

Nickel, a metallic chemical element resembling iron and cobalt in being magnetic as well as in other properties. Symbol **Ni**, atomic number 28, atomic weight 58.68. Nickel ores are chiefly found at **Sudbury, Ontario (Canada)**. Here the ore is smelted, giving **Monel metal (q.v.)**, which is subsequently reduced to metallic nickel.

A purer metal is yielded by the Mond process, crude nickel being heated in a current of carbon monoxide gas, when the gaseous compound nickel carbonyl is formed; this is next heated to about 180°, and is decomposed into nickel and carbon monoxide, the latter being recirculated through the plant. Nickel is a silvery-white, hard and malleable metal, used for nickel-plating, but since it gradually tarnishes, it is generally covered with a layer of chromium ("chromium-plating"). Nickel salts are mostly of a fine green colour and are of little commercial importance. Nickel alloys, on the other hand, are extensively employed.

Nicobar Islands, a group of picturesque islands in the Indian Ocean, S. of the Andaman Is. 12 of the 19 are inhabited, chiefly by Indians and Malays. After being in the hands of Denmark for upwards of 100 years, they were annexed by Britain in 1869. Coconuts are exported. Area, 635 sq. m. Pop. 9,500.

Nicomedia, ancient city of Asia Minor, on the Sea of Marmora. The capital of Bithynia, it was the seat of government of the Roman empire under Diocletian. The modern town is called Ismid.

Nicosia, or *Levkosia*, capital of Cyprus, near the centre of the island, 25 m. NW. of Larnaca, its seaport. Its former cathedral is now a mosque. Pop. 23,700.

Nicotine, an alkaloid present in the tobacco plant; colourless and poisonous when pure, it oxidises and turns brown on exposure to air.

Niemen, or *Memel*, river of E. Europe, rising in White Russia, and flowing through Poland and Lithuania to enter the Baltic through the Kurlisches Haff. Grodno and Kovno are on its banks. Length, 550 m.

Niepcé, Joseph Nicéphore, French chemist, a collaborator with Daguerre in photographic experiment. (1765-1833).

Nietzsche, Friedrich, German philosopher, born at Röcken, Saxony; became a professor at Basel in 1869; resigned for health reasons in 1879, and became insane about 1880. His philosophy taught the cult of the "Superman" and denounced Christianity and its virtues as a defence-mechanism of the weak against the strong. His best-known works are *Thus Spake Zarathustra*, *Beyond Good and Evil*, and *The Will to Power*. (1844-1900).

Nievre, dept. of France, in the Loire Valley, largely devoted to pasture and forest land; wheat, oats and potatoes are grown, and coal mined. The capital is Nevers. Area, 2,660 sq. m. Pop. 250,000.

Niger, great river of W. Africa, rising in French Guinea, flowing NE. as far as Timbuctoo (2 m. from the river), where it bends gradually southward, receives the Benue, about 100 m. from the coast begins to form a delta, and finally flows into the Gulf of Guinea by 22 mouths after a course of some 2,600 m., over 1,000 m. being navigable.

Nigeria, British colony and protectorate in W. Africa, along the Bight of Benin, constituted 1914 by amalgamation of several separate colonial areas; produces palm oil and kernels, cocoa, gold, tin, and ground nuts. In the N. many of the negro population are Mohammedans; in the S. mostly pagans. Capital, Lagos. Area, 373,400 sq. m. Pop. 20,300,000.

Night Heron (*Nycticorax*), a genus of wading birds of the family Ardeidae, found in Europe and America. There are some 9 species, the chestnut-backed being a handsome bird. One species, the common grey (*Nycticorax nycticorax*), is an occasional visitor to British shores.

Nightingale, a perching bird of the thrush family (*Motacilla*

luscini), the male being renowned for its beautiful song at night during the breeding season; found in many parts of southern England. It is migratory, frequents hedges and thickets, and builds its nest on, or near, the ground. It is solitary in habits and has inconspicuous colouring.



NIGHTINGALE

Nightingale, Florence, English hospital reformer and nurse, born in Florence; studied nursing at Kaiserswerth and Paris, and in 1854 volunteered to organise a staff of nurses to tend the wounded soldiers in the Crimea; arriving at Scutari on the eve of Inkerman during the terrible winter of 1854-1855, she ministered with unwearied devotion to the suffering soldiers. On her return in 1856 she established, with public support, a training college for nurses at St. Thomas's and at King's College Hospital. (1820-1910).

Nightjar, or Goat-sucker (*Caprimulgus europæus*), a nocturnal migrant bird found in S. England, the male being remarkable for its jarring noise. Its beak is very wide and fringed with bristle-like feathers. Its food consists of beetles, moths and other insects. The ancient popular belief that it sucks the udders of goats for their milk is unfounded.



NIGHTJAR

Nightmare, a feeling of oppression or suffocation which arises during sleep, accompanied by intense anxiety, fear or horror. The sufferer awakens in a state of terror, his body often covered with sweat. Common causes are indigestion or too heavy bed-covering. Psycho-analysts consider it the result of some suppressed emotional experience stored in the unconscious.

Nightshade, name of several plants of the Solanaceae order. The roots and leaves are narcotic, and the berries poisonous. They grow in hedges, fields and waste places. Among the species are the Deadly Nightshade or Belladonna (*Atropa belladonna*), Black Nightshade (*Solanum nigra*), and Woody Nightshade or bitter-sweet (*Solanum dulcamara*).

Nihilism, name given to a movement in Russia at the end of the 19th and beginning of the 20th Centuries, which sought the overthrow of the then existing social organisation and its replacement by a completely new economic, political and social system. Some of its members sought to attain their aims by the assassination of members of the governing class, and their most famous victim was the Czar Alexander II. (1881).

Nijni-Novgorod. (Nizhni-Novgorod) See Gorky.

Nile, the longest river of Africa, and one of the most noted in the world's history. Rising in the lake of Victoria (Nyansa), 3,900 ft. above sea-level, it passes, through the Victoria Nyansa, Ripon Falls and the Albert Nyansa, to Khartoum, being here known as the White Nile. It is there met by the Blue Nile, flowing from Lake Tsana in Abyssinia; and 300 m. below Khartoum by the Atbara or Black Nile. It passes through Egypt, and enters the

Mediterranean by a delta separating into two main streams at Cairo. Its total length is about 4,000 m. It forms six cataracts between Khartoum and Assuan, at the last of which is the great Assuan dam. Many anthropologists maintain that observation of the Nile's periodic floods and their results on vegetation was responsible for the invention of agriculture. The fair distribution of its waters and their power is regulated by agreements between the Egyptian, British and Italian governments.

Nile, Battle of the, fought in 1798 between the English and French fleets in Aboukir Bay. The French fleet was surrounded by Nelson and destroyed, Napoleon, in Egypt, being thus out for some time from his home base in France.

Nilgai, or Nyghau,

a large antelope, found in Persia and India, remarkable for its speed. The body is heavy and ox-like and the horns of the male short.



NILGAI

Nilgiri Hills

(the Blue Mts.), a bracing mountain district in South India, forming a triangular-shaped mass of elevated country, the peaks of which attain an altitude of nearly 9,000 ft.

Nimbus. See *Hale*.

Nîmes, capital of the dept. Gard, France, 31 m. E. of Montpellier; has unique Roman remains, including an imposing amphitheatre, now used as a bull-arena, the noble Corinthian "Maison Carrée," baths, etc. Textiles (silk, cotton, etc.), wines, and brandy are the chief articles of manufacture. Pop. 93,800.

Nineveh, a great city, capital of ancient Assyria, which stood on the left bank of the Tigris, opposite the modern town of Mosul. Excavations in the late 19th and 20th Centuries have brought to light many relics of ancient palaces and temples, and other antiquities.

Ningpo, city and port of China, in Chekiang province, renowned for its woodcarving and its many Buddhist monasteries; has hardware, carpet and lace manufactures, and considerable fisheries. Pop. 219,000.

Ninian, St., apostle of Christianity to the southern Fics of Scotland, born on the shores of the Solway; after consecration at Rome by the Pope, visited St. Martin at Tours; founded a church at Whithorn, Wigtownshire, where he died 432.

Niobe, in Greek mythology, the daughter of Tantalus. Her twelve children were slain by Apollo and Artemis, and she retired to Mount Sipylon, in Lydia, where her body became cold and rigid as stone, but not her tears, which every summer burst forth anew.

Niobium, or Columbium, a rare metallic chemical element discovered in the black North American mineral columbite. It is almost invariably associated with tantalum. Symbol Nb or Nb; atomic number 41; atomic weight 93.3.

Nipissing, lake of Ontario, Canada, which it empties by the French R., and the Ottawa. Area 330 sq. m.

Nippon, the native name for Japan.

Nirvana, a state in which all craving for existence, sensation, selfhood, or possessions is extinct; the goal set before man as his highest possible achievement by Buddhism (q.v.).

Nish, city of Yugoslavia on the R. Nisava, 125 m. from Belgrade, with railway workshops and an iron foundry. Constantin the Great was born there. It was captured by the Bulgarians in 1916. Pop. 35,500.

Nitre, Saltpetre, or Potassium Nitrate, a white crystalline solid found naturally in Persia and India, and manufactured from Chilean soda nitrate (Chile saltpetre); used in the manufacture of gunpowder, in industrial chemistry for acid manufacture, and in medicine.

Nitric Acid, a colourless, strongly ailing and corrosive liquid, which, on exposure to light, becomes yellow. It is commonly prepared by heating Chile saltpetre with sulphuric acid, and is employed in steel and copper etching.

Nitric Oxide, a colourless, poisonous gas, generally prepared by the action of moderately concentrated nitric acid upon copper turnings. Its most remarkable property is that on coming into contact with free oxygen (as in the air) it is converted into the reddish-brown gas nitrogen peroxide.

Nitrification, a bio-chemical process carried on in soil and in sea-water by certain minute bacteria, consisting in the oxidation of ammonia—produced by putrefaction and decay—to nitrates. Nitrates form the normal source of nitrogenous food for green plants and indirectly for the animal kingdom, and therefore nitrification is of great importance in nature economy.

Nitro-benzol, a pale yellow, highly refracting liquid obtained by adding 12 parts of nitric acid and 16 parts of sulphuric acid to 10 parts benzene. It is poisonous, has a strong odour of bitter almonds, and is used in perfumery. It yields aniline, the parent substance of many dyes and drugs.

Nitrogen, a non-metallic gaseous chemical element (symbol N; atomic number 7; atomic weight 14.01), discovered in 1772 by D. Rutherford. Lavoisier showed that it formed about four-fifths of the air by volume, and called it azote. Nitrogen forms about 78 per cent. by volume of dry air, in which it serves to dilute the oxygen to an extent compatible with the requirements of living organisms.

Pure nitrogen is best prepared by chemical means, e.g., by heating a solution of ammonium nitrate, or by the action of chlorine upon ammonia. Commercially it is obtained by the fractional distillation of liquid air or, more often, by blowing air through heated coke and removing the oxides of carbon from the mixture of these gases with nitrogen so produced. It is largely used in the manufacture of ammonia, nitric acid, etc.

Nitrogen is a colourless, odourless, tasteless gas which will not burn or support combustion. Chemically it is comparatively inert under ordinary laboratory conditions, but its compounds are very numerous and important, including most explosives and dyes, many drugs and fertilizers, some of the very virulent poisons, and essential articles of food, e.g., proteins.

Nitrogen, Fixation of the conversion of nitrogenous compounds. This is now performed by the Haber process for converting the nitrogen of the air into ammonia. The synthetic ammonia is converted into ammonium sulphate, etc., for agricultural purposes, while nitric acid is also made from it. Nitric acid is required as a source of sodium nitrate ("nitrate of soda"), the well-known artificial manure, and also for the manufacture of such explosives as nitro-glycerine, dynamite, lyddite, T.N.T., cordite and ammonal.

Nitro-glycerine, the common name for glyceryl-trinitrate, a very powerful explosive, prepared by adding glycerine to a mixture of concentrated sulphuric acid and nitric acid. It is a constituent of dynamite and cordite. It is an oil with a specific gravity of 1.6. It was discovered by Sobrero in 1847 and was first used as an explosive agent by Nobel.

Nitrous Oxide, a colourless gas prepared by heating ammonium nitrate, and used as a general anesthetic in dentistry and minor surgical operations. In some people its inhalation induces hysterical laughter, hence its popular name "laughing-gas." Its anesthetic

idea, was the main subject of philosophical contention in the Middle Ages.

... BORN IN 1856, HE JOINED THE army in 1878, served in Tunisia, Algeria, and China, and in 1914 took command of an artillery regiment in Alsace. He took part at the battle of the Aisne, at Verdun in 1916, and in the same year succeeded Joffre as commander-in-chief. After heavy French losses in 1917 he was transferred to N. Africa. (1856-1924).

Nizam, the name given to a viceroy or administrator of justice in the Mogul Empire of India; it is still used by the ruler of Hyderabad (q.v.), India, also known as the Nizam's Dominions.

Noah, the Biblical patriarch who, according to the Book of Genesis, constructed an ark for the preservation of the human race and the dry-land animals during the universal deluge.

Nobel, Alfred, Swedish chemist, famous for his work on explosives; invented dynamite and was the first to adapt nitro-glycerine as an explosive; died a millionaire; in his will left a sum of 1½ million pounds to found five prizes to be awarded annually for the most deserving work in physics, chemistry, medicine, literature, and peace. The prizes are open to men and women of all nationalities, and the awards are made by learned bodies in Sweden and the Norwegian Storting. (1833-1896).

Nobile, Umberto, Italian aviator; with Amundsen, in 1925, undertook an unsuccessful North Polar airship voyage, being saved by a Russian ice-breaker; in 1928 in a second voyage he attempted in the airship *Italia* to reach the Pole, succeeded in flying over it, but was forced down on the ice and rescued after a month's privation; afterwards Deputy Chief of Airship Construction in the U.S.S.R. (1885-).

Noble, former English gold coin, first minted by Edward III.; its value was originally 6s. 8d., but afterwards fluctuated.

Nodes, name given to the two points in the orbit of a planet or moon where it crosses or intersects the ecliptic, called ascending when it goes N., and descending when it goes S.

Nome, town of the S. shore of Seward Peninsula. A gold-mining centre, it sprang into being in 1899-1900. In the latter year having a population of 12,500. Pop. 1,200.

Nominalism, in philosophy, the theory that general notions, such as "man," have no reality, but are merely convenient words denoting a purely imaginary average deduced from particular instances. The controversy between the nominalists and the realists, who held the opposite view that general notions had a real existence, resembling that of the Platonic

ideas, was the main subject of philosophical contention in the Middle Ages.

Nonconformists, a name originally applied to the two thousand clergy of the Established Church of England, who in 1662 resigned their livings rather than submit to the terms of the Act of Uniformity passed on Aug. 24 that year, but now applied to the whole Dissenting body of England. The principal Nonconformist bodies of to-day are the Methodists, Congregationalists, Baptists and Presbyterians, though there are also many smaller sects. The term is not generally used to cover Roman Catholics.

Nones, in the Roman calendar, the ninth day before the Ides (q.v.), being the 7th of March, May, July, and October, and the 5th of the other months.

Non-Intervention Com-

mittee, a Committee of various European States set up at the beginning of 1937 to supervise measures agreed on to stop the flow of volunteers to both sides in the Spanish Civil War. It devised a plan for watching Spain's coasts and frontiers, which by the autumn had proved unworkable. Germany and Italy withdrew from the Committee in June 1937 after the bombing of the German ship *Deutschland*, but later returned. The Committee has remained in being, but its time has been mainly occupied with disputes between the constituent powers as to the extent of intervention on the part of the others. It eventually produced a plan for the proportionate withdrawal of non-Spanish combatants from both sides, and agreed that a commission should be sent to Spain to count such combatants. The settlement of this Spanish question is a pre-requisite to the coming into force of an Anglo-Italian Pact signed by Lord Perth and Count Ciano in April 1938. In that case Great Britain will initiate proceedings with the League of Nations to clarify the position of member states regarding the Abyssinian question.

Nonjurors, a name given to those members of the Church of England, headed by six bishops, who, having sworn fealty to James II., refused to take the oath of allegiance to William III. The bishops were deprived of their sees, but successors to them were consecrated after their deaths, and for many years the nonjurors remained in existence as a Nonconformist sect.

Non-Sequitur, in logic, or the art of reasoning, a fallacy or error, in which an inference is based upon a cause from which it "does not follow," the literal meaning of the term. The error may be due to the alleged cause being either insufficient or irrelevant.

No-Popery Riots, name given to riots in London in June, 1780, due to the zeal of Lord George Gordon (q.v.), in which much property was destroyed, and about 300 persons killed.

Nord, dept. of northern France, on the North Sea coast and Belgian frontier; has important coal mines and varied manufactures; it is, save for Seine, the most thickly populated of French departments. Lille is the capital; other towns are Dunkerque, Cambrai and Douai. Area, 2,239 sq. m. Pop. 2,022,700.

Nordenskiöld, Nils Adolf Erik, Baron, Swedish naturalist and explorer, born in Helsingfors; after several successive voyages and explorations in the Arctic Sea, in which he paid frequent visits to Spitzbergen, where he measured an arc of the meridian, in 1878-1879 discovered the North-East Passage by traversing, along the N. shores of Europe and Asia, the whole Arctic Sea from the Atlantic to the Pacific (1852-1901).



NOBLE

Nordkyn (i.e., North Chin), the most northerly point in Norway, and of the continent of Europe generally.

Nore, river of Eire (Ireland), rising in Co. Tipperary, and flowing SE. through Leit and Kilkenny to empty itself, after a course of 70 m., into the Barrow 2 m. NW. of New Ross. Also the name of a sandbank at the mouth of the Thames estuary, sometimes applied to the outer part of the estuary itself.

Nore, Mutiny at the, a mutiny in the British fleet stationed at the Nore (q.v.), which broke out on May 20, 1797, and was not suppressed till June 15, for which the ringleaders were tried and hanged. The mutiny arose from alleged grievances—bad food, insufficient pay and official tyranny—on the part of the seamen, but is believed to have been fostered by revolutionary agents.

Norfolk, an eastern maritime county of England, N. of Suffolk, with a long eastern and northern foreshore (90 m.) to the North Sea; the Wash lies on the NW. border. Light fertile soils and an undulating, well-watered surface favour agriculture, of which fruit-growing and market-gardening are special features. Rabbits and game abound in the great woods and sand-dunes, and there is a specially rich bird life. The chief rivers are the Ouse, Bure and Yare, and these and other streams form in their courses a remarkable series of inland lakes known as the Broads (q.v.). The county is famous for its fine churches, and has interesting feudal and monastic ruins at Castle Acre, Castle Rising, Bayham's Abbey, etc. The county town is Norwich. Area, 2,053 sq. m. Pop. 502,000.

Norfolk, city, port and naval base of Virginia, U.S.A., on an arm of Chesapeake Bay. Shipbuilding and fishing are carried on and cotton, silk, fertilizers, chemicals and machinery are among the manufactures. Pop. 129,700.

Norfolk, Dukes of. See Howard, Family of.

Norfolk Island, a small precipitous island in the Western Pacific, midway between New Caledonia and New Zealand, 400 m. NW. of the latter. Its inhabitants, many of whom came from Pitcairn I., and now number about 1,100, govern themselves under the superintendence of New South Wales. Area, 13 sq. m.

Norman, Montagu Collet, Governor of 1920; fought in South African War, winning the D.S.O.; Director of Bank of England since 1907. P.C., 1923. (1871-).

Norman Architecture, a style of archi-

itecture introduced into England, particularly in the construction of churches, abbeys, etc., by the Normans even before the Conquest. It was in vogue in the country till the end of Henry II.'s reign; it is characterized by the prevalence of the rounded arch. The massive Norman pillars were sometimes scored with zigzag indentations. Good examples in England are Durham Cathedral and the Abbey church of Waltham, Essex.

Normanby, town of Yorkshire, Eng., land, in N. Riding, 3 m. SE. of Middlesbrough. It has iron-mines and brick and tile works. Pop. 10,000.

Normandy, an ancient province of France, fronting the English Channel, NE. of Brittany; received its name from the Northmen who, under Rollo, established themselves there in the 10th Century; was for a long time an appanage of the English crown after the Norman Conquest;

after being taken and retaken, was finally lost to England in 1450. It became practically a part of France when it was taken by Philip Augustus in 1204, and is now represented by the five depts. Seine-Inférieure, Eure, Orne, Calvados, and Manche.

Normanton, urban district of Yorkshire, England, in W. Riding, 5 m. NE. of Wakefield. Coal is mined and stone quarried. Pop. 15,700.

Norns (Nornir), in Norse mythology the three Fates—the Past, the Present, and the Future; maidens or dames who water the roots of Yggdrasil, the ash-tree of existence, and determine the destinies of both gods and men.

Norrköping, a town in Sweden, on the R. Motala, called the "Scandinavian Manchester," 113 m. SW. of Stockholm, with cotton and woollen factories and a shipbuilding industry. Pop. 67,700.

Norroy King of Arms, a name given to the third king-of-arms, whose province is on the N. side of the Trent, the one on the S. side being called Clarenceux.

Norsemen, the Scandinavian sea-farers, farers who between the 8th and 13th Centuries set out from Norway and Denmark to expand by raids and settlement in various directions. They came to England, as the "Danes," conquering the country under Cnut in the early 11th Century. They also established themselves for a time in Ireland and the Hebrides, discovered and settled in Iceland and Greenland, reached America under Leif Ericsson, and founded prosperous states in France (Normandy), Sicily, Southern Italy and Russia.

North, Frederick, Lord, English statesman; entered Parliament in 1754, became Tory leader in the House of Commons in 1767, and Prime Minister in 1770. His subservience to George III. was largely responsible for the loss of the American colonies. A coalition was effected in 1783 between him and Fox, but it soon terminated. He succeeded to the earldom of Guilford and died blind. (1732-1792).

Northallerton, county town of the Yorkshire, England, 30 m. NW. of York; in the vicinity was fought the famous Battle of the Standard, in which David I. of Scotland was routed by the English, Aug. 22, 1138. Pop. 4,800.

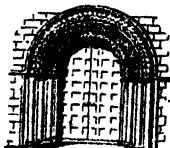
North America. See America, North.

Northampton, county town of Northamptonshire, England, on the Nen, 86 m. NW. of London; has two fine old Norman churches, is the centre of the boot and shoe manufacture, and is actively engaged in brewing, lace-making, etc.; in the outskirts is a popular racecourse. Pop. 96,300.

Northamptonshire, or Northants, a midland county of England, bordering upon nine others; has an undulating fertile surface, with extensive woods and plantations; is chiefly engaged in agriculture and stock-raising. The Nen and the Welland are the principal rivers. Among its antiquities are Fotheringhay Castle, where Mary Stuart was beheaded, Burleigh House, and many fine churches. The battles of Edgecote (1446) and Naseby (1645) were fought within its borders. Area, 914 sq. m. Pop. 309,500.

North Cape, with Nordkyn (q.v.), the most northerly point in Europe, in the island of Magerö, in 71° N. latitude.

North Carolina. See Carolina, North.



NORMAN ARCHWAY

Northcliffe, Alfred Harmsworth, first newspaper proprietor. Founding the *Daily Mail* in 1896, he later acquired the *Times* for some years, and also owned the *Evening News* and the *Weekly Dispatch*, besides a number of periodicals. He was made a baronet in 1904, a baron in 1905, and a viscount in 1917, in which year he went on a mission to America. In 1918 he took office in the Ministry as Director of Propaganda. (1865-1922).

North Dakota. See *Dakota*, North.

North-East and North-West Passages, the names given to the sea-routes through the Arctic Ocean, the former by the N. of Europe and Asia and the latter by the N. of North America, search for which was a main object of geographical exploration during the 17th and 18th Centuries. The former was first made by Norden-sköld in 1879, the latter by Amundsen in 1905.

Northern Ireland, an area consisting of the cities of Belfast and Londonderry and the counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone. Granted Home Rule in 1920, it is governed by a Governor-General, Senate and House of Commons, and sends 13 representatives to the Imperial House of Commons. Belfast is the capital, and the chief industries are agriculture, shipbuilding, flax-spinning, linen-making and distilling. The majority of the people are Protestants, but about one-third are Roman Catholics. The question of its unification with Eire (Ireland) (q.v.) has been the subject of some discussion, particularly in Eire, but is in abeyance. Area, 5,236 sq. m. Pop. 1,279,750.

Northern Territory, district in Australia, bounded W., S. and E. respectively by Western Australia, South Australia and Queensland. It has a coastline of over 1,000 m. on the N. Formerly part of South Australia, it has since 1911 been directly administered by the Commonwealth. There are desert highlands in the interior, pastoral areas farther N., and a low forested coastal region where sugarcane, cotton, oranges, etc., are grown. Pearl shell and tramping are exported. The climate is mainly tropical. Darwin is the capital. Area, 523,650 sq. m. Pop. (excluding aborigines, of whom there are some 18,000), 4,600.

Northfleet, urban district of Kent, England, 1½ m. W. of Gravesend. Shipbuilding is carried on, and chemicals, paper, cement and bricks produced. Pop. 17,800.

North Foreland, chalk headland of Kent, the most easterly point of England, with a lighthouse 188 ft. high. Three battles were fought near here in the Dutch Wars of the 17th Century.

North Island, the smaller of the New Zealand, separated from S. Island by Cook Strait. It is actively volcanic, and contains country ideal for sheep and cattle raising and fruit growing. Wellington, Auckland and Wanganui are the chief towns. Area, 41,280 sq. m. Pop. 1,018,000.

Northmen. See *Norsemen*.

North Sea, or German Ocean, between the Continent, spreads out into the Arctic Ocean, is shallow, is crossed by many sandbanks, and is subject to frequent violent storms. The Dogger Bank, between England and Denmark, 8 to 16 fathoms deep, is rich in fish, especially cod. In the World War it was the main scene of British and German naval operations, including the Battle of Jutland (q.v.), the Battle of the Dogger Bank and other fighting.

Northumberland, the most northern county of England, separated from Scotland by the Cheviots and the Tweed. Its eastern shore, off which lie the Farne Is., Lindisfarne, and Coquet Isle, N. of Durham, fronts the North Sea; in the N. the Cheviot slopes form excellent pasturage but the Pennine Range towards the W. presents dreary and less valuable moorland; on the W. are arable lowlands. Tweed, Tyne, Till, Aine, Wansbeck, are the chief rivers. Its great coalfield in the S.E. includes upwards of 100 collieries. Newcastle (county town), Tynemouth, Blyth and Wallsend are the principal towns. Within its borders were fought the battles of Otterburn, Homildon Hill, and Flodden. Area, 2,018 sq. m. Pop. 756,720.

Northumbria, ancient kingdom of the Anglo-Saxon period; comprised the eastern half of the island from the Humber to the Firth of Forth, and was divided into the northern Bernicia and the southern Deira; was founded in 547 by Ida the Angle; for a time, about 640, it was the most powerful state of the island; it ceased to exist in 827.

North-West Frontier Province, northernmost division of British India, between the Punjab and Afghanistan. About a third is British territory (capital, Peshawar), the remainder being tribal agencies. The land is mountainous and intersected with deep valleys, and inhabited mainly by turbulent tribesmen resentful of British control. The peace is hard to keep and military expeditions are of frequent necessity, as that against the Wazirs in 1937. Roads are being constructed through the mountains, and a railway now traverses the Khyber Pass. Area, 39,300 sq. m. Pop. 4,684,000.

North-West Territories, area of Canada stretching from Yukon Territory E. to Hudson Bay, and from Alberta, Saskatchewan and Manitoba to the Arctic, with all the islands to the north. Much of it is unexplored, but bordering the Arctic are grass-covered plains, and further S. forest lands, chiefly spruce and larch. The resources are as yet little developed, though some minerals are worked, and some grain grown. Fur-bearing animals are plentiful. The Mackenzie R., extending some 1,460 m., waters the W. part, and the many lakes include the Great Bear and Great Slave. They are divided into the three districts of Keewatin, Mackenzie and Franklin. Area, 1,309,700 sq. m. Pop. chiefly Indians and Eskimos, about 9,800.

Northwich, a town in Cheshire, England, with brine springs, salt mines, and manufactures of bricks, metals, and beer. Pop. 20,800.

Norway, a kingdom of North Europe, comprising the western side of the Scandinavian peninsula, separated from Sweden on the E. by the Kjölen Mts. The Arctic and Atlantic Oceans beat upon its long western seaboard, which is serrated by many narrow and sinuous fiords; Sogne Fiord, the longest, runs into the heart of the country 100 m. Off the northern coast lie the Lofotens, while the Skerries skirt the E.

The country forms a strip of irregular and mountainous coastland 1,160 m. long, which narrows down at its least breadth to 25 m. 70 per cent. of the surface is uncultivable, and 24 per cent. is forest; the lakes number 30,000, of which Lake Wenner (2,136 sq. m.) is the largest. Immense glaciers are found in the great mountain barrier, and innumerable rivers run short and rapid courses to the Atlantic and to the Skagerrak in the S.; the Glommen, flowing into Christiania Fiord,

is the largest (800 m.). The climate of the W. coast districts is tempered by the Gulf Stream drift; inland there is less rain, but much intenser cold.

The wealth of the country lies in its forests and fisheries, mines and shipping; only 2 per cent. of the land-surface is under cultivation, and 2.8 per cent. is utilized for grazing; the copper, iron, and silver mines are declining. Oslo (formerly Christiania), the capital, is the centre of the industrial area. The Norwegians are intensely democratic; the country is ruled by a king and a parliament called the Storting, elected as a single body, but divided into two sections after election. Education is free and compulsory, and the bulk of the people are Lutherans. Norway, originally inhabited by Lapps and Gothic tribes, was first united by Harold Haarfager (A.D. 863-930), and subsequently welded into a Christian kingdom by his descendant St. Olaf (1015). From 1536 it was held as a conquered province by Denmark up to 1814; in that year it was joined to Sweden, but the union came to an end in 1905. Area, 124,500 sq. m. Pop. 2,814,000.

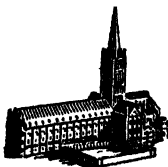
Norwich, cathedral city and county town of Norfolk, England,

on the Wensum, 114 m. N.E. of London; its beautiful woodland surroundings have won it the name of "the city in an orchard." Chief of its many fine buildings is the cathedral, a handsome Norman structure, founded in 1096; of the old Norman castle only the keep now stands, crowning a central hill. Textile fabrics are still an important manufacture, supplemented by mustard, starch, footwear, and ironware factories. Pop. 124,000.

Nose, an organ of the body in mammals, the function of which is to pass air into the lungs, freed from impurities and warmed to the right temperature. The olfactory nerves are situated in the nose, thus associating this organ with the sense of smell. The nose is composed of bone and cartilage; the interior cavity is divided by the septum, a thin structure also of bone and cartilage. Behind the nose are the nasal sinuses, cavities in the upper part of each jaw, the frontal bone, and at the base of the skull. The sinuses are filled with air from the nose, and are liable to infection, suppuration of the sinuses being a serious nasal disease. Other affections of the nose are nasal catarrh, inflammation, and the growth of polypoid due to chronic deep-seated inflammation. Nose-bleeding, when not a symptom of other diseases, is generally due to a dilated blood-vessel in the front of the septum.

Notary, Public, a person appointed to certify to a formality required by law as observed in his presence. In England such functions are generally performed by a Solicitor or Commissioner for Oaths.

Notation, the art of representing the sounds by signs. The Greeks used the letters of the alphabet for this purpose. Notation by signs was adopted in the 10th and 11th Centuries. A system of indicating duration was introduced at the end of the 11th Century by Franco of Cologne. The four-line staff notation of Guy of Arezzo, still used for plain-song, was general until the wide adoption of printing. The modern method, a gradual evolution, uses a number of large, and "notes," black or open, rising or falling with the pitch of the note, with various ornaments indicating the length of the note, the precise position of the note being fixed



NORWICH CATHEDRAL

upon a staff of 5 horizontal lines, and four intervening spaces.

Notification of Diseases.

It is compulsory, under the Infectious Diseases Notification Acts of 1889 and 1899, to notify the local Medical Officer of Health of cases of certain infectious diseases, such as diphtheria, scarlet fever, typhoid fever, etc., so that appropriate steps may be taken to prevent, by isolation, etc., the further spread of the disease. The responsibility of notification devolves upon the head of the family, but it is usually done by the doctor attending the case. Failure to notify involves a penalty of 40s. Certain other diseases, such as chicken-pox, cerebro-spinal fever, etc., may be made compulsorily notifiable in special areas by order of the local authorities.

Notre Dame, the cathedral church of Paris, situated on the "Ile de la Cité"; its erection was begun in 1163 on the site of an earlier cathedral, which itself had superseded a pagan temple on the spot, and completed, at least in its main features, in 1230.

Nottingham, county town of Nottingham, Nottinghamshire, England, on the Trent, 126 m. N.W. of London; spacious and well-built, with a castle (now an art gallery), old grammar school, racecourse, several fine churches, a Roman Catholic cathedral, etc.; is the centre of lace-making and hosiery in England, and manufactures cottons, silks, bicycles, tobacco, typewriters, etc.; a fine granite and iron bridge spans the river. Pop. 282,000.

Nottinghamshire, a north-midland county of England, lies between Lincoln (E.) and Derby (W.), and touches York on the N.; embraces the broad, level and fruitful valley of the Trent, Sherwood Forest and Wolds in the S.; excepting the Vale of Belvoir in the E. part of the Wolds, and the Valley of the Trent, the land is not specially productive. There are important collieries around Mansfield, and iron workings. The principal towns, Nottingham, Mansfield, Worksop, etc., are busily engaged in the manufacture of all kinds of lace, hosiery and various woollen goods; ironfounding is also carried on. Area, 844 sq. m. Pop. 712,700.

Nova Scotia, a province of Canada, lying E. of New Brunswick, facing the Atlantic, which, with its extensions, Bay of Fundy and Gulf of St. Lawrence, all but surrounds it; consists of a peninsula (joined to New Brunswick by Chignecto Isthmus) and of the island of Cape Breton, separated by the Gut of Canso; short rivers and lakes abound. Dairy and poultry-farming are carried on, and fruit grown; gold, coal, iron, etc., are wrought extensively; manufactures are increasing; the fisheries (mackerel, cod, herring, salmon, etc.), and timber forests are the chief sources of wealth. Halifax is the capital. The climate is variable, and subject to coastal fogs. It was discovered in 1497 by Cabot, formed a portion of French Acadie, and finally became British in 1713. Area, 21,430 sq. m. Pop. 513,000.

Novatian, a Roman priest who in the 3rd Century insisted that those who had lapsed under persecution could not be readmitted to the Church. He was joined by a considerable party, named after him Novatians, which died out in about the 6th Century.

Novaya Zemlya, a group of two large islands in the Arctic Ocean, between the Kara Sea and Barents Sea, 600 m. by 60 m., divided by a narrow strait, the Matochkin Shar; belongs to Russia, but is not permanently inhabited; is visited by seamen and hunters. Area, 30,000 sq. m.

Novel, a story in prose dealing with the adventures or feelings of imaginary persons so as to portray, by the description of action and thought, the varieties of human life and character. The earliest classical and medieval prose stories were mainly romantic, with little attempt at character portrayal. With Boccaccio's *Novella Storta* (whence the word *novel*), and such 16th Century tales as Lyly's *Euphues* and Sydney's *Arcadia*, the novel in our sense may be said to have begun. In the 18th Century, Defoe, Richardson and Fielding made it an important part of English literature; it was further enriched by Smollett's liveliness in *Peregrine Pickle* and *Humphrey Clinker* and by Sterne's characterization in *Tristram Shandy*.

Side by side with the realism of these authors was the popular vogue for the romantic "horror" novel, exemplified by Horace Walpole's *Castle of Otranto* and Mrs. Radcliffe's works. The romantic novel was given a new turn by the genius of Sir Walter Scott, who set the fashion for historical novels, dominating the beginning of the 19th Century.

Jane Austen's novel of manners proved a counter-influence, coming into its own later in the century with the novels of George Eliot and Bulwer Lytton, who, however, also wrote historical novels in the manner of Scott.

The Victorian age in literature is chiefly noted for the work of the great novelists, pre-eminent among whom are Trollope, Dickens, Thackeray, Hardy and Meredith, with Mrs. Gaskell, Charles Reade, Kingsley, and the Brontës closely following. The movement towards greater realism which originated with Flaubert, dominated the French and Russian novel—notably in the work of the Goncourt brothers, Tolstoy, Turgenev and Dostoevski—in the latter part of the century, and was brought to England by George Moore and others.

Emphasis on social conditions was shown in the novels written by H. G. Wells, George Gissing and Arnold Bennett, who with Galsworthy were the most prominent writers of the early 20th Century. Realism in the novel became linked up with psychology, and penetrating characterisation became the feature of the post-war novel. D. H. Lawrence, Aldous Huxley, James Joyce and Virginia Woolf are the best known English writers of the psychological novel, while with Somerset Maugham, Sir Hugh Walpole and, before them, Kipling the interest is perhaps equally balanced between character and action.

November, the eleventh month of the year, takes its name from having in the Roman calendar been the ninth.

Novocaine, or *Kerocaine*, a drug which has replaced cocaine in surgery as a local anæsthetic, as it is less poisonous and its reactions are less likely to result in drug-taking habits. It is often combined with adrenalin.

Noyes, Alfred, British poet. Born in Staffordshire and educated at Oxford, he published his first verse in 1902, which he followed with many other volumes; among them *The Loom of Years*, *The Winding Stair* and *The Torchbearers*. (1880-).

Noyon, city of France in the dept. of Oise, 67 m. N.E. of Paris, the birthplace of John Calvin. Its fine 13th Century cathedral was badly damaged during the World War, when the city suffered severely from bombardments. Pop. 9,500.

N.R.A., abbreviation for **National Recovery Administration**, the general term for the organisations and measures set up in pursuance of the National Industrial Recovery Act, passed by the U.S.A. Congress in 1933, and conferring wide powers on the President to deal with the economic crisis which had resulted from the slump of 1921. The Act enabled the President to take steps

to arrange industrial codes for separate industries guaranteeing the respective rights of employers and employees, to undertake public works on a vast scale, and to exercise a close supervision over production in every field. The operation of the N.R.A. gave rise to a great deal of controversy, a number of measures initiated by the President thereunder being declared as unconstitutional by the Supreme Court; but alternative methods of overcoming these obstacles to its operation were generally found, and the various organisations and bureaux established under it did much to rehabilitate industry and finance in the years following 1933.

Nubia, a large and ill-defined region of Egypt (N.) and Abyssinia (S.), and stretches from the Red Sea (E.) to the desert (W.). It is now included in the Anglo-Egyptian Sudan.

Nucleus, in botany, a term applied to (or immature seed) that portion of the ovule (or protoplasm in the cells of all plants except some Thallophytes. It is clearly marked from the surrounding protoplasm and there is an inner portion called the nucleolus, or small nucleus.

Nucleus, in physics, the "core" of the atom, bearing a positive electrical charge which is exactly neutralised by the combined negative charges of the accompanying electrons. Almost the whole mass of the atom is concentrated in the nucleus, which is itself composed of protons and electrons. The splitting of atomic nuclei by bombardment with radio-active particles is one of the most important achievements of modern physics.

Nuffield (William Richard Morris), first Viscount, British industrialist; started business as a bicycle repairer; later began making motor-cycles (1900), and in 1911 built his first motor-car; in 1912 opened his first motor-car factory; made mine-sinks during the World War; restarted car-making after the war at Cowley, Oxon., on mass-production principles; received a baronetcy in 1929; a peerage in 1934, and a viscountcy in 1938. A liberal donor to charities, including the sum of £2,000,000 in 1936 for the promotion of medical research at Oxford University. In July, 1938, he was entrusted with a Government order for a thousand aeroplanes as part of the national re-armament programme. (1877-).

Nullity of Marriage, a decree that a marriage has been null and void from the beginning may be sued for by a man or woman on the following grounds: (1) A prior marriage; (2) impotency of either of the two parties; (3) relationships within the prohibited degrees; (4) marriage without licence or publication of banns; (5) insanity of either of the parties; (6) force, fraud or mistake; (7) wilful refusal to consummate; (8) venereal disease or pregnancy by some third person existing at the time of marriage on the part of the person against whom the decree of nullity is sought.

Numa Pompilius, the second and the successor of Romulus, its founder; in Roman legend was regarded as the organiser of the state and its first lawgiver. In making his laws he was assisted by a nymph Egeria (q.v.), who lived close by in a grotto, and to whom he had recourse for consultation. His reign lasted from 716 to 673 B.C.

Numbers, Book of, the fourth book of the Pentateuch, so called from the two numberings of the people, one at the beginning and the other at the close of the period it embraces. It covers a period of 38 years, and relates the journeyings of the

Israelites in the desert of Sinai before their entry into Canaan.

Numerals, the signs used to denote quantities, arithmetical quantities. The ancient Greeks used the letters of the alphabet, in their order, for this purpose; the Romans used a cumbersome system in which the main signs were I (1), V (5), X (10), L (50), C (100), D (500) and M (1000), other numbers being formed by combinations of these, thus CCXXVIII=1878. The "Arabic" numerals now universally in use were derived from India through Arabia in the middle ages. Their inclusion of a sign (0) for zero, unknown to the classical world, did much to make the development of modern mathematics possible.

Numidia, ancient country in North Africa, nearly co-extensive with Algeria, the inhabitants of which were of the Berber race; sided at first with the Carthaginians in the Punic Wars (q.v.), and finally with Rome, till the country itself was reduced by Caesar to a Roman province.

Numismatics, the scientific study of coins and medals. Metal coinage in anything like modern form seems to have been introduced by the Lydians; it spread thence to Greece, and many ancient Greek coins remain unsurpassed even to-day for beauty of workmanship. The study of early coins has thrown much light on archæology and dynastic history, their inscriptions often giving reliable and useful guidance as to dates and historical events.

Nummulites, a class of fossilized shells with a certain resemblance to coins. They occur in beds of nummulitic limestone, in deposits sometimes thousands of feet thick. They are characteristic of the Old World, and form much of the stone of the pyramids.

Nun, female member of a religious order, dedicated to an active or contemplative life in the service of God. Christian nuns existed in Egypt as early as the 4th Century, and particularly since the 16th Century have performed heroic services to the causes of education and charity all over the world. There are several hundred orders of nuns in the Roman Catholic Church, and in the last hundred years several similar orders have arisen in the Anglican communion. Nuns played a large part in early Buddhism, but are seldom found in modern Buddhist communities.

Nunc Dimittis, the Canticle of Luke II., 29-32. It forms part of the evening service in the Book of Common Prayer, and is used in the Roman Catholic service of Compline.

Nuncio, an ambassador of the highest rank representing the Pope at the court of a sovereign. An internuncio represents the Pope at minor courts.

Nuneaton, market town of Warwickshire, shire, England, 22 m. E. of Birmingham; cotton, woollen, and worsted spinning is the chief industry. Pop. 48,000.

Nuphar, a genus of water plants of the order Nymphaeaceae, suitable for growth in ponds and tanks with a little soil. There are 7 species, all native to N. temperate and cold regions. *Nuphar luteum* is the British Yellow Water-lily or Brandy-bottle, bearing yellow flowers in June.

Nuremberg (Nürnberg), city of Bavaria, Germany, on the Pegnitz, 95 m. N. of Munich; has much quaint medieval architecture in fine preservation, valuable art collections, a large library, and a museum; produces watches, toys, wood, metal, beer, and chemicals, and exports large quantities of hops. Pop. 410,500.

Nursery School, an institution for the education and healthy development of children between the ages of two and five, thus bridging the gap (in England) between the Infant Welfare Centre and the Elementary School. The establishment of such schools in 1929 was largely due to the successful experiment of Miss Margaret McMillan at Deptford. Great stress is laid on the value of open-air, sunlight, play, rest and cleanliness.

Nursing. In former times nursing was undertaken under the direction of religious orders and the clergy, but later, especially in Protestant countries, it was regarded as a menial office, and not until the advent of general hospitals did it become a profession. In England, Mrs. Elizabeth Fry started a society for nursing the poor in 1840, while Florence Nightingale founded in 1860 the Nightingale Fund Training School for Nurses, and the profession was at last recognized as suitable for women of intelligence and education. Other important steps in the development of nursing were the opening in 1895 of the Nurses' Training School for London Hospital and that for Guy's Hospital in 1902. Since 1919 there has been statutory provision for a State Register of Nurses, qualification for inclusion being by examination under State control.

Nut, the seed or fruit of a tree enclosed in a woody shell or pericarp. Nuts of various kinds are important articles of human food, particularly in tropical lands, and from many of them valuable oils are expressed which are used in the manufacture of margarine and synthetic food products. The chestnut and walnut are both grown extensively in Europe; tropical countries export brazil nuts, coconuts, peanuts, and other food nuts in large quantities.

Nutation, name given to a slight oscillatory motion of the celestial pole of period 19 years; it is due to the effect of the moon upon the precessional motion of the earth's axis.

Nutcracker (*Nucifraga caryocatactes*), a perching bird, European and American, rarely seen in Britain, belonging to the crow family. It is about the size of a jackdaw and feeds upon nuts. Its colour is mainly brown, with black bill and feet.

Nuthatch, a family (the Sittidae) of climbing birds found in wooded districts in Europe, N. America and Asia. They are allied to the titmice and are characterised by having long, wedge-shaped bills. The *Sitta castea* is common in England. It is about 5 in. long, has a grey back and pinkish underpart. It feeds on insects and the kernels of hazelnuts.

Nutmeg, the kernel of the fruit of *Myristica fragrans*, a tree growing principally in the East Indian island of Bando. It reaches a height of 30 ft. The nut is used as a spice, as is the mace, or covering in which the nut is contained.

Nux Vomica, a plant known botanically as *Strychnos Nuxvomica*, an erect tree, from the seeds of which the important alkaloids strychnine and brucine are obtained. Curarine, the alkaloid in the arrow-poison curare, is extracted from a related plant, the *Strychnos toxifera*.

Nyanza, Albert. See Albert Nyanza.

Nyanza, Victoria. See Victoria Nyanza.

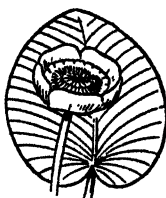


NUTHATCH

Nyasa, Lake, lake in E. Africa, feeds the Zambezi; is 360 m. long by 10 to 50 m. wide, at an elevation of 1,555 ft., and was discovered by Livingstone in 1859; the waters are sweet, and abound with fish. On the E. of the lake lie the southern part of Tanganyika and the northern part of Mozambique; on the W., Nyasaland Protectorate.

Nyasaland, British protectorate in Central Africa, lying S. and W. of Lake Nyasa, the chief town of which is Blantyre; it was formerly known as the British Central Africa Protectorate. There are plantations of sugar, coffee, tobacco, tea and cotton. The capital is Zomba. Area, 37,400 sq. m. Pop. 1,620,000 (1,800 whites).

Nymphaea, a genus of aquatic plants of the family Nymphaeaceae, of which *Nymphaea alba*,



NYPHAEA LOTUS

the white water-lily, is a well-known British species, found in lakes and rivers, and frequently grown on ornamental waters.

Nymphs, in the Greek mythology, maidens, divinities of inferior rank, inhabiting mountains, groves, seas, four rivers, valleys, grottoes, etc., under the names of Oceanides, Nereids (q.v.), (q.v.), Oreads, Dryads (q.v.), etc., distinguished by their grace and

Nysa, or Nyssa, the name of towns in classical times, sacred to Bacchus (Dionysus), in Ethiopia to the South of Egypt, in Arabia, the other in India. The name of Dionysus, who was reared there by nymphs, is a compound of the Greek meaning "God" and Nysa.

Nystagmus, a disease of the eye consisting of an oscillation of the eyeball accompanied by a feeling of giddiness as well as a twitching movement. It can be temporarily induced by turning the body round and round rapidly. Air-pilots are specially tested for nystagmus before being granted permission to fly.

Oak, the general name of trees and Quercus of the natural order Fagaceae (oaks and beeches). The male has pendulous catkins, and the fruit is an acorn. There are some 300 species, generally natives of the more temperate parts of the N. hemisphere though some are found on the Pacific Coasts and in Indomalaya. They are generally deciduous though some are evergreen. Noteworthy species are the British oak (*Quercus Robur* with two varieties, *sessiflora* and *pedunculata*), for centuries the chief timber used in this country in ship-building; the Holly oak (*Quercus Ilex*), the timber and bark of which are used in tanning; the Cork oak (*Quercus Suber*), the bark of which is ordinary cork; the White or Quebec oak (*Quercus alba*) and the Turkey oak (*Quercus Cerris*) both of which yield a useful timber.

Oak Apple Day, May 29, the day were worn in commemoration of the restoration of Charles II. to the throne in 1660, in reference to his concealment in the Boscobel oak after the battle of Worcester. Sept. 1651.

Oakengates, urban district and Shropshire, market town of Shropshire, England, 13 m. E. of Shrewsbury. It has coal and ironstone mines. Pop. 11,200.

Oak Gall, or oak-apple, an excrescence caused by a gall-producing insect, e.g., the gall wasp on oak trees. It is about the size of a marble and contains the grub.

Oakham, county town of Rutland, England, 17 m. E. of Leicester, in the centre of a fine wheat country. It has an old church, a grammar-school and a 12th Century castle, of which the banqueting-hall forms the modern county-hall. Malting and the manufacture of boots and hosiery are carried on. Pop. 3,000.

Oakland, city of California, U.S.A., the capital of Alameda county. It is on the E. coast of the Bay of San Francisco, 4½ m. across from San Francisco city; a beautiful city with tree-lined streets. It is in a vine and orchard country, has a fruit-canning industry, and manufactures textile and iron goods. Pop. 234,000.

Oaks, The, one of the five great classic races in England, run at Epsom; it was established by the 12th Earl of Derby in 1779 and is for fillies of 3 years old. The course is 1½ m. 5 yds.

Oakum, name given to fibres of old tarry ropes untwisted and employed in caulking the seams between planks in ships; the teasing of oakum was formerly an occupation for prisoners in jail.

Oamuru, seaport of New Zealand, in S. Island, 78 m. N. of Dunedin, the centre of an agricultural district. Pop. 5,500.

Oases, fertile places in a desert. Those generally river valleys the waters of which are usually underground. Sometimes they are depressions surrounded by hills into which small streams empty themselves. The most famous oasis of ancient times was in W. Egypt and was called the Oasis of Siwah. Oases have been created artificially by the sinking of artesian wells (q.v.).

Oast-House, a building containing kilns for hop-drying.

The hops are placed on horsehair-covered floors, which are heated from below, and the oast-house is so built as to provide for a continual draught of warm air to pass through and escape from an outlet at the top. Circular oast-houses with conical roofs are a feature of the landscape in the hop-growing districts of Kent, England.



OAST-HOUSE

Oates, Lawrence Edward Grace, British explorer. An army captain wounded in the Boer War, he joined Capt. Scott's Antarctic expedition in 1910, and was a member of the final party that reached the S. Pole. On March 17 Oates, who had been taken ill and feared that he might prove a burden to his comrades, deliberately walked from the tent to die. Scott commented in his diary, "It was the act of a very gallant gentleman." (1880-1912).

Oates, Titus, fabricator of a fictitious Popish plot for the overthrow of the Protestant faith in England, which brought to the block several innocent men; rewarded at first with a pension and safe at Westminster Hall, he was afterwards convicted of perjury, flogged, and imprisoned for life, but at the Revolution (1688) (1649-1705).

A solemn assertion or promise with the invocation of God as a witness, hence the termination of the judicial oath, "So help me God." In English law an oath of allegiance must be taken by the chief officers of State, judges, justices, members of Parliament, etc., though since 1888 the latter are allowed to affirm. Jurors are required to take an oath to perform their functions honestly. Before 1909 an oath in court was accompanied by kissing a copy of the New Testament, but now the party taking the oath holds the book in his uplifted hand.

Oats (*Avena*), a genus of grasses cultivated extensively in temperate climates for the sake of their grain and though grown largely as food for horses, also forms the staple part of the food of large numbers of people in N. Europe. There are about sixty species, the chief of which is *Avena sativa* (the common cultivated oat). The meal product is about half the weight of the oats and is a valuable article of food. The wild oat (*A. fava*) is supposed to be the original species.

Obadiah, a Hebrew prophet who lived about 588 B.C., shortly after the destruction of Jerusalem, at which the Edomites had assisted, and whose prophecy was written to assure the Jews that the judgment of God had gone forth against Edom. The book of Obadiah, with 21 verses, is the shortest of the Old Testament.

Oban, burgh and seaport of Argyllshire, Scotland, on a landlocked bay opening off the Firth of Lorne. The capital of the Western Highlands, it is a fashionable tourist resort. Near by are two ruined castles, an ancient cave-dwelling, and beautiful scenery. Highland games are held there annually. Pop. 5,800.

Obelisk, a tall four-sided pillar, tapering to a pyramidal pointed top, erected in connection with temples in Egypt, and often inscribed with hieroglyphics. The so-called "Cleopatra's Needle," on the Thames Embankment, is a typical Egyptian obelisk; it was removed to London in 1877 from Alexandria.

Oberammergau, a small village in SW. of Munich, Bavaria, 45 m. It is famous for the Passion Play performed by the peasants every ten years, which attracts a great many visitors. The play was instituted in 1634 in token of gratitude for the abatement of a plague.

Obesity, abnormal accumulation of fat in the body under the skin or around certain organs. The condition is often hereditary and sometimes results from over-indulgence in eating and drinking alcoholic liquors, or from lack of exercise. A diet of starch reducing foods and alkaline waters with regular exercise will reduce obesity, and extract of thyroid gland is successful in certain cases.

Obi, river of W. Siberia, which rises in the Altai Mts., flows across the Kirghiz steppe in a N. and NW. direction, and discharges into the Gulf of Obi, on the shore of the Arctic Ocean, after a course of about 2,400 m. It is an important waterway.

Oblates, an organisation of men and women, not under monastic vows, who have devoted themselves to active religion; especially a community of secular priests founded by St. Charles Borromeo in 1576, who are ready to render any services prescribed by the bishop,

Obligation, Holidays of, in the Roman Catholic Church, days set apart for abstinence from servile labour, accompanied by an obligation to attend Mass. The various holidays of obligation include those of the Circumcision, Epiphany, Ascension, Corpus Christi, SS. Peter and Paul, Assumption, All Saints and Christmas Day in England. In Scotland, the feasts of St. Joseph and the Immaculate Conception are also holidays of obligation; and in Ireland, St. Patrick and the Immaculate Conception.

Oboe, a wood wind instrument with a conical bore and a double-reed mouthpiece, forming the treble member of the class to which it belongs, the bassoon being the bass. It terminates in a small open bell, in this differing from the oboe-d'amore, whose pear-shaped bell lent it a more veiled and sympathetic tone. The word oboe comes from the old French "haut bois," or "upper wood wind."

Obolus, a small coin worth about a penny, which the Greeks were accustomed to place in the mouth of a corpse at burial, as the fee of Charon, the ferryman of the Styx.

O'Brien, William, Irish politician; entered Parliament 1885; repeatedly imprisoned for activities in connection with the land campaign; in the early 20th Century, founded an Independent Nationalist Party which worked for conciliation, but it disappeared on the rise of Sinn Féin in 1918. (1852-1928).

Observatory, a building equipped with the necessary instruments for the study of astronomy, astrophysics, meteorology, seismology, magnetic determination, or volcanic conditions. The following are among the most notable of the world's astronomical observatories: Yerkes Observatory, of the University of Chicago, Williams Bay, Wis.; the Lick Observatory, of the University of California, at Mount Hamilton; Meudon Observatory, France; Berlin Royal Observatory; Pulkova Observatory, Russia; Royal Observatory, Greenwich.

These observatories contain the world's largest refracting telescopes, ranging from the 40-in. telescope (length 62 ft.) at Yerkes Observatory to the 28-in. at Greenwich. Reflecting telescopes may be constructed on a larger scale, and are often more suitable for some kinds of celestial photography. A 74-in. reflecting telescope is in use at the David Dunlop Observatory of the University of Toronto at Richmond Hill, Toronto, while a 200-in. reflecting telescope was in 1938 in course of construction for an observatory to be erected on Mount Palomar, San Diego County, California.

Meteorological observatories are also established in various parts of the world; in Great Britain they are centred on the Observatory at Kew, with subsidiary stations at Greenwich, Falmouth, Oxford, Stonyhurst, Glasgow and Armagh.

Obsidian, a hard, lustrous rock of a glassy structure, which breaks with a conchoidal fracture. It is actually a natural glass, formed by volcanic action.

Obstetrics, the branch of the practice of medicine concerned with the welfare of women during childbirth and the ailments to which a mother is subject during pregnancy. It is closely related to gynaecology (q.v.).

O'Casey, Sean, Irish dramatist. Born in Dublin, he received no edu-

life, especially of the civil war period, are *Junio* and the *Paycock*, *The Plough* and the

Stars, The Silver Tassie, Within the Gates, and Windfalls. (1890-).

Occam, William of, English Scholastic philosopher, born at Ockham, Surrey; a monk of the order of St. Francis, he studied under Duns Scotus and became his rival, and reviver of Nominalism in opposition to him, by his insistence on which he undermined Scholastic dogmatism, but cleared the way for modern speculation. (c. 1300-1349.)

Oclusion, in chemistry, the absorption of a gas by a metal, as of hydrogen by palladium. In the process of decomposing water, a strip of palladium, if used as the negative electrode, will absorb from 800 to 900 times its volume of hydrogen.

Ocultation, a term used in astronomy for the hiding of a star or planet from sight owing to the interposition of another nearer celestial body, and specifically applied to the concealment of a star or planet by the moon.

Ocean, a body of water surrounding the division of this body. There are three great oceans, the Atlantic, Pacific and Indian, all of which are connected with the so-called Southern or Antarctic Ocean, while the N. part of the Atlantic joins the Arctic Ocean. The deepest part of the Pacific Ocean, between Celebes and Japan, is 34,416 ft. The floor of the ocean consists mainly of three areas; the continental shelf, between the shores and the 100-fathom line, the steep continental slope, between 100 and 1,700 fathoms, and the abyssal area, averaging 1,700 fathoms in depth.

Oceania, a geographical area of the S. comprising Australia, Tasmania, the group of islands stretching from Fiji to New Guinea, both inclusive, and the groups known as Polynesia and Micronesia, which include Hawaii, Samoa, the Marquesas, the Society Islands, the Ladrões, the Carolines, the Gilberts, etc.

Oceanus, in Greek mythology, the great world-stream which surrounds the whole earth, and is the parent source of all seas and streams; presided over by the god Oceanus, the husband of Tethys, and the father of all river-gods and water-nymphs.

Ocelot (*Felis pardalis*), a carnivorous animal of the cat family, found in tropical America. It is about 3 ft. long, with a tawny yellow coat marked with black spots or streaks. It feeds on rodents and birds, and climbs trees with ease.



OCELOT

Ochls (i.e., the heights), a range of hills in Scotland, extending for about 25 m. from Bridge of Allan, Stirlingshire, N.E. to the Firth of Tay; they reach their highest point in Ben Cleugh (2,363 ft.), near Stirling.

Ochre, the name given to naturally occurring hydrated oxide of iron. It is found in the form of an earth mixed with silica and alumina and varies in colour from light yellow to reddish brown. It is employed as a pigment in the manufacture of paint.

O'Connell, Daniel, Irish patriot, born near Cahirciveen, co. Kerry; was called to the Irish bar in 1798, and organised the Catholic Association of 1823. On being returned for Clare (1823), the House refused to admit him, but so strong was the agitation in Ireland, that in 1829 the Catholic disabilities were removed. Next year he represented Waterford, and subsequently Kerry, Dublin, Kilkenny and Cork. He then formed

a society for the repeal of the Union and in 1843, as Lord Mayor of Dublin, carried a resolution in its favour in the City Council. In 1844 he was indicted for raising sedition and sentenced to a year's imprisonment and a fine of £2,000, but liberated. By this time the Young Ireland party had broken away from him, the potato famine occurred, and his health was broken. (1775-1847).

O'Connor, Thomas Power, Irish journalist and politician. He started his career as a journalist in 1837, and entered Parliament in 1880 as an Irish Nationalist. He became Father of the House of Commons, but never gave up his journalistic work, founding and editing the *Star*, *T.P.'s Weekly*, and other papers. He wrote numerous political and biographical books. (1848-1929).

Octave, in music, an interval of eight diatonic notes, as from C to C¹ or B to B¹, etc., comprising a complete scale. When two notes an octave apart are sounded together, their sound is the most agreeable to the ear after that of a consonance. The vibration of an octave note is twice as fast as that of its fundamental.

Octavia, the sister of Augustus, a woman and her virtue; was married first to Marcellus, and on his death to Mark Antony, who forsook her for Cleopatra, but to whom she remained true, even, on his miserable end, nursing his children by Cleopatra together with her own.

Octavo (8vo.), the size of a sheet of paper so as to make eight leaves; hence, a book having eight leaves to the sheet. There are different sizes of octavo, arising from the different sizes of paper employed, such as, foolscap 8vo., demy 8vo., imperial 8vo.

October, the tenth month of the year in modern chronology, but the eighth (Lat. "octo," eight) month among the Romans, whose year began in March.

Octopus, a sub-order (Octopoda) of cephalopod molluscs, with eight arms, each furnished with two rows of suckers. The Common Octopus (*Polyptus vulgaris*), found in the Channel Islands and in the Mediterranean occasionally reaches a length of 6 ft.

Octroi, an old French term signifying a grant, privilege or monopoly from Government to a person or company. It also signifies a tax levied at gates of towns, etc., on produce brought in for use.

Oddfellows, the name of several friendly societies, of which the Independent Order of Oddfellows, Manchester Unity, founded in 1813, is the largest and most important. It has been a pioneer in many important movements among friendly societies. The chief Oddfellows' society in America is the Grand Lodge of Maryland and the U.S.A., and there are similar organizations in many other parts of the world.

Ode, originally, among the Greeks, a poem intended to be sung, but in modern times any elaborate lyric poem upon a lofty, heroic, or passionate theme. Pindar and Bacchylides were the greatest masters of the Greek ode; the most celebrated writer of Latin odes was Horace. Many modern poets have excelled with the ode. Gray's odes approach those of Pindar; Keat's *Ode on a Grecian Urn*, *Ode to a Nightingale* and *Ode to Autumn* are of exquisite beauty. Milton, Wordsworth, Shelley, Tennyson and Swinburne also wrote odes on a variety of subjects.

Odense, city and seaport of Denmark, Fünen, the capital of the island of Fünen. It is connected with Odense fjord, 4 m. away, by canal. In the fine old dral Canute is buried. Pop. 76,000.

Oder, river of Germany, which rises in Moravia, and crossing the frontier, flows NW. through Silesia, and N. through Brandenburg and Pomerania into the Stettiner Haff, on the Baltic. On its banks stand Ratibor, Breslau, Frankfurt, and Stettin. Its chief tributary is the navigable Warthe, and it has canal communication with the Spree, Elbe and Vistula. It is about 360 m. in length.

Odessa, city of the Ukrainian republic, U.S.S.R., on the Black Sea, 25 m. NE. of the mouth of the Dniester, the chief southern port of Russia, with 5 harbours. It exports large shipments of wheat, sugar and wool, and manufactures flour, tobacco, glass, bricks, machinery, and leather. It is well fortified, and has a university, a zoological garden, an opera-house, and museums, libraries and scientific establishments. Pop. 497,000.

Odin, or Woden, the chief god of the powers of the Greek Zeus and Ares. His council chamber was Asgard and he held court with his warriors in Valhalla. Frigg was his wife, and Balder and Thor his sons. Legends concerning him are told in the old Icelandic sagas (particularly in the two *Eddas*). He is represented at times as the embodiment of wisdom and accomplished in poetry and magic; at times as a giver of victory and god of the dead. A revival of his cult has been attempted in Germany in connection with Nazi Aryan ideals. His German name was Wodan, Anglo-Saxon Woden.

Odo, bishop of Bayeux, half-brother of William the Conqueror, was made Earl of Kent, and appointed governor of the kingdom during William's absence in Normandy; at first had great influence in State affairs, but his ambition led to his fall from power and imprisonment; prominent at the court of Normandy, he joined the first crusade, but died at Palermo. (d. 1097).

Odontoglossum, a genus of orchids, of which there are about 100 species, natives of the Andes and other mountainous parts of tropical S. America.

The flowers are very beautiful and the stems, abbreviated, are terminated by a one or two-leaved pseudobulb. In their native surroundings they are epiphytes, i.e., not usually attached to the soil but attached to another plant for support without being parasitic. They are grown in England as greenhouse orchids. Many hybrids have been cultivated, including *Alector-Perfection*, *Imperator-Olympic*, *Royal Ascot* and *Xanthinum*.

Odyssey, an epic poem by Homer relating the ten years' wanderings of Ulysses (Odysseus) after the fall of Troy, and his return at the end of them to his native kingdom of Ithaca.

Ecumenical Council, an ecumenical council representative, or accepted as representative, of the Church, universal or Catholic. See *Councils*.

Oedipus, a legendary king of Thebes, fated to kill his father and marry his mother; unwittingly slew his father in a quarrel; for answering the riddle of the Sphinx (q.v.) was made king in his stead, and wedded his widow, by whom he became the father of four children; on discovery of the incest Jocasta hanged herself, and Oedipus went mad and put out his eyes, a favourite tragic theme.

Enone, a nymph of Mount Ida, near Troy, beloved by and married to Paris, but whom he forsook for Helen; is the subject of one of Tennyson's poems.

Enothera. See *Evening Primrose*.

Oersted, Hans Christian, Danish physicist; appointed professor of physics at Copenhagen in 1808; he was the discoverer of electro-magnetism, the metal aluminium and other important scientific facts; he did much to popularise science by his book *The Soul in Nature*. (1777-1851).

Esel, or Saaremaa, a marshy well-wooded island of the Baltic, belonging to Estonia; situated at the mouth of the Gulf of Riga, it is about 45 m. long and 25 m. in average breadth, with an area of 1,000 sq. m.; Kuressaare, formerly known as Arensburg, on the SE. shore, is the only town. Pop. 45,000.

Esophagus, the gullet, or that part of the alimentary canal leading from the pharynx, the short cavity at the back of the mouth, to the stomach. In man it is composed of two layers of muscular fibres.

Offaly (formerly King's County), inland county of Eire (Ireland), in Leinster. Its surface is mainly flat—notably in the Bog of Allen in the N., but in the SE. are the Slieve Bloom Mountains, rising to 1,733 ft. It is watered by the Shannon, the Brosna, and other rivers. Tullamore is the chief town. Area, 722 sq. m. Pop. 51,300.

Offa's Dyke, an entrenchment and rampart between England and Wales, 100 m. long, extending from Flintshire as far as the mouth of the Wye; it is said to have been constructed by Offa, king of Mercia, about the year 780, to confine the marauding Welsh within their own territory.

Offenbach, Jacques, French composer, born in Cologne of Jewish parents; studied music in Paris, and in 1853 produced *Pepero*, the first of many comic operas, of which the most popular were *La Grande Duchesse de Gerolstein*, *La Belle Helene* and especially *Les Contes d'Hoffmann*. (1819-1880).

Offensive Trades are those which constitute a nuisance under the Public Health Act, of 1875. They include blood-boiling, bone-boiling, soap-boiling, fell-mongering, tallow-melting and tripe-boiling. The penalty for infringing the regulations which control these trades is a fine of £50. An action can be brought in the High Court to abate any nuisance caused by such trades, such as offensive smells. A declaration signed by a Medical Officer of Health or by ten inhabitants of the district is sufficient to demand an abatement.

Offertory, in the Roman Catholic Church, a portion of the liturgy chanted at the commencement of the eucharistic service. In the English Church the word connotes the part of the service read during the collection of the alms at communion.

Office, Holy, a congregation of Cardinals of the Roman Catholic Church whose concern it is to supervise the purity of the faith and provide against heresy. The Inquisition (q.v.) was formerly so known.

Officers Training Corps, units organised for the training of Army officers by various universities and public schools. The offer to organize such a corps must be accepted by the Army Council. There are two classes: the senior, conducted by the universities, and the junior, conducted by the public schools. The purpose of the O.T.C., as it is popularly called, is to supply



ODONTOGLOSSUM
ASPERUM

officers in a national emergency. They are on a voluntary basis.

Official Receiver, in England, a public official who performs certain duties in the winding-up of companies and the bankruptcy of individuals. He reports to the courts any misdemeanour under the Bankruptcy Act and supervises the trustees.

Official Secrets Acts, acts passed in 1890, 1911 and 1920 to provide punishments for the disclosure of state secrets by civil servants and others. In recent years protests have been increasingly made by journalists and others against their alleged use by the Government in such a way as to raise obstacles to the collection of news.

Ogee, an architectural moulding consisting of a double curve, the upper half convex and the lower concave.



Ogham, or **Ogam**, an alphabet of 20 letters in use among the ancient Goideals of Ireland, Scotland, Wales and SW. England; the signs, consisting of groups of upright and oblique strokes, are usually found carved on monumental stones, of which about 300 are known.

Oglethorpe, James Edward, English general, born in London; served under Prince Eugene against the Turks, and in 1732 established the colony of Georgia, in N. America, as a refuge for paupers and debtors, and defended it against the Spaniards. His conduct as a general during the Jacobite rising of 1745 was the subject of a court martial, but he was acquitted. (1696-1785).

Ogmore (and **Garw**), urban district of Glamorganshire, Wales, situated 4 m. SW. of Bridgend. It is the centre of a coal-mining area. It has remains of a Norman castle. Pop. 27,000.

Ogowe, river of W. Africa which rises in the Akukuja plateau, and flowing N. and W., enters the Atlantic by a delta S. of Cape Lopez, its course lying wholly within French Congo territory. Sandbanks prevent navigation except by small boats. It has a course of 750 m.

Ogpu, abbreviation of Obiedinyonnoye Gosudarstvennoye Politicheskoye Upravleniye, or the State security department of the U.S.S.R., successor of the Cheka, whose duty it is to control and expose counter-revolutionary activities, political plots, espionage, sabotage, and so on. It operates under the control of the Central Executive Committee of the Soviet Union exercised through its Attorney-General, and its head is one of the Council of People's Commissaries. Its secret police operate throughout Russia, and, it has been said, even abroad, and have been responsible for the arrests made in the many successive anti-Trotskyist "purges" that have recently taken place in the country.

O'Higgins, Bernardo, Chilean soldier and statesman, born at Chillán, of Irish descent; he joined the rebellion of Rozas in 1810, and was defeated at Rancagua in 1814; afterwards joined San Martín, and won several battles. In 1822 he became dictator of Chile, in the first national government, but was forced to retire next year. (1770-1842).

O'Higgins, Kevin Christopher, Irish politician; he joined the Sinn Féin movement in 1916 and was imprisoned; elected for Queen's County (1918), he served in the Cosgrave ministry and became minister of justice and vice-president of the

executive council in 1923 and also, in 1927, minister for external affairs. He was assassinated near Dublin. (1892-1927).

Ohio, a state of the U.S.A., which stretches northward from the Ohio R. to Lake Erie, between Pennsylvania and Indiana. Area, 41,040 sq. m. It consists of level and undulating plains, producing wheat and maize. Sheep-grazing and cattle-rearing are very extensive, and large quantities of wool are produced. There are valuable deposits of limestone and freestone, and important coalmines, oil-wells and reservoirs of natural gas. The manufactures include iron and steel goods, machinery, motor-cars, wagons and textile fabrics. In the N. excellent fruit is grown. The capital is Columbus, and other cities are Cleveland (the largest), Cincinnati, Toledo, Akron and Dayton. The state was settled in 1788 and admitted to the Union in 1803. Area, 41,000 sq. m. Pop. 6,850,000.

Ohio River, river of the U.S.A.; formed by the confluence of the Allegheny and the Monongahela R's. It pursues a westward course of 967 m., and after receiving sundry tributaries, joins the Mississippi, being the largest and, next to the Missouri, the longest of its affluents. It is navigable for the whole of its course. On its banks stand Pittsburgh, Cincinnati, Louisville, and other cities.

Ohm, the standard unit of electrical resistance, defined as the resistance of a column of mercury of specified size; an electro-motive force of one volt will send a current of one ampere length through a resistance of one ohm.

Ohm, Georg Simon, German physicist, born at Erlangen; became professor of mathematics of Cologne (1817) and at Nuremberg (1833), and in 1852 professor of physics at Munich; discovered the law of conduction known as Ohm's Law, which states, briefly, that the strength of an electric current is equal to the electro-motive force divided by the resistance of the conductor. (1787-1854).

Ohmmeter, in electricity, a direct-reading instrument used to measure, commonly, resistances of great magnitude, such as those of insulation. The instrument has two coils, with their axes at right angles. One coil is connected to a known, and the other to an unknown resistance. With a fixed voltage supply, the deflection of the needle depends upon the value of the unknown resistance.

Oilcake, a cake or mass of compressed linseed—or rape, poppy, mustard, cotton and other seeds—from which oil has been extracted. Linseed cake is much used as a cattle food, while rape-cake is employed for fattening sheep.

Oil City, a city of Pennsylvania, U.S.A., on the Allegheny R., 75 m. N. of Pittsburgh; it is the centre of a great oil trade, and oil-refining industry; there are also engineering and boiler works and a municipal airport. Pop. 22,000.

Oil Engines, a term applied to (1) engines burning heavy oil instead of petrol, e.g. Diesel engines; and (2) ordinary steam engines (turbines, etc.) burning an oil fuel instead of coal, as installed in many large modern vessels. See **Internal Combustion Engine**; **Turbine**.

Oils and Fats. Fixed (non-volatile) oils and fats are esters, or mixtures of esters, of glycerol with fatty acids or with acids related to the fatty acids but containing less hydrogen, i.e., unsaturated. A typical fat, occurring in mutton-fat, is tri-stearate or tri-stearin, while an oil is glyceryl oleate, or tri-olein, as in olive-oil. Oils and fats are probably formed in the living organism by the

reduction of carbohydrates, such as starch and sugar; they act as reserve food supplies and contain large amounts of potential energy, which becomes available when they are oxidised in the normal life-processes. When pure, they are colourless, odourless and tasteless, insoluble in water and neutral to litmus. Among the chief fats are tallow, lard, suet and butter, while of the oils perhaps the best known are linseed, cottonseed, olive and coconut. See also *fat*.

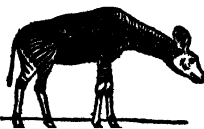
Oise, dept. of N. France, bordered by the dept. of Aisne, on the E., chiefly by Seine-Inférieure on the W., by Somme, on the N., and Seine-et-Marne and Seine-et-Oise, on the S. Its area is 2,272 sq. m.; it is largely hilly, has extensive forests, and is watered by the lower course of the Oise and its tributaries. Clay, sand, building-stone and peat are worked; the crops include grain, potatoes and sugar-beet, and cattle-rearing and bee-keeping are carried on; there are numerous mineral springs. Industries include the manufacture of sugar-beet products, textiles, carpets, hosiery, lace, furniture and brushes. Beauvais is the chief town. Pop. 402,600.

Oise, the Ardennes, in Belgium, enters France and flowing SW. falls into the Seine at Comfains-St.-Honorine, 40 m. below Paris. Its principal affluent, the Aisne, joins it near Compiègne; extensively canalized, it has a length of 186 m.

Ojibwas, or Chippewa, a group of Algonkin Indians originally inhabiting the shores of Lake Huron and Lake Superior, and now divided equally between Canadian and American territory. They were friendly to the early French settlers, and later to the British. At the present time the tribe numbers about 30,000.

Oka, river of the U.S.S.R., which rises near Ochka, in the Central Black Soil Area, and flowing N. and W. alternately, joins the Volga at Gorky (Nishni-Novgorod), after a course of 950 m., navigable nearly all the way.

Okapi, an African animal of the giraffe family. It has comparatively short neck and legs, has a light fawn-coloured head, purplish body, with horizontal, black and white, zebra-like markings on the flanks and legs. It is exceedingly rare, being found only in the most inaccessible parts of the Great Congo Forest where it was discovered in 1901 by Sir H. Johnston. The male has vestigial horns.



OKAPI

Okhotsk, Sea of, an immense sheet of water in E. Siberia, lying between the peninsula of Kamchatka and the mainland, with the Kurile Islands across its mouth; it is scarcely navigable, being infested by fogs and ice-bound throughout the winter.

Oklahoma, a state of the U.S.A., which stretches southward from Kansas to the Red R., with Texas on the W. and S., and Missouri and Arkansas on the E.; it has an area of 69,414 sq. m., and presents a prairie surface crossed by the Arkansas, Cimarron, and Canadian Rs., and rising to the Wichita Mts. in the S. There are many brackish streams, and the rainfall is light, hence the soil can be cultivated only in parts. Oil, coal, natural gas, lead and zinc are the chief mineral products. Ceded to the United States under restrictions by the tribes of the Indian Territory in 1888, the area was finally purchased and opened for settlement in 1890. The chief town is Oklahoma City, and other important towns are Tulsa and

Muskogee. The State was admitted to the Union in 1907. Pop. 2,396,000.

Oklahoma City, city of the U.S.A. and capital of the state of Oklahoma, on the North Fork of the Canadian R. It is a new city, settled in 1889, with many handsome buildings and streets bordered with trees. There is a university, founded in 1911. The city has an important trade in cotton, cattle, horses and other stock; there are also stockyards and canning factories. Pop. 185,400.

Olaf, St., a Norwegian king; wrested the throne from Eric in 1015 and by striving to propagate Christianity by fire and sword, excited disaffection among his people, who rebelled and obliged him to flee to his brother-in-law, Jaroslav of Russia, by whose help he tried to recover the throne, but was defeated and slain; he was canonised in 1164, and is patron saint of Norway (945-1030).

Öland, an island of Sweden, off the coast, 85 m. long and about 10, broad, with an area of 518 sq. m.; it has good pasture and yields alum, chalk and sandstone; the fisheries are valuable. Borgholm is the only large settlement. Lake Hornsjö is 3 m. in length. There are many stone monuments and other antiquities. Pop. 30,000.

Olav, Crown Prince of Norway, son of Haakon VII, born July 2, 1903; married, 1929, Princess Märtha of Sweden, and has 3 children, two daughters and a son, Prince Harald, born 1937.

Old Age Pensions, were first granted in 1909. Under the Old Age Pensions Act, 1908, the maximum pension was 5s. weekly, and no pension could be paid to an applicant whose income was over £31 10s. per annum. From time to time the rates have increased and now vary (a) in the case of a pensioner who is one of a married couple living together in the same house, between 10s. a week, where the combined yearly means of husband and wife do not exceed £52 10s., and 1s. a week where the yearly means do not exceed £99 15s.; (b) in other cases, between 10s. a week, where the yearly means do not exceed £26 5s., and 1s. a week where the yearly means do not exceed £49 17s. 6d. To arrive at the "yearly means," a deduction not exceeding £78 in case (a) or £39 in case (b) may be made from means other than earnings. The pension is payable to persons of the age of 70 or over, who have been British subjects for the preceding 10 years and have resided in the United Kingdom for 12 years since attaining the age of 50, if natural-born British subjects, or for 20 years if not natural born. By the Widows' and Orphans' and Old Age Contributory Pensions Acts of 1925-1931, persons who have paid a specified number of contributions under the Insurance Acts are entitled to a pension of 10s. weekly on attaining the age of 65, with no conditions as to income. A widow's contributory pension is supplemented by allowances of 5s. weekly for the first child and 3s. for each additional child of school age or younger. Non-contributory Old Age pensions are paid to blind persons from the age of 50.

Old Bailey, popular name for the London, which stands on the site of the old prison of Newgate; the existing building dates from 1906. The word "bailey" is derived from the Fr. *baillie*, meaning a work fenced with palisades or masonry, constituting a town's defence, and later used as a synonym for any prison.

Oldbury, urban district of Worcester-shire, England, in the Black Country, 5 m. N. of Birmingham; it has

chemical, iron and steel works, and factories of many kinds. Pop. 36,000.

Oldcastle, Sir John, Lord Cobham, English Lollard leader; distinguished himself in arms under Henry IV. in 1411, but having embraced Lollardism was tried for heresy and committed to the Tower in 1413, but escaped to Wales; recaptured and convicted of abetting insurrection on religious grounds, he was burned to death in St. Giles's Fields. (d. 1417).

Old Catholics, a section of the Church in Germany and Switzerland that first announced itself in Munich in 1870, upon the declaration of the dogma of the infallibility of the Pope. The prime movers were Dr. Dollinger and Professor Friedrich, backed by 44 professors of the university; the movement has not extended itself to any considerable extent.

Oldenburg, a German state embracing three provinces: (1)

Oldenburg proper, the largest, adjoins Hanover, with its N. limit on the North Sea; it is a tract of moorland and fen, watered by the Weeser, Hunte, and tributaries of the Ems; the capital is Oldenburg, on the Hunte, 30 m. NW. of Bremen. Pop. of province, 487,000. (2) Lûbeck lying in Holstein, N. of but not including the city of Lûbeck; Area, 209 sq. m. Pop. 48,000. (3) Birkenfeld, lying among the Hunsrück Mts. in the S. of Rhenish Prussia; Area, 312 sq. m. Pop. 58,000. Independent since 1180, then belonging to Denmark (1677-1773), Oldenburg acquired Lûbeck in 1803, and Birkenfeld in 1815, when it was raised to the rank of grand-duchy; it became a republic in 1918. Under the Nazi regime, popular government was set aside and the state put under the chancellor's statthalter.

Oldham, county borough of Lancashire, England, on the Medlock, 7 m. NE. of Manchester; an important cotton-spinning centre, it has numerous cotton-mills and also manufactures silks, velvets, hats and machinery. Pop. 140,300.

Old Red Sandstone, name given to the rocks, consisting of sandstones, shales and limestones, laid down in N. and W. Europe and N. America in Devonian times, to distinguish them from the New Red Sandstone of Triassic age. The fossils, which are very rich in remains of fishes, crustaceans and aquatic plants, indicate that these deposits were laid down in inland seas.

Old Testament. See Bible.

Old Trafford, a W. suburb of Manchester, England, where the cricket ground of the Lancashire club is situated. The Manchester Ship Canal traverses the former beautiful Trafford Park.

Oleander, or Rose Bay (*Nerium Oleander*), a beautiful evergreen shrub of the Apocynaceae order, with rose (or white) flowers in clusters; native to the Mediterranean shores. The bark of the root is medicinal and poisonous.

Oleaster, the popular name of a genus (*Elaeagnus*) of small hardy trees of the order Elaeagnaceae, distributed over Asia, Europe and N. America. There are 20 species, some of which are cultivated in English gardens for the sake of their foliage and their fragrant flowers, especially *Elaeagnus argentea* (deciduous) bearing silvery-white willow-like leaves and yellow flowers; *E. macrophylla* an evergreen bearing silvery leaves and flowers; *E. pungens* an evergreen bearing white gardenia-scented flowers and *E. umbellata*, one of the most handsome species of all.

Olefines, in chemistry, a series of luminous and smoky flame and easily com-

bine with other substances. The simplest member of the series is the gas ethylene, while the remainder are inflammable gases or solids insoluble in water.

Oleograph, a print in oil-colours produced by a process which is designed to imitate an original oil-painting.

Oleron, an island of France, in the Bay of Biscay, at the mouth of the Charente; 11½ m. long and from 3 m. to 7 m. broad. It is separated from the mainland by a narrow channel. Pop. (island) 15,500.

Olga, Russian saint, wife of Igor, prince of Kiev; a Christian convert herself in 955, she converted her subjects too. (d. 969). Festival, July 11.

Oligarchy, a term applied to a government in which supreme power is concentrated in the hands of a few persons. During the Middle Ages oligarchies existed in Genoa, Florence and elsewhere, and this form of government is especially characteristic of the modern "totalitarian" state.

Oligocene, name given to the division of the tertiary rocks lying above the eocene and below the miocene. The only rocks of this age in England are in the Hampshire basin, especially in the Isle of Wight, and are represented by sandstones, limestones, marls and clays.

Olive (*Olea europaea*), a fruit tree of the natural order Oleaceae; a low-branched evergreen, from 30 to 30 ft. high, bearing small white flowers and oval leathery leaves. It is a native of S. Europe and Asia Minor and flourishes in warm and comparatively dry areas, being cultivated in Italy, France, Spain, etc., for the sake of the oil which is obtained by bruising and pressing the fruit. The fruit is also picked for the table and the tree yields good timber.



OLIVE

Olives, Mount of, or Olivet, mountain ridge of Palestine, E. of Jerusalem and 2,682 ft. above sea-level; so called as at one time being covered with olive-trees. It is celebrated as the scene of some of the most sacred events in the life of Christ. The Garden of Gethsemane was on its W. slope.

Olivier of Ramsden, Sydney Olivier, English politician and writer. Entered the Colonial Office, 1883; governor of Jamaica, 1907-1913; permanent secretary, Board of Agriculture, 1913-1917; became secretary for India, Privy Councillor and baron in 1924. A prominent member of the Labour Party, he was secretary of the Fabian Society, 1886-1890, and has written much on West Indian and economic questions. (1859-)

Olmütz. See Olomouc.

Olney, town of Buckinghamshire, England, on the Ouse, 59 m. NW. of London; it has a beautiful Gothic church, and an agricultural trade. Here William Cowper and John Newton wrote the "Olney Hymns." Pop. 2,600.

Olomouc (formerly Olmütz), town of Czechoslovakia, in Moravia, situated on the Morava, 41 m. N.E. of Brno. It has a 14th Century cathedral, a 16th Century town-hall, and other ancient buildings. Brewing is carried on, and there is an important agricultural trade. It suffered severely in the Thirty Years' War, and the Seven Years' War. Pop. 66,400.

Olympia, a plain in Elis, in the Peloponnese, traversed by the R. Alpheus (the modern Rupaia), the scene of the Olympic Games which were celebrated by the ancient Greeks at intervals of 4 years.

Olympiad, a name given to the period of four years between each celebration of the ancient Greek Olympic Games; the first recorded Olympiad was in 776 B.C., the last in 394 A.D.

Olympias, the wife of Philip II. of Alexander the Great. Divorced by Philip, she fled to Epirus and instigated the assassination of Philip. She returned to Macedonia on the accession of Alexander and after his death became virtual ruler but, besieged by Cassander, was put to death. (d. 316 B.C.).

Olympic Games, an international athletic meeting held every four years and deriving its name from the ancient Greek contests held at Olympia. The modern series started in 1896 in Athens, a feature being the Marathon race commemorative of the bringing to Athens of the news of the Greek victory at Marathon, a distance of more than 26 miles. The first really international meeting was the fourth Olympic contest of 1908, held in London. Further meetings were held at Stockholm (1912), Antwerp (1920), Paris (1924), Amsterdam (1928), Los Angeles (1932) and Berlin (1936).

Olympus, a mountain range in Greece, between Thessaly and Macedonia, the highest peak of which is 9,750 ft. in elevation; its summit was the fabled abode of the Greek gods; to the SE. lies the beautiful vale of Tempe.

Om, a mystic word among the Hindus and Buddhists, used on solemn occasions, such as during the recital of the Vedic hymns, as a sort of spiritual charm.

Omagh, town of Northern Ireland, on the Strule, 34 m. S. of Londonderry; the county town of Tyrone. It has been rebuilt since 1743, when it was destroyed by fire. There is a linen industry. Pop. 5,100.

Omaha, largest city of Nebraska, U.S.A., 20 m. above the confluence of the Missouri. It is connected by a bridge with Council Bluffs on the opposite shore. Its silver-smelting works are among the largest in the world. It has a vast pork-packing industry, and manufactures lined oil, boilers and safes. Pop. 214,000.

Oman, independent sultanate of Arabia, lying along the shores of the Persian Gulf and the Arabian Sea, at the SE. end of the peninsula; the interior is largely mountainous; there are stretches of very fertile country where there happens to be water for irrigation, but the coast is very hot and unhealthy. Area, 82,000 sq. m. The capital is Muscat. The Sultan of Oman is a pensioner of the Anglo-Indian Government. Pop. about 500,000.

Oman, Sir Charles, English historian, born at Mousterpore, Bengal. His writings include histories of Greece, the Byzantine Empire, the Peninsular War, of England before the Conquest and of the 16th Century. He became Chichele professor of Modern History at Oxford in 1905, and was Conservative M.P. for Oxford University, 1919-35. Knighted in 1930. (1860-).

Omar, second Caliph (634-644); at first a persecutor of the Faithful, he underwent in 615 a sudden conversion; was vizier of Abu-Bakr whom he succeeded; subdued Syria, Persia and Egypt in the name of Allah and established the temporal power of Islam; he was assassinated. (c. 561-644).

Omar, Mosque of, or Dome of the Rock, a Mosque in Jerusalem on the supposed site of Mohammed's ascent to heaven, or, from the Jewish point of view, of the uncompleted sacrifice of Isaac; it was built by Omar, the second successor of the prophet. See also, Mosque.

Omar Khayyam, astronomer-poet of Persia, born at Naisapur, in Khorassan; became astronomer to Sultan Malik Shah in 1074 and helped to reform the calendar. In the East he is famous for his mathematical works, in the West for his *Rubaiyat*, or Epicurean quatrains, which Edward Fitzgerald translated into English verse. (d. 1123).

Omdurman, town of the Anglo-Egyptian Sudan, opposite Khartoum, on the W. bank of the Nile; its great bazaar is the centre of a vast trade in native products, and there is an important cattle and camel market. It was the capital of the Mahdi and of the Khalifa. In the battle of Omdurman, fought at Kereri, 7 m. to the N., the Anglo-Egyptian army, under Kitchener, routed the forces of the Khalifa, Sept. 2, 1898. Pop. 111,000.

Omnibus, a public vehicle plying for hire on a fixed route at fixed fares; horse-drawn omnibuses were introduced into London by George Shillibier in 1829, the idea being taken from Paris. Steam omnibuses were tried in 1833, and petrol-driven ones were introduced in 1904. Double-deck buses date from 1857, but for long they were unroofed. Many of the chief improvements were due to the London General Omnibus Co., which controlled most of London's buses until 1933, when it was merged in the London Passenger Transport Board.

Omsk, town of the U.S.S.R., in the Siberian Area, standing on the right bank of the Irtysh, at its confluence with the Om, 1,800 m. E. of Moscow; it is on the Trans-Siberian railway, and has scientific and other establishments. Pop. 227,000.

Onager,

or Ghor-khar (*Equus onager*), a species of wild ass inhabiting the deserts of W. and West Central Asia and NW. India, standing 11 to 11½ hands high.



ONAGER

Onagraceae, a family of dicotyledonous plants whose British representatives include the enchanters' nightshade, evening primrose (*q.v.*) and willowherb. There are some 40 genera and 500 species included in the order, the genera including *Eurothera*, *Clarkia* and *Fuchsia*.

Onega, lake of the U.S.S.R. between the White Sea and Lake Ladoga, after which it is the largest lake in Europe, being 140 m. long and 59 m. broad; has an irregular shore, deeply indented in the W., and many inflowing rivers, but is drained only by the Svir; icebound for four months, it has busy traffic the rest of the year; navigation is promoted by canals.

O'Neill, Eugene Gladstone, American dramatist, born in New York. He first took to commerce, then spent two years at sea, and produced his first play in 1914. Several of his plays including *Anna Christie* and *The Emperor Jones* have had London productions. He deals largely with the depressed classes, and especially with the colour problem, though his *Mourning Becomes Electra* (produced in London in 1938) was a powerful and sombre modern psychological study of the *Electra* (*Oedipus*) complex. (1888-).

Onion (*Allium Cepa*), a liliaceous plant allied to garlic, the leek, etc., the bulbous root of which is much used as an article of food. It is a biennial herbaceous plant, with long, tubular leaves and a swelling pithy stalk. There are at least twenty varieties, including the Strasbourg, Spanish and

Portuguese. It originated from Central Asia (Persia, etc.).

Onomatopoeia, the formation of words which imitate sounds made by, or connected with, the things they represent, such as "bow-wow," "hiss."

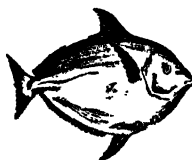
Ontario, province of Canada, lying N. of the Great Lakes, between Quebec and Manitoba, with an area of 412,800 sq. m. The surface is mostly undulating; there are many small lakes, and the chief rivers flow eastward to join the Ottawa. Agriculture is the chief industry, enormous crops of wheat, maize, and other cereals being produced. There are extensive timber forests; stock-rearing and dairy-farming are important; there are rich mineral deposits, especially of iron, copper, lead, silver, petroleum and salt; manufactures of agricultural implements, hardware, textiles and leather are carried on. Toronto is the largest town, while Ottawa is the capital of the Dominion and Hamilton an important railway centre. The province was constituted in 1791 as Upper Canada, united to Quebec or Lower Canada in 1840, and received its present name in 1867. Pop. 3,426,500.

Ontario, lake of N. America; the smallest and most easterly of the five great lakes of the St. Lawrence Basin, it lies between the province of Ontario, Canada and New York State; receives the Niagara River in the SW., and is drained by the St. Lawrence in the NE. On its shores stand Hamilton, Toronto and Kingston, on the N., and Oswego on the S. Canals connect it with Lake Erie and the Hudson R.

Onyx, a variety of agate or chalcedony, in and black, sharply defined in good specimens. The stones come from India and S. America, and are highly valued for cameo-cutting.

Ooze, a thickened muddy deposit on the surface of carbonate of lime. It is formed chiefly by the accumulation of the dead shells of foraminifera, mingled with remains of other marine creatures.

Opah, or Moon-fish, (Lampris luna) of the North Atlantic and Pacific Oceans and the Mediterranean, remarkable for its bright colouring; its body is bluish-green spotted with silver, and its fins scarlet.



OPAH

Opal, a gem-stone consisting of an amorphous hydrated silica, of which the finest kind, precious opal, is translucent, with blue or yellow tint, and when polished with a convex surface, shows a scintillating play of colours known as opalescence. It is found largely in Australia, Mexico, Hungary, Japan and Guatemala.

Opera, a drama set to music and acted of a full orchestra. 17th Century opera was at first little more than drama with a musical background; later the emphasis shifted to the music, at the expense of the drama. Activity was greatest in Italy, where Monteverdi produced his *Orfeo* in 1602, though Purcell, Lully and Keiser in England, France and Germany respectively, were contributing to the development of opera. In the 18th Century, in Italy, Scarlatti improved the libretto and standardised the form of the aria.

Opera declined in form in the middle of the 18th Century, but was revived by Gluck and Mozart. In 1816 Rossini produced the *Barber of Seville*, and was followed by Bellini, Donizetti and Verdi (composer of *Aida*, *Il Trovatore* and *Rigoletto*). In Germany, Beethoven's *Fidelio* is important as his single opera.

After him, the Romantic movement produced Weber (*Die Freischütz*) and Wagner, one of the greatest of operatic composers (*The Ring*, *Tannhäuser*, *Lohengrin*, *Parsifal*, etc.). Of his successors, the chief was Richard Strauss (*Rosenkavalier*). In France, Gounod (*Faust*) and Bizet (*Carmen*), in Italy, Mascagni (*Cavalleria Rusticana*), Leoncavallo (*Pagliacci*), and Puccini (*Madame Butterfly*, *La Bohème*); in Russia, Tchaikovsky, Rimsky-Korsakov and Mussorgsky, are the chief figures in 19th Century opera.

Ophthalmia, or **Conjunctivitis**, inflammation of the conjunctiva of the eye. It is marked by redness and swelling of the white part and a mucopurulent discharge. The commonest forms are catarrhal, while membranous ophthalmia accompanies diphtheria in children, a greyish membrane forming on the eyelid.

Ophthalmoscope, an instrument for observing the internal structure of the eye. It consists of a mirror and a double-convex lens by which a beam of light from a lamp is thrown upon the retina. Atropine, or a similar agent, is often used to dilate the pupil before examination.

Opium, a combination of alkaloids obtained from the juice of the half-ripened capsules of the opium poppy (*Papaver somniferum*). It contains morphine and narcotine as well as other alkaloids, and small quantities of mineral salts and organic acids. Laudanum, a solution of opium in alcohol, is the form in which opium is usually given medicinally, e.g., to relieve pain or induce sleep. The juice, or latex exudes from the capsules and hardens when notches are cut in them.

Opium War, the name given to Great Britain and China in 1840, following the destruction of British ships taking opium to China. The war resulted in the ceding of Hong Kong and the Treaty Ports to Great Britain.

Oporto, city and seaport of Portugal, near the mouth of the Douro, 209 m. N. of Lisbon, the headquarters of the wine trade. It has numerous warehouses and cellars; textiles, gloves, hats, pottery, tobacco and other goods are manufactured; noteworthy buildings include the 12th Century cathedral, the museum, opera-house and bullring. Pop. 232,300.

Opossum (*Didelphidae*), a family of marsupial animals, native to America (from the U.S.A. to Patagonia), the species being fairly numerous and all very much alike in general characteristics and comprising the only marsupials found outside Australia. They are of slender build, have a long snout, prehensile tail and an opposed

clawless great toe on the hind foot enabling them to grasp objects. The Common Opossum (*Didelphys marsupialis*), about the size of a cat, abounds from the U.S.A. to Brazil. For a while after birth the young are carried in their mother's pouch, but later upon her back, clinging to her tail by means of their own prehensile tails. It feigns death when caught. Some of the species are as small as a mouse.

Optician, one who examines the eyes, corrects errors of vision, and ensures the maximum amount of comfortable vision by preventative or corrective measures. An optician is not qualified to treat diseases of the eye, but should be able to recognize their presence.

Optics. See Light.



OPOSSUM

Optophone, an instrument by which enabled to read ordinary print, depending upon the sensitiveness of selenium to light. The optophone is capable of emitting varying sounds according to the shape of the letters over which it is passed. The blind reader learns to recognize the sound associated with each letter.

Oracle, in ancient times a place where reply to a query or problem, through the medium of an appointed priest or priestess. Among the Greeks the most famous oracles were those of Olympus (Zeus) and Delphi, the latter being at the temple of Apollo.

Oran, city and seaport of Algeria, at the head of the gulf of Oran, 260 m. W. of Algiers, with a Roman Catholic cathedral, a mosque, school, college, and two castles. It has an excellent modern harbour and does a large trade in esparto grass, iron ore and cereals. It is also a French naval station. Pop. 163,800.

Orange, the golden, globular fruit of the *Citrus aurantium* of the order Rutaceae; a tree with fragrant white flowers, introduced into Europe from China and now cultivated for commercial purposes in many parts of the world including the U.S.A., South Africa and Australia. The different varieties of the species include the Sweet orange (*Citrus aurantium*), the Bergamot orange (var. *Bergamia*), yielding a perfume; the Seville or Bitter orange (var. *Bigaradia*) used in making marmalade. Other popular varieties include the Mandarin orange (*C. nobilis*), Tangerine, Maltese or Blood orange, Jaffa and the Seedless Navel orange of S. America.

Orange, chief river of South Africa, highlands of Basutoland, and flows 1,300 m. westward to the Atlantic, receiving the Vaal and the Caledon as tributaries, and having Cape Province on the S. bank and the Orange Free State, Griqualand West, Bechuanaland, and Namaqualand on the N. A bar at the mouth and the aridity of its lower course make it unfit for navigation.

Orange, a town of France, near Avignon, formerly the capital of a small principality and giving title to the Princes of Orange. In 1500 it passed to the house of Nassau. The most famous of the Princes of Orange were William the Silent and William III. of England.

Orange Free State, a province of the Union of South Africa; bounded N. by the Transvaal, S. and W. by Cape Province and E. by Natal and Basutoland. It has an area of 49,660 sq. m.; undulating plains slope northward and southward, from which rise isolated hills called kopjes. The chief industries are the rearing of sheep, cattle, horses and ostriches; coal-mining is carried on in the N. and diamond-mining in the SW.; the exports include wool, hides and diamonds. Founded by Dutch Boers from Natal, it was annexed by Britain in 1848, but granted independence in 1854. Again annexed by Great Britain in 1900 after the Boer War, it became autonomous in 1907 and in 1910 joined the Union. The capital is Bloemfontein. Pop. 629,000 (207,300 whites).

Orangemen, popular name for the Orange Society, an association of Protestants in Ireland instituted to uphold the Protestant succession to the Crown and the Protestant religion as established upon the accession in 1688 of William III, formerly Prince of Orange. The Orangemen have been prominent at political crises when Protestantism and the Union seemed in danger. They annually celebrate the battle of the Boyne on July 12.

Orang-utang (*Simia satyrus*), an anthropoid ape native to the E. Indies, Borneo and Sumatra; less

man-like than the gorilla or chimpanzee, it is remarkable for the length of its arms, its stout legs and long, reddish hair. It attains a maximum height of 5½ ft., and the males are notable for the enormous throat-sac and warty growths on the side of the face which give them a grotesque appearance. It feeds upon the fruit of the Durian and other trees. The name, which is from the Malay, means literally "man of the woods."



ORANG-UTANG

Oratorio, a musical composition on a sacred theme, dramatic in form and associated with orchestral accompaniments, but without scenic accessories; it derives its name from the oratory of St. Philip Neri at Rome, in which a composition of the kind was first performed. The highest point in the development of Italian oratorio was the work of Scarlatti in the 17th Century. In the 18th Century in Germany, Bach wrote oratorios of a reflective rather than dramatic character, the best-known being the *St. Matthew Passion* and *Christmas oratorios*; but it was Handel, especially in *The Messiah* who developed it to its fullest capacity. Among the finest of later oratorios are Haydn's *The Creation* and *The Seasons* and Mendelssohn's *Elijah*, while Sir Edward Elgar's *Dream of Gerontius* is among the few good modern oratorios.

Orbit, (1) in astronomy, the path described by a heavenly body in the course of its revolution, especially that of a planet or comet round the sun, or of a satellite round a planet; (2) in anatomy, the pyramidal hollow in the skull in which the eye rests.

Orchardson, Sir William Gullier, born at Edinburgh; studied there and in 1862 removed to London; he became an R.A. in 1877. Among the best and most popular of his (mainly dramatic) pictures are "The Challenge," "Her Mother's Voice," "On Board the Bellerophon," (Napoleon Bonaparte), "Marriage de Convenience" and "Voltaire." (1832-1910).

Orchestra, a body of performers on musical instruments, grouped usually into strings, wood-wind, brass and percussion. The inclusion of stringed instruments dates from the 17th Century, and in the early 18th Century numerous wood-wind instruments were added. Flutes were used in the orchestra in the time of Bach, and later the clarinet was introduced. Mozart revived the trombone, and Beethoven wrote solo parts for the instruments. The later Romantic composers, in particular Berlioz, Wagner and Strauss, were responsible for the modern large orchestras.

Orchids (*Orchidaceae*), a large order of monocotyledonous plants, numbering 450 genera and some thousands of species, world wide in distribution, though most abundant and the species mostly concentrated in tropical regions. They are all perennials but differ greatly in specific characteristics. The tropical species, whilst not parasitic, mostly grow on and rely for support on other plants. Some species are comparatively insignificant plants but many are of rare and exotic beauty. Few have any practical use, with the exception



SEE ORCHIS

of the Vanillas (especially the *Vanilla planifolia*), from the pods of which the flavouring known as vanilla is obtained. There are numerous British species of orchids, including the Early Purple (*Orchis mascula*), the Spotted Orchid (*Orchis maculata*), the Bee Orchid (*Ophrys apifera*), the Bird's nest orchid (*Neottia Nidus-avis*), etc., etc. Many tropical species are grown as greenhouse and stove plants.

Orcazy, *Barotse*, otherwise *Emmuska* at *Tarna*, British novelist, born at Tarna, Hungary; she studied painting in London and exhibited at the Royal Academy. In 1905 she published *The Scarlet Pimpernel*, which was followed by more than 40 similarly romantic novels, chiefly of the French Revolution period, including many "Pimpernel" sequels, which have been very popular.

Ordeal, a test by fire, water, poison, whereby the innocence or guilt of accused persons; still common to many savage or half-civilized peoples. Ordeals formed part of the judicial system of England until the time of Henry III. Ordeal by water of battle was not formally abolished until 1818.

Order in Council, an order of the British Sovereign, with the advice of the Privy Council and within limits defined by Parliament. In cases of emergency, these limits have been disregarded, Parliament subsequently having been asked to ratify the action by granting an indemnity to those concerned.

Ordinance, legislation by means of an Order of the King in Council. There is today, however, no clear distinction between a Statute of Parliament and an Ordinance. Ordinance as a form of legislation was superseded by Proclamation, the King having power by the Statute of Proclamations (1539) of legislating in this way without reference to Parliament. Legislation by the Governor of a Colony in Council is also termed an ordinance.

Ordination, the ceremony of admission to the ministry of the Christian Church; the term applies properly to admission to each of the several orders of the Church, although the ordination of a bishop is now known as consecration.

Ordinance, collective term for heavy mounted guns, i.e., cannon and howitzers. Their use dates from the 14th Century, but only during the last 50 years has any real advance been made towards the main objectives, which are speed of loading and firing, high velocity of projectiles and accuracy of aim. Horse artillery is usually lighter than field artillery, while mountain artillery is lighter still and capable of being easily dismantled for transport. The heaviest type of ordinance is that used for garrison work and naval purposes.

Apart from improvements in the propellant explosives, the main advance in the construction of heavy ordinance has been the substitution of steel for the weaker iron and brass, of which the first cannon were made. Among many other mechanical improvements, gun-carriages are now so constructed that the cannon reverts of itself to its original position after the recoil of firing, while greater velocity has been given to the projectiles by the rifling of the barrel and by increasing its length.

Ordinance Survey, the Government, supervised by the Ministry of Agriculture, which prepares maps on various scales, of the United Kingdom for civil and military purposes and for sale to the public. Its surveying work is carried out by a department of the Royal Engineers.

Ordovician, the geological strata of rocks overlying the Cambrian layers and covering large areas of Wales, home of the ancient Ordovices. They consist mainly of slates and shales, with some limestones and grits. The period of their formation was one of great volcanic activity, and many of the Welsh mountains (e.g., Snowdon) are the worn-down stumps of the Ordovician volcanoes.

Ore, a native mineral containing a sufficient proportion of a metal to make its extraction an economic proposition. In the case of common metals, the yield of metal from an ore should amount to from 30 per cent. to 60 per cent. Ore is found either in sand or gravel (alluvial ore), or in seams of sedimentary rock, or else deposited in igneous rock. After mining, the ore undergoes various processes of crushing, sorting, and chemical or other treatment in order to separate the worthless elements and extract the pure metal.

Oregon, state of the U.S.A., on the Pacific seaboard, with Washington, Idaho, Nevada and California on its inland borders. The Coast Range extends along the shore, and between these mountains and the Cascade Range is a semi-arid plateau extending to the Blue Mts. in the N.E., and, under irrigation, affording excellent grazing and dairy-farming ground. The Willamette Valley, in the W., is arable, producing cereals, potatoes, tobacco, hops and fruit. The State is rich in timber, coal, iron, gold, silver, mercury and platinum; and the rivers (of which the Columbia, on the N. border, is the chief) abound in salmon. The capital is Salem, the largest city Portland, both on the Willamette R. The State has many libraries, schools and colleges. Area, 96,700 sq. m.; pop. 954,000.

Orenburg, town of the U.S.S.R., in the Middle Volga Area. It stands on the Ural River and is a railway junction and a trading centre. It has saw-milling, brewing and metal industries. Pop. 144,600.

Orestes, the son of Agamemnon and Electra and Iphigenia who killed his mother to avenge the murder, by her connivance, of his father. He went mad afterwards, but was acquitted by the Areopagus and became king of Argos and Laconia. His friendship for Pylades, who married his sister Electra, has passed into a proverb.

Organ, a musical instrument, consisting of a series of pipes of different pitch, one to each note, sounded by wind pressure and controlled by a keyboard. There are usually several of such series each complete in itself and known as stops; they are classed as diapason, viol, reed, etc., according to their tone quality and can be employed separately or in combination. A complete organ usually comprises two or more of what are virtually smaller organs; they are known as Great Organ (the basic instrument), Swell organ, Solo organ, Choir organ, etc., and can be played upon independently (each having its own manual or keyboard), or "coupled" in unison. Modern organs are blown by electric blowers in place of the older bellows worked by man power, while "action," i.e., the link between keyboard and pipe, has largely replaced the former "tracker," or mechanical and pneumatic actions.

Organic Chemistry, that branch of chemistry which is devoted to the study of the innumerable carbon compounds.

Organism, a structure instinct with life, and possessed of organs that discharge functions subordinate and ministrative to the life of the whole.

Orgy, a secret religious festival among the ancient Greeks, generally connected with the worship of nature divinities, in particular of Demeter, Orpheus and Dionysus (Bacchus), and celebrated with mystic rites and wild revelry.

Oriel, a type of bay window, usually one in an upper storey and overhanging, supported by brackets or corbels, or by an engaged column (i.e., one partly sunk into the wall), the upper part of which is usually attached to a corbelled structure beneath the oriel.

Orient, (Latin *oriens*, "rising," as applied to the rising sun), the eastern horizon where the sun rises; hence, the countries of the East.

Orientation, (1) the determination of the points of a compass in relation to the E. point; (2) in architecture, the position of a building with regard to the E.; especially, of a church, the chancel of which usually points to the E.

Oriflamme (i.e., flame of gold), the banner of the ancient kings of France, borne before them as they marched to war; a red flag mounted on a gilded staff, it was originally the banner of the abbey of St. Denis, and was first assumed as the royal standard by Louis VI.

Origen, one of the Fathers of the Church, born in Alexandria. A pupil of Clement, he made a deep study of Greek philosophy and in 232 established a school at Caesarea; in 250 he suffered in the Decian persecution. He wrote numerous theological works, beside the *Hexapla*, a valuable source of textual criticism, in which the Hebrew Scriptures and five Greek versions are arranged side by side. (185-254).

Orinoco, river in the N.E. of South America, which rises in the Sierra Parima, and flowing W., bifurcates, the Casiquiare channel turning S. and joining the Rio Negro, while the Orinoco proper continues W., N., and E. through Venezuela, entering the Atlantic after a course of 1,500 m. by an enormous delta. It has a vast number of tributaries and numerous rapids. It is navigable for 700 m. from the mouth.

Oriole (Oriolidae), a well-defined family of brightly-coloured birds confined to Europe, Asia, Africa and Australia and not represented in America.

The Golden Oriole (*Oriolus galbula*) is a native of Europe, and a regular summer visitor to the S. of England. Its plumage is golden-yellow, mingled with black. The American, or "Baltimore," Oriole (*Icterus Baltimore*), called an "oriole" on account of its brilliant orange plumage, belongs in reality to the Hang-nest (Icteridae) family.



GOLDEN ORIOLE

Orion, in Greek mythology, a handsome giant and hunter who was struck blind by Dionysus, but recovered his eyesight on exposing his eyeballs to the rays of Aurora, and became afterwards the companion of Artemis; he fell a victim to the jealousy of Apollo, and was transformed into a constellation in the sky.

Orissa, province of India, created in April 1936, as a result of the Government of India Act, out of the former province of Orissa by the addition of parts of the Central Provinces and Madras. It comprises 6 districts, with a total area of 38,000 sq. m., and includes the deltas of the Mahanadi, Brahmani and Baitarani. Rice is the chief crop, while jute and turmeric are also grown; cotton- and silk-weaving are carried on. The chief town is Cuttack. The province is admin-

istered by a governor, with a council and a legislature of 60 members. Pop. 8,044,000.

city of Mexico, 70 m. SW. of Vera Cruz; a centre of the sugar industry. It has railway workshops and also manufactures tobacco and textiles. 18 m. N. is the dormant volcano of Orizaba. Pop. 50,000.

Orkney Islands, a group of 67 is. of the Scottish mainland, from which they are separated by the Pentland Firth, 6½ m. broad. They cover 375 sq. m., and comprise a Scottish county. Pomona is the largest island, and contains Kirkwall, the capital, as well as Stromness. Oats, barley, turnips and potatoes are grown, and cattle, horses, sheep and pigs are reared; fishing, distilling and the quarrying of sandstone are carried on. Pop. 22,000.

Orlando, Vittorio Emanuele, Italian politician. A law professor at Palermo, he entered Parliament in 1897, becoming minister of education, 1903; of justice, 1907, of the interior, 1916, and prime minister in 1917, when he helped to rally the nation after the defeat of Caporetto. One of the "Big Four" in the Peace Conference, 1919, he fell from power over the Fiume question, and as an anti-Fascist retired from politics on the triumph of Mussolini in 1925. (1860-).

Orléans, city of France, on the Loire, 75 m. by rail SW. of Paris; the capital of the dept. of Loiret. It is a trading rather than an industrial town, but manufactures machinery, tools, hosiery, tobacco and vinegar. It has numerous quaint wooden houses of ancient date, and an old cathedral and museum. Its historic associations include the raising of the siege in 1429 by Joan of Arc, and captures on two occasions by the Germans in 1870. Pop. 75,200.

Orléans, Dukes of, the name of four distinct branches of the royal family of France, the first commencing with Philippe, fifth son of Philippe VI. of Valois, in 1344; the second (1392) with Louis, brother of Charles V.; the third (1626) with Jean Baptiste Gaston, brother of Louis XIII., who became lieutenant-general of the kingdom on the death of his brother; the fourth (1661) with Philippe I., brother of Louis XIV. Philippe II., son of the preceding, was regent of France during the minority of Louis XV.; he jeopardized the finances, and injured public morals by the depravity of his life (1674-1723); Louis-Philippe, his grandson, was lieutenant-general and governor of Dauphiné (1725-1785); Louis-Philippe Joseph, son of the preceding, surnamed Philippe-Egalité, played a conspicuous part in the Revolution, voting for the death of the king, his cousin, and perished on the scaffold (1747-1793); and Louis-Philippe (q.v.), his son; Prince Louis-Philippe Robert, eldest son of Comte de Paris; claimant to the French throne. (1869-1928).

Orme's Head, Great, a headland on the coast of Caernarvonshire, North Wales; NW. of Llandudno.

Ormolu, a name given to an alloy of copper and zinc, lacquered or burnished to resemble gold and formerly much used for mountings of furniture.

Ormonde, James Butler, Duke of, Irish soldier and statesman; distinguished himself in Ireland under Strafford and during the Civil War was chief supporter of the cause of Charles I. in Ireland; appointed Lord-Lieutenant of Ireland in 1667, and in 1670 escaped assassination by the notorious Colonel Blood. (1610-1688).

Ormsby-Gore, William George Arthur, British politician, eldest son of the third Baron Harlech; entered Parliament 1910 and was Under-Secretary of State for the Colonies 1922-1924.

and Nov. 1924-1929, Postmaster-General 1931, First Commissioner of Works 1931-1936, Secretary of State for the Colonies 1936; P.C. 1927. (1886-).

Ormskirk, urban district and market town of Lancashire, England, 11 m. N.E. of Liverpool. Rope-making, iron-founding and brewing are among the industries. Pop. 17,000.

Ormuz (or Hormuz), an island at the mouth of the Persian Gulf, once famous as a mart for diamonds and other precious stones; red ochre and rock salt are produced. Pop. about 1,000.

Ormuzd, a deity of the Zoroastrian religion, the embodiment of the principle of good, as Ahriman is of the principle of evil.

Orne, inland department of N. France, S. of Calvados; grows apples and pears, produces horses and cattle, and has various manufactures; capital Alençon. Area, 2,370 sq. m. Pop. 270,000.

Ornithology, the scientific study of birds, their origin, classification, structure and habitat. It is now generally agreed that birds are of reptilian origin, having affinity with the dinosaurs. They are variously classified. Huxley grouped them into (1) *Saururæ*, extinct "lizard-tailed," toothed birds, (2) *Ratitæ*, the non-flying birds including Ostriches, Rheas, Moas, Emus, Cassowaries, Kiwis and Tinamous, (3) *Carinatae*, including all the other (i.e., flying) birds; these have keeled breast-bones, though in some cases so reduced that the power of flight is almost or quite lost.

Ornithorhynchus. See Duck-billed Platypus.

Orontes, ancient and most familiar name of the chief river of Syria, the modern El-'Asi, which rises in the western slopes of Anti-Lebanon, and flows N. through Syria, turning at last SW. to the Mediterranean. Near the town of Homs it expands into the lake of the same name. Its length is 170 m.

Orpen, Sir William, British artist, born in Dublin, educated there and at the Slade School. He established an early reputation by winning a gold medal and exhibiting at the New English Art Club. Later he became famous for his portraits, in which he showed remarkable ability to handle colour. He became an A.R.A. in 1910 and an R.A. in 1919; he was knighted in 1918; as an official artist, he painted some remarkable realistic pictures of the World War. (1878-1931).

Orpheus, in Greek mythology, son of Apollo and the Muse Calliope, famed for his skill on the lyre, by which he could subjugate even rocks and trees. After the death of his wife Eurydice, he induced Pluto, by his musical art, to allow her to return from the nether world, on the sole condition that he would not look upon her until they reached the light of day. The condition was broken and Orpheus, having lost Eurydice, wandered inconsolable until his death at the hands of the jealous Thracian women.

Orpiment, the native tri-sulphide of lemon-yellow crystals which occurs in Czechoslovakia, Rumania, the U.S.A. and elsewhere; it was formerly used as a dye.

Orpington, town of Kent, England, 5 m. S.E. of Chislehurst, the centre of a fruit and hop-growing district. Here originated the breed of fowls called by this name. Pop. 9,900.

Orrery, an apparatus which, by means of balls, and geared wheels, exhibits the relative motions of the sun, planets, and other bodies; so named after the fourth Earl of Orrery, for whom John Rowley made the first example in 1716.

Orris Root,

the rhizome of a species of iris (*Iris Florentina*), which, when dried, exhales a scent like that of violets, and consequently is used, as a powder in the manufacture of toilet preparations.



ORRIS ROOT

Orsova, name of two towns in Rumania, on opposite banks of the Danube, at the Iron Gates. Old Orsova on the W. bank of the R. Cerna, is a trading and shipping centre. Pop. 6,000. New Orsova, on the opposite bank, was repeatedly taken and retaken in the wars of the 18th Century. Pop. 3,000.

Orthoclase, a variety of felspar, a porphyry, syenite and other rocks.

Orthopaedic Surgery, a branch of surgery which aims at maintaining the ordinary functions of the limbs and at correcting any deformity or deviation from the normal. While especially concerned with promoting healthy growth during childhood and with setting right any deformity resulting from birth, the orthopaedic surgeon also treats deformity which may develop in later life. Manipulative treatment, electrical stimulation, gymnastics, and mechanical aids (splints, artificial appliances, etc.) are among the means employed.

Orthoptera, one of the main orders comprising cockroaches, grasshoppers, locusts, and, in the view of some entomologists, earwigs. Their wings are not usually well developed for flying; many of them, like the cricket, produce sounds.

Ortolan, a song-bird (*Emberiza hortulana*) belonging to the hunting family; the wings are black, throat yellow, head grey. Native to S. Europe and W. Asia. Ortolans migrate to Africa in winter. They are much prized as food.

Orvieto, city of Italy, on a hill near the Tiber, 60 m. NNW. of Rome; it has a beautiful Gothic cathedral and Etruscan tombs. Amongst other things trades in a white wine. Pop. 7,500.

Oryx, a genus of antelopes found in Mediterranean countries and Africa. They have markedly long horns. Included in the genus are the Beisa oryx (*Oryx beisa*) of Abyssinia and the Gemsbok (*Oryx gazella*) of S. Africa.

Osage, river of the U.S.A. It rises in Kansas, where it is known as the Marais des Cygnes, and flows through Missouri to join the Missouri R., near Jefferson City. Length, 494 m.

Osaka, city of Japan, on Honshu I., at the head of Osaka Bay, 30 m. from its seaport, Hiogo; after Tokyo, the largest city in the country. It has a castle, old temples and walls, as well as modern ship-building yards, and factories, producing textiles, leather and metal goods, glass, etc. It is a large exporting centre and stands in a tea-growing district. Pop. 3,213,000.

Osborne House, the residence in the island, a favourite resort of Queen Victoria; now a home for convalescent officers of H.M. Forces.

Oscar I., king of Sweden and Norway, afterwards Charles XIV, ascended the throne in 1844. (1799-1859). Oscar II., king of Sweden and Norway, son of preceding, succeeded his brother Charles XV. in 1872, distinguished himself in literature by translating Goethe's *Tasso* into Swedish and by a volume of poems. (1829-1907).

Oscillation, in wireless transmission, a form of interference which usually results from some maladjustment in a receiver, causing it to re-transmit, therefore interfering with its own reception and with that of other apparatus in the vicinity. A person whose receiver is radiating oscillation is offending against the terms of the receiving licence, as issued by the General Post Office.

Osier, (*Salix*), the name of several species of willow are used in making baskets, etc. The common Osier (*S. viminalis*) and Brown Osier (*S. triandra*) are grown extensively in the Fen district.

Osiris, one of the principal gods of ancient Egypt, the husband of Isis, his sister, and the father of Horus; a solar deity, his death at the hands of Set, god of darkness, and his resurrection with the aid of Isis and Nephthys, symbolized the rising and setting of the sun and the alternation of seasons.

Oslo, the capital of Norway, situated at the head of Oslo Fjord, on the SE. coast. It is the seat of government and contains the parliament house, university, royal palace, and numerous other fine buildings, including churches and museums. There is a modern harbour, with dry and floating docks; fabrics, paper, iron and steel goods, soap, tobacco, glass and chemicals are made. From 1624 to 1925 it was known as Christiania. Pop. 253,000.

Osmanlis, name given to the Ottoman Turks, after the founder of the empire, Othman or Osman.

Osmium, a metallic chemical element obtained from osmiridium; it is bluish-white in colour, immensely hard and resists acid. Symbol, Os. Atomic number, 76. Atomic weight, 191.6. Density, 22.48.

Osmosis. If a solution of sugar in water is separated from pure water by a thin membrane, e.g., of parchment or collodion, water will pass through the membrane into the solution, the phenomena being known as osmosis; and, in general, substances will diffuse through a permeable membrane from a solution in which they are more concentrated to one in which the concentration is less. Osmosis is of great biological importance, being responsible, in part, for the turgidity of herbaceous plants, the rise of sap, and the absorption of soil-water by roots, as well as playing an essential rôle in the absorption of materials by the organs and membranes of animals' bodies.

Osnabrück, town of Germany, in the Prussian province of Hanover, 70 m. W. of the city of Hanover, on the Hase; it has much quaint and beautiful architecture, including that of the 13th Century Marienkirche; textiles, paper and machinery are made. Pop. 94,300.

Osprey, or Fish-hawk (*Pandion haliaetus*), a bird of prey of the Pandionidae family having affinities with both the Hawks and the Owls. It was formerly native to Great Britain, but now occurs only rarely as a migrant. About 2 ft. in length, with a wing-span of nearly 6 ft. It has a white head and lower parts, with dark brown back and wings. Ospreys feed on fish, caught by swooping from a height, having a reversible outer toe and spicules on the soles of the feet which enable them to catch and hold their prey.



OSPREEY

Ossa, a mountain in S.E. Thessaly, near Mt. Pelion, which, latter in Greek mythology, the Giants piled upon Ossa in order to reach Olympus.

Ossett, municipal borough of Yorkshire, shire, England, in the W. Riding, 2½ m. W. of Wakefield. Nearby are coal-mines, and woollen cloths and shoddy are made. Pop. 15,000.

Ossian, the heroic poet of the Gaels, the lived in the 3rd Century. James Macpherson (1736-1796) published in 1762-1763 what he claimed to be the poems of Ossian, celebrating the exploits of Fingal and his family, which he had collected and translated from the Gaelic. The production aroused the hostility of Dr. Johnson, and the "Ossianic poems" have generally been considered spurious.

Ossification, process whereby fibrous tissue or cartilage is converted into natural bone. It goes on throughout childhood and adolescence and is not fully completed until about the age of 20. Deposits of lime and phosphorus salts are necessary to ossification.

Ostend, town and popular watering-place of Belgium, on the SW. coast 65 m. due W. of Antwerp; attractions include a parade 3 m. in length, a casino, theatres and a racecourse. It has frequent steamer communication with Dover, and manufactures linen and sail-cloth. Fishing is the chief industry. During the World War it was a German submarine base, but in May, 1918, the harbour was blocked by the celebrated sinking of Dr. Hindenburg. Pop. 44,200.

Osteology, a division of the science of anatomy which treats of the distribution, function, and growth of bones.

Osteopathy, a system of healing founded in the U.S.A. by Andrew Taylor Still in 1874. The first principle of osteopathy is the self-sufficiency of the human body and its capacity to effect its own cure, with the aid of osteopathic manipulation. Osteopathy is, therefore, opposed to remedial drugs, and its founder also discountenanced serum treatment and vaccination. Though not legally recognized in England, osteopathy is regulated by the British Osteopathic Association.

Ostia, the seaport of ancient Rome, at the mouth of the Tiber, now occupied by a village with a cathedral and a bishop's palace. There is an electric railway to Rome, 14 m. to the NE. Excavations have disclosed the old city, which, after Pompeii, is the best preserved Roman city in existence.

Ostracism, the sentence of banishment for a term of ten years from Athens of any individual whose political influence seemed to threaten the liberty of the citizens. The sentence was decided by plebiscite, each citizen writing the name of the person he wished to banish on a potsherd or oyster-shell (Gr. ostrakon). For ostracism to be operative, 10,000 votes had to be recorded against the individual.

Ostrich, the largest living birds, of species, placed in a family by themselves (the Struthionidae). They are natives of Africa and Arabia, living in the desert and scrub areas. They stand up to 8 ft. high, the males being taller than the females. They all have black plumage with white tail and wings. Entirely terrestrial and unable to fly, they are noted for the speed they can attain with their long, powerful legs, which are equipped with 2 toes. They have a long, almost bare neck, a small head with large eyes, and a wide, flat beak. The four species are the Common or Northern (*Struthio camelus*), the Massi (*S. massotus*),



OSTRICH (MALE)

the *S. molybdophanes* and the *S. australis*. In South Africa, the southern U.S.A. and elsewhere ostriches are reared on farms for their valuable black or white curling feathers.

Ostrogoths. See *Goths*.

Ostwald, Wilhelm, German chemist, born at Riga, where he became professor in 1882; in 1887 he was given the chair of physical chemistry at Leipzig; he resigned in 1906 and three years later was awarded the Nobel prize for chemistry; he was notable for researches in electro-chemistry and the viscosity of solutions and for his discovery of a method of oxidizing ammonia, important for the manufacture of nitric acid and explosives. (1853-1932).

Oswald, St., King of Northumbria, where by the aid of Aidan he established the Christian religion, after his own conversion while in exile in Iona; he died in battle fighting against Penda, king of Mercia. (c. 605-642).

Oswaldtwistle, urban district of Lancashire, England, 3 m. S.E. of Blackburn. It has coal-mines and cotton-mills, and chemicals, paper and pottery are made. Sir Robert Peel was born nearby. Pop. 14,000.

Oswego, city of New York State, U.S.A., on the E. of Lake Ontario, at the mouth of the Oswego R.; it has a modern harbour and extensive accommodation for grain, and has a large trade in grain and lumber; the falls in the river furnish hydro-electric and water-power for industrial purposes. Pop. 22,700.

Oswell, William Cotton, English explorer, born at Leytonstone, Essex, served with the East India Co. at Madras and later explored Africa with Livingston. (1818-1893).

Oswestry, England, 20 m. N.W. of Shrewsbury; has an old church, castle and school, and also railway workshops, tanneries and some woollen mills. Pop. 9,800.

Otago, provincial district of South Island, New Zealand, occupying the S.E. end of the island, and covering an area of 25,220 sq. m. It is mountainous and inaccessible in the W., but in the E. consists of good arable plains; the climate is temperate. Timber abounds, and there are gold, coal, iron and copper mines, and manufactures of woollen goods, iron and soap. The capital is Dunedin, other towns being Invercargill, Port Chalmers, and Lawrence. Pop. 238,900.

Otaru, seaport of Japan, on the W. coast of Hokkaido, 20 m. N.W. of Sapporo. It has a busy trade and is an important fishing centre, especially for herrings. In 80 years its population has grown from 4,000 to 154,000.

Othman, the third caliph and a son-in-law of the Prophet; he was elected in 644, but his weakness and caprice led to a revolt, and he was assassinated by Mohammed, son of Abu-Bekr. (c. 574-656).

Otho, Roman emperor; a companion of Nero in his orgies, he was exiled on refusing to divorce his wife Poppaea, Nero's mistress; on Nero's death he was acclaimed emperor by the Praetorian Guards and murdered Galba and Piso who had seized power, but defeated by the revolted German legionaries, stabbed himself to death after a reign of three months. (A.D. 32-69).

Otitis, acute inflammation of the middle ear which may be the result of an attack of acute catarrh, or of some infection such as scarlet fever; it is accompanied by earache and discharge from the ear. Warm drops of dilute carbolic acid in glycerine may relieve the pain; dry warmth also helps, but poultices and hot fomentations are ill-advised.

Otley, urban district and market town of Yorkshire, England, in the W. Riding, on the Wharfe, 14 m. N.W. of Leeds. Besides an agricultural trade, there are manufactures of printing machinery, leather goods and worsted. Pop. 11,000.

Otranto, a decayed seaport and fishing town of S.E. Italy, 52 m. S. of Brindisi; founded by Greek colonists. It contains an 11th Century cathedral, a church with Byzantine frescoes and a castle. Pop. 2,800.

Ottawa, capital of the Dominion of Canada, situated on the right bank of the Ottawa R. at its confluence with the Rideau, between the Chaudière and Rideau Falls. It has striking Parliament buildings, rebuilt after their destruction by fire in 1916 and containing a celebrated carillon of 53 bells and a fine library; other buildings include the mint, the public archives, the national museum and art gallery, and dominion observatory; there are two cathedrals; Rideau Hall is the residence of the Governor-General; there is a university. The chief industries are connected with lumber and paper. Ottawa became the capital of Canada in 1858. In 1932 the imperial economic conference met there, resulting in the conclusion of the "Ottawa Agreements" for inter-imperial trade. Pop. 125,000.

Ottawa Indians, a tribe of Algonquians now mostly resident in Canada, though some are to be found in the State of Michigan, U.S.A. whither they moved from an original home farther east.

Ottawa River, the largest tributary of the St. Lawrence, 685 m. in length. Rising in the W. of Quebec, it flows W., then S., then S.E., to join the St. Lawrence at Montreal. Its course is broken by numerous rapids and lakes.

Otter, a group (Lutrine) of aquatic mammals belonging to the same family (Mustelidae) as the weasel, but having webbed feet, and a thick, powerful tail. Otters feed principally on fish. They are widely distributed, one species, the Sea Otter (*Lutra lutris*) of the N. Pacific, somewhat resembling the seal in formation of the hind legs, prefers salt water. The Common Otter (*Lutra vulgaris*), found in Europe (including Britain) and Asia, is about 5 ft. in length, while the N. American otter (*Lutra canadensis*) is larger still.



COMMON OTTER

Otter, village of Northumberland, England, 16 m. S. of the Scottish border, famous as the scene of a conflict on August 19, 1388, between the Douglases and the Percies, in which the Earl of Douglas lost his life and Henry Percy ("Hotspur") was taken prisoner.

Otterhound, a hound especially bred for hunting otters. It has a strong, lengthy neck, and powerful, wide paws which enable it to swim strongly. The coat is thick and water-resisting and grey, buff, black or reddish in colour.

Otto, or Actar, of Aescas, an essential oil, obtained by distilling rose leaves of certain species, principally *Rosa damascena*, with water or steam. It comes chiefly from Bulgaria and the Near East, and is used, greatly diluted, in perfumery.

Ottomans, the name given to the Turks, from Othman or Osman (1288-1320), who founded the empire. Thomas, English dramatist, born

Otway, near Maidbury, Sussex; intended for the Church of St. Peter and St. Paul.

failed as an actor, and became a playwright, his chief productions being the tragedies *The Cryhan*, 1880, and *Venice Preserved*, 1883. He died from hastily swallowing a piece of bread when starving. (1652-1685).

Ouachita, or Washita, river of U.S.A., rising in W. Arkansas and flowing through Louisiana into the Red R. near the confluence of that river with the Mississippi. Length 550 m.

Oubliette, an underground cell of a medieval castle, entered only by a trapdoor in the roof; also a secret passage opening upon the moat, for the sinister disposal of prisoners.

Oudenarde, a town of Belgium, 18 m. S. of Ghent, the scene of Marlborough's victory over the French on July 11, 1708. Pop. 6,400.

Oudh, region of India, part of the United Provinces of Agra and Oudh, it has an area of 24,000 sq. m. Annexed in 1856 and united with Agra in 1877, it extends from the frontier of Nepal to the Ganges, and is watered by the Gogra and the Gumti. The chief crops are rice, sugar, opium, cotton and tobacco. See *United Provinces*.

Oudinot, Charles Nicolas, Duke of Bar-le-Duc; served with distinction under the Revolution and the Empire; led the retreat from Moscow, and was wounded; joined the Royalists after the fall of Napoleon, and was made a peer. (1767-1847).

Ouida, the pseudonym of Marie Louise de la Ramée, English novelist, born at Bury St. Edmunds; published her first novel *Held in Bondage* in 1863, and followed it with many romantic novels of society and army life, of which the best are *Under Two Flags* and *Moths*. (1839-1908).

Oulton, village of Suffolk, England, 2 m. W. of Lowestoft, on the R. Waveney; Oulton Broad, near by, is a popular yachting and fishing centre. Pop. 4,500.

Ounce, OR *Leopard* (*Felis uncia*), a carnivorous animal, found in Persia and the Himalayas. The fur is thicker than that of the leopard, which it otherwise resembles, though the spots are less marked, and the tail is longer.



OUNCE

Ouse, the name of several English rivers, of which the chief are (1) the Yorkshire Ouse, formed by the union, near Borough-bridge, of the Ure and the Swale; flowing past York, Selby and Goole, it unites with the Trent to form the Humber, after a course of 60 m.; it receives the Nidd, Wharfe, Aire, Don and Derwent. (2) The Great Ouse, rising in the S. of Northamptonshire and pursuing a winding course N.E. through the shires of Buckingham, Bedford, Huntingdon, Cambridge and Norfolk to the Wash; its length is 158 m.; and (3) the Sussex Ouse, rising between Horsham and Cuckfield and flowing through the Weald, past Lewes, to Newhaven; its course is 30 m.

Outlawry, a penalty involving loss of property and rights, originally imposed by the king as punishment for high treason, but, after Magna Carta, only by a man's peers or by the law of the land. At the present day it no longer applies to civil cases, but in criminal law it is still, theoretically, a last resort against a fugitive offender.

Outram, Sir James, British soldier, "Barad of India"; born in Derbyshire, he began his military career in Bombay, served in the Afghan War (1838) and the war with

Persia (1857) and played an important part in the suppression of the Indian Mutiny, waiving his rank of lieutenant-general to serve under Havelock in the relief of Lucknow. (1803-1883).

Ouzel, the popular name of the Water-rail, ouzels or Dippers (*g.v.*) of the family of birds Cincloide, the Common Dipper being a familiar British species; also of the Ring-ouzel, another British bird of the Thrush (*Turdidae*) family.

Ovary, the female sex gland. The two ovaries are situated in the pelvic cavity, one on either side, and are connected by the Fallopian tubes and by ligaments to the womb. Each ovary contains a layer of germinal cells known as "Graafian follicles." Each follicle contains an ovum, and as each ovum comes to maturity (at the menstrual period) it is discharged along the Fallopian tube into the womb, ready for impregnation.

Overhead Charges, expenses in business which are necessary to the running of the organization, but are not immediately involved in the purchase of stock. They include such items as rent, management salaries, book-keeping, accounting and interest on loans. As a rule, they are provided for by the addition of a sufficient amount to those charges necessary to maintain the required profit.

Overseas Settlement Board, a department of the Dominions Office, constituted in February, 1936, the function of which is to consider schemes for emigration to the various dominions within the Empire, and to advise the Secretary of State for Dominion Affairs on matters relating to emigration.

Overture, a musical composition, occasionally a separate concert piece, but usually forming an orchestral introduction to an opera; it is sometimes unrelated in content to the music of the opera itself, sometimes summarizes its main themes. The first real overtures began with the French composer Lully (1639-1687), but not until the advent of Gluck (1714-1787) did the overture bear any dramatic relation to the form of the opera it preceded. By Beethoven the overture was given its full dramatic import (especially his *Leonora No. 3*), and the development was further carried on by Weber (*der Freischütz*, *Euryanthe*), Wagner (*Tannhäuser*, *der Ring des Nibelungen*, *die Meistersinger*, etc.) and others.

Oversyl, province of the Netherlands, situated between Germany and the Zuider Zee, with an area of 1,300 sq. m. It is mainly fenland and sandy heath, but cattle are reared near the Zuider Zee, and butter and cheese are produced. Zwolle is the capital. Pop. 559,000.

Ovid, (Publius Ovidius Naso), Roman poet of the Augustan age, born in the Abruzzi; studied rhetoric, but abandoned it for literature and a life of pleasure, writing, among other works the *Tristia*, *Fasts*, and the *Metamorphoses*, his best-known work, which recounts Greek and Roman legends the heroes and heroines of which underwent miraculous changes of form. A favourite of Augustus, he fell under his displeasure, and was banished on the pretext of his licentious poem *Ars Amatoria* in A.D. 8 to the swamps of Scythia, near the Black Sea. (43 B.C.—A.D. 17).

Oviedo, city of Spain, capital of the province of Oviedo, situated 60 m. NW. of Leon. It has a celebrated 14th Century cathedral, with a library, also an early 9th Century church and a university; textiles, iron and leather are manufactured. Here the insurgents were besieged for 3 months in 1808, during the Spanish Civil War. Pop. 77,000.

Owen, Sir Richard, English zoologist, born at Lancaster; appointed professor of comparative anatomy in London in 1834, and superintendent of the British Museum, 1856, he became a Fellow of the Royal Society, and in 1857 was president of the British Association; a brilliant anatomist, he reconstructed many extinct animals, such as dinosaurs, from fossil fragments. (1804-1892).

Owen, Robert, British Socialist reformer, born at Newtown, Montgomeryshire; became manager of a cotton-mill at New Lanark, which he managed on Socialist and profit-sharing principles. His social creed was embodied in his *New View of Society, The New Moral World*, and numerous pamphlets. In 1835 he established the colony of New Harmony, Indiana, U.S.A., practising community of property, which ended in failure. He was a pioneer of infant schools and co-operative societies. (1771-1858).

Owen Sound, city and lake-port of Georgian Bay, Lake Huron. It has a good harbour, and has lumber and flour mills, tanneries, engine-works and brickfields. Pop. 12,900.

Owl, the nocturnal birds of prey, belonging to the order Strigiformes, consisting of two families: horned or Wood Owls (Bubonidae) and Barn Owls (Strigidae). The owl is characterised by a large head, with a short, hooked beak; the eyes are large, both looking forwards and encircled by discs of feathers; it can twist its neck almost right round; its wings are wide and rounded. Distributed throughout the world, the Tawny Brown or Wood Owl (*Syrnium aluco*) is the commonest British species. The Short-eared Owl (*Asio flammeus*), which nests on the ground and the Long-eared Owl (*Asio otus*) are also British resident species. The Snowy Owl (*Nyctea scandiaca*) is a winter visitor to this country and a number of other species have occurred or do occur as stragglers.



BARN OWL

Ox, a name generally given to domesticated cattle of the male sex, but also applied to buffaloes, bison, and some extinct related animals. They have been domesticated as draught animals from the earliest historic times. In India the humped species (*Bos indicus*) is regarded with religious veneration.

Oxalic Acid, a crystalline poisonous organic acid, found naturally as an acid salt in wood-sorrel, rhubarb root and many other organic tissues; produced commercially by the action of caustic potash and soda upon sawdust, it is used in the dye industry and for cleaning.

Oxford, county town of Oxfordshire, England, seat of Oxford University and of a bishopric; on the left bank of the Thames, 62 m. WNW. of London. It is a city of great beauty, with many colleges, chapels and churches; here the Mad Parliament met and adopted the Provisions of Oxford in 1256; Latimer and Ridley (in 1555) and Cranmer (in 1556) were burned in Broad Street; Charles I. made it his headquarters after the first year of the Civil War; it was the refuge of Parliament during the plague of 1665. Printing is an important industry, while at Cowley nearby are the huge Morris motor works. Pop. 80,500.

Oxford and Asquith, Herbert, Earl of, British statesman. Born at Morley, Yorkshire, he was called to the Bar in 1876; married Helen Meiland in 1877, and, after her death, Margaret Tennant, famous as a society leader and wit, in 1894. Liberal M.P. for U.E.

East Fife (1836-1918), he was prominent as counsel in the Parnell Commission of 1889, and became Home Secretary in 1892. He became Chancellor of the Exchequer in 1905, and Prime Minister in 1908, his period of office witnessing the conflict with the House of Lords over the Parliament Act, the Ulster troubles, the suffragette campaign, and finally the outbreak of the World War. In May, 1915, he formed the Coalition government and, resigning in 1916, became leader of the Independent Liberals. M.P. for Paisley, 1920-24, he became a peer in 1925 and resigned the leadership of the Liberal Party in 1926. (1852-1928).

Oxford Group, a religious movement founded in 1921 by Dr. Frank N. D. Buchman, an American Lutheran minister, and taking its name from the fact that much of its initial success was associated with Oxford University students. The purpose of the "group" is to gain the spiritual benefit of sharing religious experiences and of mutual confession. Those whose lives have been "changed" by a spiritual reawakening testify to the power of Christianity. "Groups" have been formed in over 50 countries.

Oxford Movement, a religious movement, known also as the Tractarian Movement, originated by John Henry Newman, John Keble, R. H. Froude, and others. Newman wrote the first of the *Tracts for the Times* in 1833; a year later Pusey joined the movement. The *Tracts*, which aroused much controversy, were a protest against Low Church and Broad Church Anglicanism. The Movement did much to restore the prestige of the Anglican Church, and prepared the way for the sympathy later shown towards Catholicism.

Oxfordshire, a S. midland county of England, bounded S. by the Thames, N. by the shires of Warwick and Northampton, E. by Buckinghamshire, and W. by Berkshire and Gloucestershire; its area is 748 sq. m. On the whole flat or undulating, it rises in the S.E. to the Chiltern Hills; watered by tributaries of the Thames, such as the Windrush, Cherwell and Thame, it is chiefly agricultural, and has much pastureland. The manufactures include motor cars, blankets, gloves, lace, paper, and agricultural tools. Oxford is the county town; two members are returned to Parliament. Pop. 209,600.

Oxford University. Oxford was a seat of learning as early as the 11th Century. Schools of divinity, law, and topography were founded in the 12th Century and by the 13th Century Oxford ranked second only to Paris; it responded quickly to the Renaissance, and by the time of the Reformation 13 colleges were founded; they now number 25. The University is rich in museums and libraries, especially the world-famous Bodleian Library and the Taylor Library, the latter devoted to modern literature. The University contains the following colleges: University College (founded 1249), Balliol (1263), Merton (1264), Exeter (1314), Oriel (1326), Queen's (1340), New College (1379), Lincoln (1427), All Souls' (1437), Magdalen (1458), Brasenose (1509), Corpus Christi (1518), Christ Church (1546), Trinity (1584), St. John's (1555), Jesus (1571), Wadham (1612), Pembroke (1624), Worcester (1714), Keble (1870), and Hertford (1874). St. Edmund's Hall, the sole academical hall remaining, dates from 1236. In addition, there are 4 women's colleges: Somerville (1879), Lady Margaret Hall (1879), St. Hugh's Hall (1886) and St. Hilda's (1893). Women were first admitted to full membership and to take degrees in 1920. The University returns two members to Parliament.

Oxidation, term applied to a chemical change whereby oxygen is added to an element or compound. Thus, iron is oxidized by the oxygen in the air to form rust, or iron oxide. Substances which have the property of surrendering oxygen to other substances are called oxidizing agents.

Oxides, binary compounds of oxygen, divided into 2 classes according to their chemical properties: acid or anhydride oxides are the oxygen compounds of non-metals, which react with water to produce acids; basic oxides are the oxygen compounds of metals, which react with acid or with oxides more negative than themselves to form salts (bases).

Oxlip, or Greater Cowslip (*Primula elatior*), a flowering plant of the Primulaceae order found in Great Britain, similar to the cowslip and primrose, but to be distinguished from the ordinary hybrid.

Oxus, or Amu-Daria, a great river of the Pamirs, Central Asia, which rises in the Pamirs, and flows W. between Turkestan and Afghanistan, then NW., reaching the Sea of Aral after a course of 1,500 m.; it is believed at one time to have flowed into the Caspian, and there is record of two changes of course; it is important for irrigation.

Oxygen, a gas, one of the most widely distributed of the elements. It exists in the atmosphere in the free state, mixed with nitrogen; it forms part of the constitution of rocks and minerals and of the blood and tissues of animals, being essential to life, while the decay of organic matter is carried on by its agency. It is colourless and odourless, and is slightly heavier than air. It was first isolated in 1774 by Joseph Priestley. Mixed with Acetylene, it forms the intensely hot oxy-acetylene flame, used for welding and cutting iron and steel. Symbol, O; atomic number, 8; atomic wt., 16.

Oyer and Terminer ("he ar and determine"), a Commission to hear and determine special causes, constituting the authority of a judge of assize.

Oyster, a bivalve mollusc of the class *Enlamellibranchia*. The true oyster (*Ostrea*) adheres to the sea-bottom by the left valve, first settling as young "spat" oysters (less than an inch in length) after passing through a larval stage. Edible oysters

are cultivated in several parts of the world, notably at Whitstable (England) and Cancale (France). The *Pinnidae* are a species of oyster found chiefly in the Mediterranean where they sometimes attain a length of over 2 ft. Fresh-water oysters (*Unio*), found in rivers in America, are cultivated for the shells used in button-making.

Oyster Bay, town and summer resort of New York, U.S.A., on Long Island, the home of Theodore Roosevelt. It has fine bathing beaches and other attractions for visitors; oyster-dredging is carried on. Pop. 8,500.

Oyster-catcher, or Sea Pie, a group of wading-birds of

the plover (*Charadriidae*) family found on the seacoast in most parts of the world N. of the equator. The Common Oyster-catcher (*Haematopus ostralegus*) is familiar on British shores. The plumage is black and white, or entirely black; the bill is long and hard and



COMMON OYSTER-CATCHER

chisel-shaped at the tip, for opening the shell-fish on which it feeds. It nests on sea shores and river mouths in hollows in the ground.

Ozokerite, a natural mineral wax, greenish or yellowish in colour, found in the bituminous beds of the coal measures of Galicia and Rumania and in Utah, U.S.A. It forms a hard paraffin when purified, and is used for making candles, as an adulterant of beeswax, and, combined with rubber, as an insulating material.

Ozone, an allotrope of oxygen, of the formula O_3 . Pure ozone is a heavy pale blue, poisonous gas with a smell of chlorine or seaweed; on cooling, it condenses to a dark blue liquid which is explosive, particularly if impure; the gas itself decomposes into oxygen when allowed to stand. It is a bactericide and is used for sterilizing the water-supply of many large towns and also in the manufacture of chemicals and for refining oils, etc.

P

Paca, genus (*Coelogenys*) of South American burrowing rodents of the family Dasyproctidae, mainly brown and white in colouring. They are edible.

Pachmann, Vladimir de, Russian pianist, preter of Chopin; born in Odessa, he studied under his father and at Vienna; he made his concert debut at Leipzig in 1878, and first appeared in London in 1882. (1848-1933).

Pachydermata, a popular term for non-ruminant mammals of the order Ungulata, including the elephant, rhinoceros, etc., though it does not indicate any necessary relationship.

Pacific Ocean, the largest sheet of water on the globe, occupies a third of its whole surface. It is a wide oval in shape, lying between Australia and Asia on the W., and North and South America on the E. Except from Asia it

receives no large rivers. On its American shores the Gulf of California is the only considerable indentation; the Okhotsk, Japanese, Yellow, and Chinese Seas, on the Asiatic coast, are rather wide bays shut in by islands than inland seas. Its innumerable islands are the chief feature of the Pacific Ocean. The continental islands include the Aleutian, Kurile, Japan, and Philippine Is., and the archipelago between the Malay Peninsula and Australia. The Oceanic Is. include countless groups, volcanic and coral, chiefly in the southern hemisphere, between the Sandwich Is. and New Zealand. Commerce on the Pacific Ocean increased vastly with the extension of the United States westward, the colonization of Australia, and the opening of Chinese and Japanese ports. San Francisco, Los Angeles, Vancouver and Valparaiso on the E., Hong-Kong, Sydney and Yokohama on the W., are the chief centres of trade.

Padang, a town and free port on the W. coast of Sumatra, the largest town on the island, and the Dutch official capital. Pop. c. 42,000.

Paddington, metropolitan borough of London, W. of St. Marylebone; largely residential. Pop. 139,000.

Paddle-wheel, the wheel by which steamers are propelled through the water. Paddle-wheels were fitted to the first steamers, but they are now replaced by screws in the majority of steam vessels. The wheel is driven by the engine, and is fitted with floats, originally fixed blades radiating round the hub of the wheel, but with an increase in the width of the wheel the floats act on a lever attached to the centre of the wheel and have a "feathering" action. They are not suitable for cargo boats, as the set of the wheel in the water cannot be altered to suit a variation in the draught of the vessel.



EARLY PADDLE-STEAMER
(The Sirius)

Paderewski, Ignace Jan, Polish pianist, musical composer, and statesman, born in Podolia; made his debut in 1887, with instant success; he has composed numerous pieces both for the voice and the piano. During the World War he assisted in recruiting a Polish army in the U.S.A. On the rebirth of Poland as a nation in 1919 he became Premier and Foreign Minister, and was present at the Peace Conference, resigning the same year. (1860-).

Padiham, urban district and market town of Lancashire, England, 3 m. NW. of Burnley. Coal-mining and the manufacture of cotton are the chief industries. Pop. 11,600.

Padstow, market town on the N. coast of Cornwall, England, with fishing and agricultural interests and a small harbour. Pop. 2,500.

Padua, city of northern Italy, 23 m. by rail W. of Venice, chiefly interesting for its artistic treasures, including the municipal buildings, cathedral, and nearly fifty churches, innumerable pictures and frescoes, and Donatello's famous equestrian statue of Gattamelata; there is also a university, library, museum, and the oldest botanical garden in Europe. Pop. 139,000.

Pæony, or *Peony*, (*Pæonia*), a genus comprising 15 species of large and gaudy flowering plants of the order Ranunculaceae; widely cultivated as garden flowers. There are varieties with red and white flowers, which are large and globular; double forms have been produced by cultivation.

Pæstum, an ancient Greek city of Lucania, in South Italy, with important remains of temples and other specimens of Greek architecture.

Paganini, Nicolo, Italian violinist, born in Genoa; was a composer of concerto and other violin pieces. (1784-1840).

Page, Walter Hines, American man of letters and diplomat, born in North Carolina; from 1880 to 1913 he edited various periodicals and newspapers; in the latter year he was appointed Ambassador in London, adopting a pro-British attitude in the earlier years of the World War. (1856-1918).

Paget, Sir Alfred Wyndham, British admiral; entered the Navy in 1865, and took part in the Egyptian war in 1882 and in later African operations. In the World War he was mainly concerned with administrative work. (1852-1918).

Pagoda, a Chinese or Japanese temple, several storeys, always uneven in number, associated chiefly with Buddhism; there is a pagoda in the Botanic Gardens at Kew, near London.

Pahang, one of the Federated Malay States and considerably the largest, occupying the central part of the Malay Peninsula with a coastline on the S. China Sea. It is mountainous, and through it runs the R. Pahang (297 m. long). Gold and tin are mined, rubber and copra produced. Kuala Lipis is the capital. The Sultan (*Kew Gardens*) resides at Pekan, the old capital which is near the mouth of the Pahang R. Area 13,800 sq. m. Pop. 200,000.



Paignton, urban district and seaside resort of Devon, England, 2 m. SW. of Torquay. Its older is deservedly famous. Pop. 18,400.

Pain, Barry Eric Odell, English humorist. His first book was *In a Canadian Canoe*, 1891; *Eliza*, 1900, was first of a saga concerning suburban life. (1865-1928).

Painlevé, Paul, French politician, who after serving under Ribot and Briand became Prime Minister for a time in 1917 and again in 1925. (1863-1933).

Painting, the application of pigment to the chief methods were: (1) encaustic, painting on a wax surface finished by the application of heat; (2) tempera (q.v.), painting in colour tempered with egg-size on a gesso-covered surface; (3) fresco, painting in dry colours on wet lime plaster. In the early 15th Century the Van Eycks perfected the method of painting in oil, and in the 18th Century water-colour was first generally used. The pigments used by the ancients were various: white, obtained from chalk or white lead; blues from minerals, e.g., lapis lazuli; reds from oxides of iron; greens from substances such as malachite. Later painters extended these by obtaining some colours from vegetable gums and dyes, e.g., gamboge, various lakes, and indigo, some from minerals, e.g., azurite (red pigment) from hematite. To-day, many yellows are obtained from sulphides of cadmium, greens from combinations of oxygen and chromium, emerald green from copper, acetic acid, and arsenic, prussian blue from ferro-cyanide of iron.

The *Italian School* of Painting is, with the exception of classical painting, the earliest and is divided into various groups: (1) the Florentine, of which the chief are Cimabue and Giotto (13th Century), Fra Angelico and Botticelli (14th Century), Michelangelo and Leonardo da Vinci (15th Century); (2) the Sienese, Duccio and the Lorenzetti (14th Century); (3) the Umbrian, Raphael (15th Century); (4) the Venetian, Bellini and Giorgione (15th Century), Titian (16th Century), Canaletto and the landscape painters (17th Century).

The *Flemish School* is represented by the Van Eycks (14th-15th Century), Mabuse (15th Century), Rubens and Van Dyck (16th Century), and the *German* by Dürer (15th Century), and Hans Holbein the younger (16th Century), who spent much of his life in England. Of the *Dutch School* the chief are the 17th Century masters, Frans Hals, Rembrandt, de Hooch, Vermeer, and the landscape painters, Cuyp and Hobbema.

In *Spain* Morales and El Greco (16th Century) and Velasquez (17th Century) are the foremost; in *France*, Poussin (17th Century), Watteau (18th Century), and Ingres (19th Century); in *England*, Hans Holbein, Hogarth,

a social realist, and the 18th Century portrait painters, Lely, Reynolds, Gainsborough, Romney and Raeburn, and of the same period the landscape painters, Crome, Cotman, Cox, Girtin, Constable, and Turner (late 18th-early 19th Century).

In the 19th Century the pre-Raphaelite school had as its chief exponents Rossetti, Burne-Jones and Watts. In the 19th Century also the French Impressionist painters (Renoir, Cézanne, Seurat, Monet, Manet, etc.) are noteworthy for their success and their influence. Later movements of shorter duration include Futurism, Cubism, Vorticism. The most flourishing contemporary painting is the Abstract and Surrealist.

Paisley, town in Renfrewshire, Scotland, 7 m. W. of Glasgow, on the White Cart. It is the chief centre of manufacture of cotton thread in the world, and its other industries include dyeing, bleaching, woollen goods, pottery and engineering. Pop. 86,500.

Paladin, the name given to the peers of Charlemagne, such as Roland, and also to knights-errant generally.

Palaeography, the study and deciphering of ancient manuscripts. Early records were generally made on stone or metal, baked bricks (as in Assyria), or bark and leaves (as in India); the last have mainly disappeared owing to climatic conditions, but the papyrus MSS. of ancient Egypt have in many cases survived till the present day. The extensive use of contractions in ancient manuscripts is one of the chief difficulties of palaeography.

Palaeolithic Age, the age of human development marked by the use of unworked and unpolished stone implements. It is divided into several periods, named from districts in which cultural remains have been found, principally the Chellean, Acheulean, Mousterian, Aurignacian, Solutrean and Magdalenian. Palaeolithic man had considerable artistic ability, as is evidenced by the drawings of animals, etc., found in caves in Spain and elsewhere.

Palaeologus, the name of a Byzantine family, several members of which attained the imperial dignity, the last of the dynasty dying in 1453. They came into prominence in the 11th Century, and are still represented as a family in France by, among others, the poet and diplomat Maurice Paléologue (1859—), French Ambassador in Russia during the earlier part of the World War.

Palaeontology, the study of the fossilised remains of animals and plants of former geological ages; it is divided into palaeobotany (dealing with plants) and palaeozoology (with animals). The fossils as a rule take the form of petrified skeletons, where the original material (chitin, silica, or carbonate of lime) has been partly or wholly replaced by other minerals; in some cases the skeleton has been dissolved away by percolating water, leaving a mould. Fossils are important aids to geologists in determining the relative ages of rocks in different places, as well as giving information about the conditions under which they were laid down. They give us much information about the evolution of the various forms of animal life.

Palaeozoic, or Age of Ancient Life, includes the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Permian geological systems. In the Lower Palaeozoic the only fauna were invertebrates and fishes, whilst at the end of the age reptiles appear. The characteristic fossils of palaeozoic times are the trilobites.

Palanquin, in India and China a covered box-like conveyance for one person borne on men's shoulders.

Palate, the roof of the mouth, consisting of the hard palate towards the front, composed of the superior maxillary and palatal bones, and of the soft palate, farther back, composed of a muscular layer. The malformation known as cleft-palate is usually associated with hare-lip; it is operable if treated in early life.

Palatinate, or *Palz*, the name of two States, originally one, of the old German empire, one called the Lower Palatinate or Rhenish Bavaria, West of the Rhine, partitioned in 1816 among the States of Baden, Bavaria, Prussia and Hesse-Darmstadt, and the other called the Upper Palatinate, now nearly all included in Bavaria; the former has for principal towns Spire and Landau, and the latter Ratisbon.

Palatine, name given in the Middle Ages to a Count or feudal lord who exercised judicial functions over the area of his county. In England, Cheshire, Durham and Lancashire were distinguished as Counties Palatine, and their special courts continued to function into the 19th Century. The German district of the Palatinate received its name from having been formerly subject to the special jurisdiction of the Elector Palatine.

Palatine, one of the seven hills of ancient Rome; according to tradition, the first to be occupied; it was chosen by the first emperors for their imperial residence.

Pale, the, that part of Ireland in which, after the invasion of 1172, the supremacy of English rule and law was acknowledged, the limits of which differed at different times, but which generally included all the eastern counties extending 40 or 50 m. inland.

Palembang, chief commercial city of Sumatra, Dutch E. Indies, capital of the SE. residency of Palembang (area, 33,340 sq. m.). It stands near the Palembang or Musi R. in a marshy area, and many of the houses are built on rafts. Wood and ivory carving, and the making of gold ornaments and silk are the chief industries. Pop. of city, 62,000.

Palermo, capital of Sicily, and formerly of the Kingdom of the Two Sicilies, picturesquely situated in the midst of a beautiful and fertile valley; is a handsome town, with a magnificent cathedral and many churches, a university, art school, museum, and libraries; machinery, chemicals, lemons, and tobacco are exported. Pop. 412,000.

Palestine, a small territory on the SE. corner of the Mediterranean, 140 m. from N. to S. and an average of 70 m. from E. to W., bounded on the N. by Lebanon, on the E. by the Jordan Valley, on the S. by the Sinaitic Desert, and on the W. by the sea. It suffered much during the wars between the Eastern monarchies and Egypt, and between the Crescent and the Cross, was captured from the Turks in the World War, and mandated to Great Britain, the Balfour Declaration of 1917 having promised to set up there a National home for the Jews. Since then many Jews from all parts of the world have settled, both as agriculturists and in newly-developed towns such as Tel-aviv; but the Arab population has been increasingly averse to Jewish settlement, riots and bloodshed having been common in recent years. In 1937 a Royal Commission reported in favour of the division of the country into three areas, one under Jewish and one under Arab government, with a third, including Jerusalem, still remaining under British mandate. In 1938 the British Government, with the approval of the House of Commons and the Council of the League of Nations, sent out a technical Commission to work out a scheme of partition in detail. So far no final decision has yet been made by the British Government, but its

present policy is in favour of partition. The capital is Jerusalem; other cities Tel-aviv, Haifa, Jaffa and Gaza. Area, 10,430 sq. m. Pop. (1937) 1,383,320 (877,000 Moslems, 386,000 Jews and 119,000 Christians).

Palestrina, Giovanni Pierluigi da, cele-music, born in Palestrina; resided chiefly at Rome, where he wrought a revolution in Church music; produced a number of masses which at once raised him to the foremost rank among composers. (1524-1594).

Palgrave, Francis Turner, English poet, born in London, professor of Poetry at Oxford, and remembered for his *Golden Treasury of Songs and Lyrics*. (1824-1897).

Pali, an Indian language, allied to Sanskrit, in which the sacred books of the southern or Hinayana Buddhists are written.

Palimpsest, the name given to a manuscript written on the top of another that has been erased, yet often not so thoroughly that the earlier one cannot be in a measure restored. Many important relics of classical literature have been recovered by the expert treatment of Palimpsests.

Palk's Strait, the channel which separates Ceylon from the mainland of India, 100 m. long and 40 m. wide, generally shallow.

Palladio, Andrea, Italian architect, born at Vicenza; was precursor of the Italian style of architecture called "Palladian." His works consist principally of palaces and churches, and the finest specimens are to be met with in Venice and in his native place. (1518-1580).

Palladium, a statue of Pallas in Troy, which depended the safety of the city. It was fabled to have fallen from Heaven upon the plain of Troy, and after its abstraction to have been transferred to Athens and Argos. It is now applied to any safeguard of the liberty of a State.

Palladium, a metallic chemical element occurring naturally with platinum (q.v.), and discovered by Wollaston in 1803. Symbol Pd, atomic number 46, atomic weight 106.7. Its most remarkable property is its power of occluding or absorbing large quantities of hydrogen.

Pallas, in Greek mythology, one of the names of Athena (q.v.), considered as the goddess of war.

Pallium, a circular band, 2 in. wide, made of lamb's wool, worn about the neck and shoulders by Roman Catholic archbishops. It is sent them by the Pope on appointment, investiture with it being the sign of their assumption of metropolitan jurisdiction.

Palm, general name for plants of the natural order Palmæ, of widely varying appearance, the most familiar examples being the arborescent type, with tall slender unbranched trunks, e.g., the date-palm, *Palmyra* palm, coconut-palm; there are also various climbing and trailing types, e.g., cane-palms. Almost all are of tropical growth. The leaves are palmate or pinnate, varying widely in form within these two types. The flowers are usually yellow and strongly scented, growing in spikes. The stems are usually coated with some hard siliceous deposit, though internally they are soft and pithy. The palm is of great economic value. Wax and timber are obtained from the *Ceroxylon* palms, cane from members of the genus *Calamus*, betel-nuts from the betel-nut palm (*Areca catechu*); sago from the genus *Sagus*; dates from the genus *Phoenix*; from the sugar-palms and *Palmyra* palms various substances are obtained which are fermented into liquors.

Palma, (1) capital of the Balearic Is., of Majorca, on the Bay of Palma, SW. coast, has a Gothic cathedral and a Moorish palace; manufactures silks, woollens and jewellery. Pop. 93,000. (2) One of the Canary Is., 15 m. NW. of Tenerife; grows sugar, and exports honey, wax and silk manufactures. Pop. c. 53,000.

Palm Beach, a favourite winter resort NE. of Miami, in Florida, U.S.A., 35 m. NE. of Miami; with the adjoining town of West Palm Beach it has a pop. of 25,000.

Palmer, medieval name for a pilgrim returning from the Holy Land, who usually bore a palm branch in his hand, offering it on the altar on his return home.

Palmerston, Henry John Temple, Viscount, English statesman, born at Broadlands, Hants; being an Irish peer, entered the Commons in 1807; from 1809 to 1828 he was Junior Lord of the Admiralty and Secretary for War. Separating himself from the Tory party, he was Foreign Secretary from 1830 to 1841, and again from 1846 to 1851, when he resigned owing to differences with the Premier, Lord John Russell. In 1852 he joined Lord Aberdeen's coalition ministry, and on its fall became Prime Minister himself in 1855. He prosecuted the Crimean War and the Chinese War of 1857, and suppressed the Indian Mutiny, 1857-1858. Defeated in 1858, he returned to office next year with a cabinet of Whigs and Peelites; his second administration furthered the cause of free trade, but made the mistake of allowing the *Alabama* to leave Birkenhead. He was Prime Minister when he died. (1784-1865).



LORD PALMERSTON

Palmerston, North, city of North Island, New Zealand, in Wellington province, 90 m. N. of Wellington. It is an agricultural centre. Pop. 26,000.

Palmistry, the art of reading character from the lines and marks, and so called "Mounts," on the palm of the hand. The lines on the right hand are supposed to tell the future, on the left the past.

Palm Oil, prepared from the Guinea oil-palm, cultivated chiefly in West Africa. After boiling and crushing, the fruit is trodden under water, the oil being collected as it rises to the surface. It can be hardened into a solid fat by the hydrogenation process.

Palm Sunday, the Sunday before its being commemorative of Christ's triumphal entry into Jerusalem. It is commemorated in Roman Catholic and many Anglican churches by a procession in which blessed palm-branches are carried.

Palmyra, or Tadmor, a ruined city of Syria, Asia Minor, 150 m. N.E. of Damascus, once situated in an oasis near the Arabian desert; a place of importance, said to have been founded by Solomon. An important commercial centre after 100 A.D., it was taken by the Romans in A.D. 372, and destroyed by Aurelian, after which it gradually decayed into ruins, which were discovered in 1878. It contains the remains of a temple and lengthy colonnade.

Pamirs, The, or "Roof of the World," an Asiatic plateau traversed by mountain ridges and valleys, at the average height of 13,000 ft. NW. of the plateau of Tibet, connecting the mountain system of the Himalayas, Tian-Shan, and the Hindu Kush, and inhabited chiefly by nomad Kirghiz bands.

Pampas, vast grassy, treeless, nearly level plains in South America, mainly in the Argentine; stretching from the lower Parana to the S. of Buenos Aires. They afford rich pasture for large herds of wild horses and cattle.

Pampas Grass, a genus (*Cortaderia*) of grasses, native to America, grown in Britain as garden plants; they bear flowers in white or rose-coloured plume-like panicles.

Pamplona, or Pampeluna, fortified city of Navarre province, 16 m. from the French frontier. It is a railway centre, with an old cathedral, and was formerly the chief town of the kingdom of Navarre. Pop. c. 35,000.

Pan, in the Greek mythology, a goat-man, a personification of wild nature, and the protector of flocks and herds; is represented as playing on a flute of reeds of different lengths, called Pan's pipes, and dancing on his cloven hoofs over glades and mountains, escorted by a bevy of nymphs.

Panama, southernmost republic of Central America, in the Isthmus of Panama, traversed by the Panama Canal; declared its independence of Colombia in 1903; produces bananas, cocoa and coconuts. Capital, Panama. Area, 32,400 sq. m. Pop. 467,500. The city of Panama, founded in the early 16th Century, has a population of 83,000.

Panama, isthmus of, the narrow strip, varying in width from 40 to 110 m., which joins Central to South America; the Gulf of Panama washes it to the S., the Gulf of Darien and the Mosquito Gulf on the N. It is crossed by the Panama Canal, and (save for the American Canal Zone) is comprised in the republic of the same name.

Panama Canal, connecting the Atlantic and Pacific oceans through the isthmus of Panama, was planned in 1879 by Ferdinand de Lesseps, and begun by a French company in 1881, but abandoned after 8 years; in 1902 the U.S.A. resumed the work, which was completed in 1920, though the Canal had been in use since 1914. The Canal Zone, the use of which is granted by Panama to the U.S.A., is a strip of land 10 m. wide; the canal is 50 m. long, the channel being from 300 to 1,000 ft. wide at the bottom. The excavation amounted to 220,000,000 cu. yds.; the cost was \$460,000,000; the first steamer passed through from the Atlantic to the Pacific and back again on August 1, 1914.

Pan-American Congress, an international conference of the various American states held periodically to consider matters of common interest. The first, at which only five states were represented, was held in 1826. A Pan-American Union also exists to develop commercial relations, international communications, and similar matters.

Panchromatic, a term, in photography, applied to plates or films which have been so prepared that though reproduction is in monochrome all colours are given proper values. They are usually "slower" than ordinary plates and films and should be developed in total darkness.

Pancras, St., a boy martyr of 16, who suffered under the Diocletian persecution about 304; gives his name to a metropolitan borough of London, N.W. of the City, mainly residential, with manufactures of pianos, furniture, etc., and railway works. Pop. 184,000.

Pancreas, a gland situated in the abdomen, secreting both the pancreatic juice, an alkaline necessary to the digestion of food in the duodenum, and insulin, essential for the proper metabolism of sugar.

Panda, Giant, (*Ailuropus melanoleucus*), or Bear-Cat, a mammal found only on the S. and E. borders of Tibet; fully-grown weighs about 21 stone and is the size of a large hog;



GIANT PANDA

in appearance it is between the bear and the racoon, with white face and body, black legs, black rings round the eyes, and black ears and collar. It is amazingly slothful, has never been seen to run or jump, and feeds exclusively on bamboo. A related animal, also called the Panda (*Ailuropus fulgens*) is found in the regions about Assam.

Pandects, the digest of civil law executed by the Emperor Justinian between the years 529 and 533.

Pandora, in Greek mythology, a woman of surpassing beauty to whom Zeus gave a box full of all forms of evil from which all the contents escaped to ravage the earth, Hope alone remaining behind.

Pangalos, Theodore, Greek general and statesman, born at Salamis; after the World War he served in the Asiatic campaign as Chief of Staff. In 1924 he entered the Greek Cabinet, which he overthrew the following year, assuming the Premiership and in 1926 the presidency of the republic as dictator; but after a few months' rule he was overthrown and imprisoned. (1878-).

Pangolin, or Scaly Ant-Eater, a mammal of the order Edentata,

native to Asia and Africa; with long snout and tail and scaly coat; emits a nauseous odour when attacked. The African species, which include the Giant Pangolin, are burrowing animals; the Asiatic include both burrowing and climbing animals. They are toothless, catch their food, which is ants, with their tongues, and use their tails for climbing and as part of their defensive armour when they coil themselves up into a ball.



PANGOLIN

Panicum, a genus of grasses including the Eastern food-grain millet.

Panipat, a town in the Punjab, India, 53 m. N. of Delhi; was the scene of two decisive battles, one in 1526, resulting in the establishment of the Mogul dynasty at Delhi, and another in 1761, to the extinction of the Mahratta supremacy in North-West India. Pop. 28,000.

Pan-Islamism, the conception of the various Mohammedan peoples in defence against and opposition to the Christian powers. Since the World War it has been replaced by Pan-Arabism, which aspires to the union of the Arab peoples in a common nationality or federation.

Pankhurst, Mrs. Emmeline, British feminist leader; helped to found the Women's Franchise League in 1889, and afterwards founded the Women's Social and Political Union in 1903, and was a leader of militant methods to secure votes for women, being several times imprisoned. In 1908 ill-health secured her release; in 1912 and 1913 hunger-strikes achieved the same end. In her work she was assisted by her daughters Christabel and Sylvia. (1854-1928).



MRS. PANKHURST

Pannonia, a province of the Roman Empire, conquered between 35 B.C. and A.D. 8; occupied a square with the Danube on the N. and E. and the Save almost on the S. border. It passed to the Eastern Empire in the 5th Century, fell under Charlemagne's sway, and was conquered by the Hungarians shortly before A.D. 1000.

Panorama, a picture of large size, of which a part only is exhibited at a time; it is usually arranged to revolve on a cylinder, the portion exposed at any moment being enhanced by special illumination effects. Since the rise of the cinematograph it has gone out of ordinary use. The name is often applied to any large picture in which the features of an extensive landscape are depicted.

Pansy. See *Heartsease*.

Pantelleria, a Mediterranean island, belonging to Italy, almost midway between Sicily and Tunis; there are mineral springs and an Italian convict station; fruits are grown. The island is believed to have been heavily fortified in recent years. Pop. c. 10,000.

Pantheism, the doctrine which identifies God with nature, or asserts his immanence at the expense of his transcendence; distinguished from deism, which denies the former but affirms the latter, from theism, which affirms both, and from atheism, which denies both.

Pantheon, a circular temple in Rome, first erected in 27 B.C. by Agrippa, son-in-law of Augustus, with niches all round for statues of the gods, to whom in general it was dedicated. It is now a church, Santa Maria Rotonda, and affords sepulture to illustrious men. Also a building in Paris, since the Revolution used as a receptacle for the ashes of the illustrious dead, Mirabeau being its first occupant.

Panther, a name given to the leopard (q.v.) of the Old World and to the puma (q.v.) of America.

Pantograph, a contrivance for copying an enlarged or a reduced scale.

Papacy, the ecclesiastical system of the Roman Catholic Church, considered as a form of spiritual or temporal government. The temporal sovereignty of the Pope was a gradual growth, based on the fact that after the disappearance in the 5th Century of the Western Roman Empire the Popes, as the principal persons left in Rome, naturally acquired a preponderating voice in the city's affairs. The work of such great Popes as Leo I in the 5th Century and Gregory I in the 6th laid the basis for claims which by the 11th and 12th Centuries had grown to cover an assumed right to dispose of secular thrones and to depose or appoint temporal rulers at will.

The Middle Ages are largely taken up by the struggles between the Papacy on the one hand and the great secular states, the Holy Roman Empire, France, and England especially, seeking respectively to defend or overthrow the Papal claims. At the end of the 14th Century the Great Schism, followed by the Reformation, greatly weakened the Papal position in international affairs, though until 1870 the Popes maintained their temporal rule over a part of Central Italy.

The rise of authoritarian states in the 20th century has in a measure renewed the conflict between the Roman Church and the temporal state. For, although in 1929 Mussolini restored Papal temporal rule over the Vatican City (q.v.) and arranged a Concordat defining the limits of church and state rights respectively, and in 1933 a Concordat between the Pope and Hitler regulated their respective claims in Germany, these Concordats,

especially in the latter country, have been interpreted by the state in senses which the Church was unable to approve, and bitter quarrels have arisen over such matters as the separate existence of Catholic Youth organisations and educational policy.

Papal States, a territory in the N. of Italy, extending irregularly from Naples to the Po, until 1870 subject to the temporal sovereignty of the Pope, but annexed to the united kingdom of Italy in that year. In 1929 the Lateran Treaty revived the Pope's temporal sovereign power over a small area called the Vatican City (q.v.).

Papaveraceae, an order of plants of the poppy, is a typical genus, another well-known genus being *Eschscholzia*; most species contain a juice of narcotic properties, that of the poppy being the opium (q.v.) of medicine.

Papeete, town of Tahiti and principal administrative centre of French Oceania and is situated on a bay on the NW. coast of the island. Pop. 7,000, of whom about 5,000 are French.

Papen, Franz von, German soldier and statesman; born at Well, Westphalia. Became Chief of the General Staff to the Turkish army in Palestine in the World War; entered the Prussian Landtag in 1921. For a short time in 1932 Chancellor of the Reich; at the same time acted as commissary for Prussia, Vice-Chancellor under Hitler 1933; Minister to Austria, 1934. (1879-).

Paper, a material for writing, made by felting fine fibres derived from various plants. It was known in China early in the Christian era, being probably introduced thence to the West by Arab traders. The materials first used for its manufacture were bark, linen and rags; later, esparto grass from N. Africa and Spain was used, especially for high grade paper. For newspapers and periodicals newsprint is largely made from wood-pulp, which is prepared from thinly sliced wood treated, after considerable pressure, with a solution of caustic soda.

Paper Money has been in use in the East from early times, but has only been used on a large scale in the West since the World War, on the outbreak of which gold almost disappeared from circulation in practically all countries. The issue of £1 and 10s. notes by the British Treasury began in 1914; in 1928 their place was taken by Bank of England notes of the same denominations. In the United States dollar notes or "Greenbacks" have been in regular circulation since the Civil War.

Papier-mâché, a light, durable substance made from paper pulp or sheets of paper pasted together and variously treated with chemicals, heat, and pressure, largely used for ornamental trays, boxes, light furniture, etc., in which it is varnished and decorated to resemble lacquer-work, and for architectural decoration, in which it is made to imitate plaster moulding.

Papini, Giovanni, Italian author, born in Florence; wrote essays, criticism, and poetry, until suddenly, in *Storia di Cristo*, 1921, he developed a pious mysticism, which he adhered to in subsequent works, which include his *Sant' Agostino* (1929). In *God*, 1931, something of his earlier self reappears. (1881-).

Papua. See *New Guinea*.

Papworth Village Settlement, a settlement in Cambridgeshire, England, near Huntingdon, where tuberculous patients reside and carry on village industries. It is a voluntary organisation, started in 1917, and houses nearly a thousand residents.

Papyrus, or *Paper-reed* (*Cyperus Papyrus*), a river-side plant of the natural order Cyperaceae, found in Egypt, the Sudan, etc., standing up to 12 ft. high. It is a kind of sedge with a soft triangular stem, the pith of which is easily split into ribbons. In ancient times, by Egyptians, Greeks and Arabs, the pith was used as a writing material; at first long strips were rolled up, but later rectangular pages were cut and bound together book fashion; much ancient literature is still preserved on papyrus; the use of papyrus was superseded by that of parchment and rag-made paper.

Para, state of Brazil, adjoining the Guianas, producing rubber, fruits and sarsaparilla. Area, 444,000 sq. m. Pop. 1,500,000. Also its capital, also known as Belém do Pará, on the estuary of the Pará R. Pop. 293,000.

Parabola, a conic section formed by the plane parallel to one of its generating lines; the path of a projectile thrown in the air at an angle with the vertical is a parabola.

Paracelsus, Swiss physician, alchemist, and mystic, whose real name was Theophrastus Bombastus von Hohenheim, born at Einsiedeln; one of the founders of modern medicine and chemistry; credited with the discovery of hydrogen. (1493-1541).

Parachute, an umbrella-like device of silk intended to break the fall of a person or object from a height; it consists of a sheet of silk with cords attached which opens automatically on the pulling of a rip-cord. Parachutes for use in case of need are generally carried by aircraft, and "parachute-jumping" from aeroplanes at great heights is being developed as a sport or exercise in agility.

Paraclete (Greek for *Comforter*), name given to the Holy Ghost which Christ promised His disciples would take His place as their teacher and guide after He left them. Also the name of the monastery founded by Abelard near Nogent-sur-Seine, of which Héloïse (q.v.) was abbess.

Paradox, a statement which, while true, is in form or content contrary to the generally accepted opinion on the matter with which it deals, or which unless accepted in a special sense or carefully examined may be apparently untrue; a familiar example is the father's assurance to the son he has chastised that "it hurts me more than it hurts you."

Paraffins, a homologous series of inflammable hydrocarbons, characterized by their comparative lack of chemical reactivity. Some of them are used as liquid fuels for internal combustion engines, etc., under the names of aviation spirit, petrol, gasoline, benzine, etc. Higher boiling-point paraffins are used as paraffin oil for oil lamps, as lubricating oil, and as heavy oil for Diesel engines. "Vaseline" is the trade name of a semi-solid mixture of paraffins used for lubrication and as a salve, while solid paraffins are found in paraffin wax (q.v.). Methane and ethane occur in the natural gas given off from the earth in oil-fields and are used as a gaseous fuel.

Paraffin Wax, a white waxy solid consisting of mixtures of the higher members of the paraffins (q.v.). It occurs naturally as ozokerite or earth-wax, but is mostly obtained as one of the later fractions in the distillation of petroleum. Paraffin is used in making candles, waxed paper and linoleum, and as an insulator in the electrical industry.

Paraguay, South American republic, whose territories lie between the Pilcomayo and Paraguay and the Parana Rrs., with Argentina on the W. and E.,

Bolivia on the N. and Brazil on the N. and E. It consists of rich undulating plains, and in the S. of some of the most fertile land on the continent. The country is rich in natural products, but without minerals; dye-woods, rubber, Paraguay tea, gums, fruits, wax, cochineal, and many medicinal herbs are gathered for export; maize, rice, cotton and tobacco are cultivated. The industries include some tanning, brickworks and lace-making.

Founded by Spain in 1535, Paraguay was the scene of an interesting experiment in the 17th Century, when the country was governed wholly by Jesuits, who, excluding all European settlers, built up a native Christian communalistic state. They were expelled in 1768; in 1810 the country joined the revolt against Spain, and was the first to establish its independence. For 26 years it was under the government of Dr. Francia; from 1865 to 1870 it maintained a heroic but disastrous war against the Argentine, Brazil, and Uruguay, as a consequence of which the population fell from a million and a half to a quarter of a million. In 1934 it engaged in a war with Bolivia over the disputed Gran Chaco territory, and occupied much former Bolivian territory. The capital is Asunción. Area, c. 62,000 sq. m. Pop. 930,000.

Paraguay River, a South American river, 1,800 m. long, the chief tributary of the Parana, which it enters above Corrientes; rises near Matto Grosso, Brazil. It forms part of the boundaries between Brazil and Bolivia and between Paraguay and the Argentine.

Paraldehyde, a substance obtained by the polymerization of acetaldehyde (q.v.). It is a colourless liquid boiling at 124°C., and will not mix with water. It is a soporific, familiar in sensational fiction as "K.O. (i.e., knock-out) drops"; a more legitimate use is in inducing a calm sleep preparatory to the administration of an anesthetic for a surgical operation.

Parallax, of a star, is the angle subtended at the star by the radius of the earth's orbit; generally, it denotes the apparent change in the position of an object due to a change in the position of the observer.

Parallel, the name given to lines in the same plane so related to each other that if produced they never meet, or, in other words, that the distance between them at any point is always the same. In geography the term is applied to those circles which are drawn upon a globe and are parallel to the Equator (see *Latitude*).

Parallelogram, a quadrilateral with opposite sides parallel. For *Parallelogram of Forces*, see *Statics*.

Paralysis, loss of the power of movement, which is caused by injury or disease of the brain, spinal cord, or nerves, or an affection of the muscular substance itself. Paralysis limited to one side of the body is usually due to a disease of the brain and is called hemiplegia. When one side of the face and the opposite side of the body are attacked it is due to disease or injury to the medulla oblongata, and is called crossed paralysis. Local paralysis is due to an injured nerve-trunk.

Paramaribo, the capital of Dutch Guiana, on the Surinam, 10 m. from the sea, and the centre of the trade of the colony; it is a station on the United States-Argentine air route. Pop. c. 50,000.

Parana, (1) the capital of the province of Entre Ríos, Argentina. It is the ancient capital of Argentina, and stands on the Parana R., 7 m. from Santa Fé. It has a large trade in lumber, coal, skins, wool and salt meat. Pop. 72,890. (2) A state of Brazil, extending from the Atlantic to the

Rio Parana, Paraguay and Argentina. The area is 93,270 sq. m. and the population 1,014,200. Capital, Curitiba.

Parana River, a great river of South America, formed by the confluence of the Rio Grande and the Paranahyba; forms part of the boundary between Paraguay and the Argentine; its junction with the Uruguay forms the estuary of the Plate. The river is broad and rapid, 2,000 m. long. The chief towns on its banks are Corrientes, Santa Fé, and Rosario.

Paranoia, a mental disorder which takes the form of an obsession based upon delusions, especially a delusion that the patient is the subject of persecution. Advanced cases lead to insanity. Other paranoid delusions arise from excessive ambition, imagined injustice, often following unsuccessful litigation, or amatory fixations.

Parasites, in biology, are animals or parasites, plants living on and deriving their nourishment from other living organisms, either animal or plant. The term is generally used only in those cases where definite harm is done to the host; in the absence of injury the association is described as commensalism or symbiosis. Examples of parasitic animals are the liver-fluke of sheep and the microscopic parasite causing malaria in man; among parasitic plants may be mentioned mistletoe (a partial parasite), dodder, toothwort, and various fungi. Many disease-producing bacteria are parasites.

Paratyphoid, name for several allied which closely resemble typhoid (*q.v.*) but are due to different bacilli. The symptoms cannot be distinguished from those of typhoid, which last, however, is more often fatal.

Paravane, a naval device used during the World War, which secured the immunity of ships steaming at sea from anchored mines. It consisted of a torpedo-shaped body fitted with hydrovanes.



PARAVANE

As the mooring chain of the mine came in contact with the attached tow-rope, it was deflected from the ship, a heavy cutter bracket at the head of the paravane snapped the chain and the mine then rose, to be destroyed by gun-fire.

Parcae, the Roman name of the Three Fates (*q.v.*), derived from *paros*, a part, as apportioning to every individual his destiny.

Parcel Post. The delivery of parcels up to 7 lb. in weight was first undertaken by the Post Office in 1883; in 1927 a system of cash on delivery (C.O.D.) was instituted. Parcels should be marked *Parcel Post* and postage prepaid by the sender. Parcels are neither accepted nor delivered on Sundays. Those for Eire (Ireland), the Channel Is. and the Isle of Man are liable to customs duties. The inland rates are: not exceeding 3 lb., 6d., with an additional 1d. per lb. up to 5 lb.; for 1/11 lb. (the limit) may be sent. The size of the parcel must not exceed 3 ft. 6 in. in length, and in length and girth combined 8 ft.

Parchment consists of skins specially prepared for writing; it takes its name from Pergamum, where it was first so used. The skins used are of sheep, for fine parchment or vellum, of calves, goats and lambs; parchment for drum-heads is made from calves' and asses' skins.

Pardon. In England, in nearly all cases of crime except in cases of impeachment, a full or conditional pardon from the Crown may be granted either before or

after trial. Pardon was formerly granted by the Crown under the Great Seal, but by an Act of George IV., it was made sufficient for the sovereign to issue a warrant under his sign-manual and countersigned by a Secretary of State. The sovereign acts upon the recommendation of the Home Secretary. In America the Constitution provides that the President shall have power to grant reprieves and pardons for offences against the state except in cases of impeachment.

Paregoric, compound tincture of camphor, including opium, oil of anise, and benzoic acid, used as an alleviative for coughs and rheumatism.

Parent. Although the common law of England does not compel parents to maintain their children, yet if they fail to do so, in the case of a child unable to earn its own living, the poor law authority can obtain an order from a justice of the peace to compel the parents or other relatives to contribute to the cost of so doing. When the children are legitimate the law provides that the father shall be their guardian until their majority, but, under the Guardianship of Infants Act, 1925, the Divorce Acts and Infants' Custody Act, the custody of a child may be granted exclusively to the mother. In the case of an illegitimate child the mother may summon the putative father to appear before a magistrate, who, if the affiliation is proved, may order him to pay the lying-in expenses and a weekly sum not exceeding 20s. until the child's sixteenth year. At death parents may, by a will duly executed, disinherit their children; but in the event of intestacy, if there is no surviving parent, the children share the whole estate, real and personal, in equal shares.

Pariah, name given in southern India to the lower classes not a member of any recognized caste; usually a member of one of the indigenous non-Hindu races.

Parimutuel, a method of betting on horse racing. It differs from the totalisator (*q.v.*) in that the stake money is collected in a series of "pools" instead of one. It was invented in France in 1872, and is popular in that country and America, the government deducting a commission from the takings.

Paris, capital of France, in the dept. of Seine, in the centre of the northern half of the country, on both banks of the Seine, and on two islands in midstream, 110 m. from the sea. The artistic, literary and intellectual capital of the world, it has been almost wholly rebuilt during the 19th and 20th Centuries, and retains very few buildings earlier than the 17th Century. Among the more important public buildings are Notre Dame, the great Gothic cathedral, built in the 12th Century; the Louvre, perhaps the most famous art gallery and museum in the world; the Palais de Justice and Conciergerie, on the Ile de la Cité, with the beautiful Sainte-Chapelle, built by Louis IX. to house Christ's Crown of Thorns; the Pantheon, where France's great men are commemorated; the Invalides, with the tomb of Napoleon; the Arc de Triomphe, with the tomb of the Unknown Soldier marked by a perpetual flame; the Tour Eiffel; the Luxembourg, meeting place of the Senate; the Opera and Théâtre Français; and the Palais Royal with its covered arcade of shops. The fortifications once a feature of the city, are now destroyed. Concentric rings of wide boulevards surround it; among its fine squares the Place de la République, Place de la Concorde and Place de la Bastille may be mentioned. The Champs Elysées and Bois de Boulogne are its most famous open spaces. The University (the Sorbonne) is the resort of students of every race and colour. The

scene of many tragic events in the Revolution, its siege and capture by the Germans in 1870-1871 and the subsequent Commune are the outstanding events of its more recent history. It was the scene of the Peace Conference in 1919 after the World War. Pop. 2,829,750; Greater Paris (dept. of Seine), 4,963,000.

Paris, in the Troy legends, son of Priam and Hecuba; his carrying off of Helen to Greece was the cause of the Trojan War (q.v.), in which he slew Achilles, and was mortally wounded by the poisoned arrows of Hercules.

Paris, a genus of perennial herbs of the Umbelliferae, order Liliaceae, including the Herb Paris, true love or one-berry (*Paris quadrifolia*).

This is occasionally found in Great Britain, in shady woods. The stem, which grows sometimes to a height of 10 or 12 ft., bears a yellow flower of unpleasant odour; the berry is a blackish purple.

Paris, Matthew, English, Irish chronicler, a Benedictine monk of St. Albans; author of two Latin histories, one, the *Chronica Majora*, of the world from the creation to his time; the other, the *Historia Minor*, from the Norman Conquest to the year of his death. (c. 1195-1259).

Park, Mungo, African traveller, born at Foulshields, Scotland; after studying medicine, went in 1795 for the first time to Africa. Starting from the Gambia, he penetrated eastward to the Niger, then westward to Kamalia, where illness seized him; he returned to England and published *Travels in the Interior of Africa*, 1799. In 1805 he set out for Africa again at Government expense; he reached the Niger, and attempted to descend the river in a canoe, but he and his companions were drowned. (1771-1806).

Parker, Sir Gilbert, British novelist and politician. Born in Canada, he emigrated to Australia and then to London, where he made a name with novels dealing largely with life in Canada, *The Seats of the Mighty* and *The Weavers* being two of the best. For 18 years he sat as M.P. for Lancaster, and he was knighted in 1902. (1852-1929).

Parkhurst, a village in the parish of Carisbrooke, Isle of Wight, at which is a large convict prison accommodating 800 prisoners.

Parlement, the name given to the local courts of justice in France prior to the Revolution, especially that of Paris, in which the edicts of the king required to be registered before they became laws.

Parliament, the legislative body of the three estates of the realm—Clergy, Lords and Commons. The first are represented in the Upper House by the archbishops and 24 bishops, of whom London, Winchester and Durham are always three, the remainder sitting according to seniority of consecration; the rest of the Upper House comprises the lay peers (see *Lords, House of*). The House of Lords may initiate any bill not a money bill; it does not deal with financial measures at all except to give its formal assent; it also reviews bills passed by the Commons, and may (subject to the Parliament Act, q.v.), reject them. Of late years this veto has come to be exercised only in cases where it seems likely that the Commons do not retain the confidence of the people, having thus the effect of referring the question for the decision of the constituents.

The House of Commons (q.v.) comprises

615 representatives of the people; its members represent counties, boroughs and universities, and are elected by practically the entire adult population, male and female, over 21. The Commons initiates most legislation, deals with bills already initiated and passed by the Lords, inquires into all matters of public concern, discusses and determines imperial questions, and exercises the sole right to vote supplies of money. To become law bills must pass the successive stages of first and second reading, committee and third reading in both houses, and receive the assent of the Sovereign, which latter has not been refused for two centuries. Relations between the Parliaments of the United Kingdom and the Dominions are governed by the Statute of Westminster (1931) (q.v.).

Parliament Act, a law passed in August, 1911, aimed chiefly at decreasing the power of the House of Lords. Under it the Lords cannot reject or amend a money Bill, and cannot touch a measure passed three times by the House of Commons. The life of the House of Commons under the Act was reduced from seven to five years. The Act only passed the House of Lords after Asquith had threatened to create enough new peers to secure a majority for it, and its passing ended a constitutional crisis that had begun with the rejection by the House of Lords of the 1909 Budget.

Parma, a cathedral and university town of N. Italy, on a tributary of the Po, 70 m. N.E. of Genoa; is rich in art treasures, and it manufactures pianofortes, silks and woollens, and cheese, and has a cattle and grain market; formerly the capital of the duchy of that name, which was united to Italy in 1860; it was the residence of Correggio. Pop. 71,000.

Parmoor, Charles Alfred Cripps, first Baron, British judge and Labour statesman; entered Parliament as a Conservative in 1895, left his party on the Free Trade issue, and attached himself to the Labour Party. Lord President of the Council, 1924, and 1929-31. (1852-).

Parnahyba, a port of Brazil situated on the river of the same name, 10 m. from its mouth. Its exports include cotton, leather, goat skins and rubber. Pop. 20,000.

Parnassus, a mountain in Phocis, Greece, 10 m. N. of the Gulf of Corinth, 8,000 ft. high, in Greek legend the seat of Apollo and the Muses, and the centre of the earth, with the oracle of Delphi and the Castalian spring on its slopes.

Parnell, Charles Stewart, Irish statesman, born at Avondale, Co. Wicklow; he entered Parliament in 1875 as a Home Ruler, and led his party in obstructionist methods; he also founded the Land League. He was charged with responsibility for political crimes in Ireland, but the enquiries of a Royal Commission proved that an incriminating letter attributed to him was a forgery. Cited as co-respondent in the O'Shea divorce case when at the height of his power, he retired from the leadership of the party, and died only a few months later. (1846-1891).

Parnell, Thomas, English minor poet, born in Dublin; became archdeacon of Clogher; is best known as the author of *The Hermit*, though his ode *The Night-Piece on Death* and the *Hymn to Contentment* are of more poetic worth. His works were published posthumously by Pope. (1679-1718).

Parody, a form of literary production in which a serious and generally well-known work, in prose or poetry, is ridiculed by more or less close imitation of its style and matter. A famous example in English literature is John Philips' *Splendid Shilling*, a burlesque of Milton's *Paradise Lost*.



HERB PARIS

Paros, Greek Island, one of the Cyclades, exports wine, figs and wool; in a quarry near the summit of Mt. St. Elias the famous Parian marble is still cut; the capital is Paroskia. Pop. c. 9,000.

Parotid Glands, in anatomy, the glands, one on either side of the face, immediately in front of the ear and communicating with the mouth by a duct.

Parr, Catherine, sixth wife of Henry VIII. and the daughter of a Westmorland knight; was of the Protestant faith and obnoxious to the Catholic faction, who trumped up a charge against her of heresy and treason, from which, however, she cleared herself to the satisfaction of the king, over whom she retained her ascendancy till his death. Subsequently married Lord Seymour. (1512-1548).

Parr, Thomas, called **Old Parr**, English farmer, notable for his long life, being said to have lived 152 years and 9 months, from 1483 to 1635.

Parrakeet, name commonly given to parrot, any small long-tailed parrot. The budgerigar, popular as a cage-bird in England, is the best-known.

Parramatta, next to Sydney, from the oldest town in New South Wales; manufactures colonial tweeds and Parramatta cloths, and is in the centre of orange groves and fruit gardens. Pop. c. 18,000.

Parrot, any bird of the family Psittacidae.

The bill is hooked and rounded and is much used in climbing. The tongue is soft and fleshy and the wings are of moderate size but the tail is often elongated. The plumage is generally brilliant. They are natives of tropical and subtropical regions; the species are numerous and include parakeets (*q.v.*), macaws, lorikeets, lories, and cockatoos. They subsist upon fruit and seeds and breed in hollow trees. Many species can imitate the human voice. Some live to a great age, instances being known of these birds reaching 70 or even 90 years. They are subject to a disease known as psittacosis, which can be communicated to man.



PARROT

Parrot Fish, a group of sea fishes of the family Scaridae, comprising several genera; brilliant in colour, their teeth are united in beak-like plates. Mainly tropical, one species is found in the Mediterranean, and was esteemed an edible delicacy by the ancients.

Parry, Sir Hubert Hastings, British composer. He was a professor at Oxford and Director of the Royal College of Music, and composed a number of works, chiefly cantatas and oratorios, and several symphonies; he also wrote several books on music. (1848-1918).

Parry, Sir William Edward, British Arctic explorer, born at Bath; visited the Arctic Seas in four voyages between 1818 and 1826, and a fifth in 1827 in quest of the North Pole via Spitsbergen, in which he was baffled by an adverse current; died governor of Greenwich Hospital, and left several accounts of his voyages. (1790-1855).

Parsec, a unit of astronomical distance; the distance of a star of parallax one second, *i.e.*, $3\frac{1}{3}$ light-years or 19 million million miles.

Parsees, a name given to the disciples of Zoroaster or their descendants in Persia and India. In India they number some 110,000, are to be found chiefly in the

Bombay Presidency, form a wealthy community, and are engaged mostly in commerce. They pay homage to the sun and to fire as the symbol of the deity. They expose their dead apart in the open air in "towers of silence," where they are left till the flesh is eaten away.

Parsley (*Petroselinum sativum*), a plant of the order Umbelliferae, a well-known garden herb used for its aromatic flavour in soups and other dishes. It is a native of Sardinia and was introduced into England in the 16th Century.

Parsnip, an umbelliferous plant (*Pastinaca sativa*) grown in Europe for the sake of its white, carrot-like root, used as a table vegetable.

Parsons, Sir Charles, British engineer, inventor of the steam turbine engine and of other mechanical devices; president of the British Association at Bournemouth in 1919; awarded the Order of Merit, 1927. (1854-1931).

Parsonstown, or **Birr**, a town of Co. 61 m. SW. of Dublin. **Birr Castle** has an observatory. Pop. c. 5,000.

Parthenogenesis, name given to reproduction, that is, to reproduction of plants or animals by means of unimpregnated germs or ova. It is found only in the lower forms of life.

Parthenon, a celebrated temple of the goddess, Doric order at Athens, dedicated to Athena, constructed under Phidias of the marble of Mt. Pentelicon, and regarded as the finest specimen of Greek architecture that exists; it is 228 ft. in length and 65 ft. in height. It was severely damaged by an explosion in 1687, but has since been largely restored. Many sculptures from the pediment are in the British Museum, London. See **Art, History of**.

Parthia, an ancient country corresponding to Northern Iran; was inhabited by a Scythian people of Aryan speech and manners, who, after being tributary successively to Assyria, Media, Persia, Alexander the Great, and Syria, set up an independent kingdom in 250 B.C., which was Rome's greatest and most continuous rival for domination of the Middle East. Ctesiphon was their capital. The Euphrates lay between them and Rome, and they were overthrown by Ardashir, who founded a new Persian empire about A.D. 224.

Partnership, the relation between two or more persons, each contributing to a business jointly with a view to profit. Unless there is special agreement to the contrary, the partners share profits and losses equally among themselves; each partner is liable for the debts of the business, and the acts of any partner normally bind the others. The law also makes provision for the establishment of limited partnerships, in which certain partners without voice in the management of a business are liable for its debts only to the amount of capital they have contributed.

Partridge, a gallinaceous bird of the phasianid family, with several species, one, the Grouse Partridge (*Pterodroma cinerea*), being commonly preserved as a game bird in Great Britain. It feeds on grain and seeds, insects and their larvae. Other species include the Red-legged, the French, or Guernsey, partridge, the Greek partridge, the Arabian and the Indian. The greater part of the plumage is grey varied with brown and black. The wings and tail are short. They are found chiefly in cultivated ground.



COMMON PARTRIDGE

Partridge, Sir Bernard, English black-and-white artist; practised stained-glass designing and decorative painting, 1880-1884. Joined *Punch*, 1892, and was for long its principal cartoonist, he was knighted, 1925. (1861-).

Party Government, the system of government under which the executive is nominated by, or under the control of, that one of two or more political parties which holds the largest number of seats in the legislature. It has been the principle of government in Great Britain since the Hanoverian succession. In totalitarian states it has been superseded by a system under which only a single political party is permitted to exist.

Party Wall, a wall dividing two parties on each of them. In the absence of special agreement it is deemed to belong jointly to the owners of the two properties, who are equally responsible for its upkeep and repair.

Pasadena, a city and health resort of Angeles, California, U.S.A., E. of Los Angeles, of which it is largely a residential district. In the district fruit growing is carried on. It is the seat of the Huntington Library and near it is the Mt. Wilson observatory. Pop. 76,100.

Pascal, Blaise, French mathematician and philosopher, born at Clermont, in Auvergne; at 16 wrote a treatise on conic sections; at 18 invented a calculating machine; he afterwards made experiments in pneumatics and hydrostatics, by which his name became associated with those of Torricelli and Boyle; in 1654 he retired to the convent of Port Royal (q.v.), where he spent the rest of his days as an ascetic, and wrote his celebrated *Provincial Letters* in defence of the Jansenists against the Jesuits, and his no less famous *Pensées*, which were published after his death. (1623-1662).

Pas-de-Calais, dept. of NE. France, Channel; has coal and iron mines, many and varied manufactures, agriculture and fishing industries. Capital Arras; other chief towns, Calais and Boulogne. Area, 2,600 sq. m. Pop. 517,500.

Pasha, a title given in Turkey before the establishment of the Republic to relatives of the Sultan and to governors of provinces and prominent officers in the army and navy.

Pasque Flower, (*Anemone Pulsatilla*), a purple-flowered perennial herb of the order Ranunculaceae, found in England on chalky soils; it is so called because it flowers about Easter-tide.

Passau, German city in Bavaria, at the confluence of the Inn and the Danube, 105 m. E. of Munich; has manufactures of leather, tobacco, porcelain, paper, and beer. Pop. 25,000.

Passchendaele, village in Flanders, captured by the Allies in the prolonged and bloody third battle of Ypres (November, 1917). It fell into German hands again in the spring of 1918, and was recaptured by the Allies in September of that year.

Passeriformes, an order of birds, containing five or six thousand species, including all perching birds, such as finches, sparrows, warblers and crows; all true song birds are included in the order; they are four-toed, one of the toes being directed backwards.

Passfield, Sidney Webb, first Baron, British politician. Born in London, he married Beatrice Potter in 1892, and after a civil service career became known together with his wife as a writer on economics and particularly as an authority on trade

unionism. He was one of the founders of the Fabian Society. In 1922 he became a Labour M.P., in 1924 President of the Board of Trade, and in 1929 a peer and Colonial Secretary until 1931. Among his works, written jointly with his wife, are *A History of Trade Unionism*, *Industrial Democracy*, and *Soviet Communism*. (1859-).

Passing-Bell, a bell tolled at the moment of the death of a person to invite his neighbours to pray for his soul.

Passion Flower

(*Passiflora*), a genus of climbing plants with large purple flowers and edible fruits, native to America, but cultivated as a garden flower in England.



PASSION FLOWER

Passionists, a Roman Catholic religious order of priests founded in 1694 by St. Paul of the Cross, a Sardinian; they are engaged in revival and mission work in various parts of the world.

Passion Play. See *Miracle Play*.

Passion Week, properly the week preceding Holy Week, commencing on Passion Sunday, the fifth Sunday of Lent; but the name is often given to Holy Week itself, i.e., to the week immediately preceding Easter.

Passive Resistance, a term first applied to the action of Nonconformists in England and Wales who, being opposed to the Education Acts of 1902 and 1903, refused to pay the education rate, preferring distraint upon their goods to voluntary payment on the grounds that rate-aid should not be given to schools giving denominational instruction.

Passover, a Jewish festival in commemoration of the Exodus from Egypt, celebrated about the time of the Christian Easter, and lasting for eight days. A feature of its ceremonies is the exclusive use of unleavened bread throughout the week. Its celebration was commanded in the Biblical book of Exodus.

Passport, a certificate of identity issued by a State to its nationals securing their protection by their government while travelling abroad. In Great Britain a fee of 15s. is charged for a passport, which is issued by the Foreign Office through the Passport Office, and is available for five years, which may be extended to ten on payment of an additional fee. For visiting many countries a visa is also necessary, obtainable—at a fee—from the consulate of the country to be visited.

Pasteur, Louis, French chemist, born at Dôle, in dept. Jura, celebrated for his studies and discoveries in the chemistry of fermentation, on which Lister's work was based, and also for his researches in hydrophobia, and his suggestion of inoculation as a cure for that and other diseases. The Pasteur Institute in Paris was established in 1886 to carry on his researches. (1822-1895).

Pasteurization. See *Sterilization*.

Pasto, a city of Colombia, at the foot of a volcano of the same name. It is a centre of the agricultural, textile, rope and tanning industries. It has a university and is an airport. Pop. 60,000.

Paston Letters, a series of letters belonging to a Norfolk family, published over a century ago. They date from the reign of Henry V. to the close of the reign of Henry VII. and are of great importance as illustrating the political and social history of the period.

Pastoral Staff, staff with a crooked in front of, a bishop as the symbol of his authority as shepherd of souls.

Patagonia, territory in the South America, lying between the Rio Colorado and the Strait of Magellan, divided between Chile and the Argentine Republic. Chilean Patagonia is a narrow strip W. of the Andes, with a broken coast-line, many rocky islands and peninsulas; Eastern or Argentine Patagonia is an extensive stretch of undulating plateaux intersected by ravines, largely covered with coarse grass or sparse shrub. Lagoons are abundant, and there are many rivers running eastward from the Andes. Herds of horses and cattle are bred on the pampas.

Patchouli, a perfume with a strong odour, derived from the dried branches of an Indian plant (*Pogostemon patchouly*) introduced into the West in 1844.

Patent, or letters patent, a document issued by the Crown entitling the holder to a monopoly in respect of an invention. A patent lasts for 16 years, subject to the patentee making the prescribed payments, in default of which the patent lapses. The patentee may, if he has not within that time been properly remunerated for his invention, apply to Court for an extension. The applicant for a patent must accurately set out the nature of his invention in a document known as "the specification"; and this must be filed at the Patent Office, Chancery Lane, London. Skill is required in preparing a specification, and it is generally advisable to employ the services of a patent agent. Any substantial error in the specification may render the patent void. If, during the life of the patent, it can be proved that the description is wrong, or so incomplete as to stultify the result aimed at, the patent will be void.

The applicant may either lodge a provisional or a complete specification; if provisional, the patent will be protected for 8 months; but before the expiration of that period, he must lodge a complete specification. For the purposes of the latter, drawings are required, whereas in the case of a provisional specification, usually none are necessary. The fees are, on application, £1; on filing complete specification, £4; on sealing £1. Application for certificate of payment of renewal: before the expiration of the 4th year and in respect of the 5th year, £5, and £1 additional each year to £16 in respect of the 16th year. The total fees for 14 years are, therefore, about £100. Copies of patent specifications can be obtained for the sum of 8d. a copy.

Patent Medicines, medicines whose composition is, or is supposed to be, a trade secret, and is not disclosed on the coverings under which they are sold; also proprietary medicines recommended for the relief of a specific malady, whether the manufacture is a secret or is revealed. Such preparations are in Great Britain subject to a stamp duty, of a minimum of threepence, rising with the amount of the selling price, and may only be made or sold by manufacturers or vendors holding a licence.

Patent Office, a department of the government, which deals mainly with the granting of patents (see *Patents*), the registration of designs and trade marks, and with questions relating to literary and artistic copyright. It is under the direction of a Comptroller-General.



PASTORAL STAFF

Pater, Walter Horatio, English author of word, phrase, and style; born in London; chiefly remembered for his *Renaissance*, *Marius the Epicurean*, *Imaginary Portraits*, and *Appreciations*. (1839-1894).

Paternoster, the Lord's Prayer, so words, "Our Father," called from its opening words, "Our Father," in Latin "Pater noster."

Paterson, city of New Jersey, U.S.A., centre of the American silk manufacture; also produces cotton, paper and machinery. Pop. 138,500.

Paterson, William, Scottish financier, projected and helped to found the Bank of England, and was responsible for the ill-fated Darien scheme, in which he lost all his possessions, though he was later partly indemnified by a Government grant. (1658-1719).

Pathans, a Mohammedan race living on and beyond the NW. frontier of India, including the Mohmands, Afridis, Wazirs, Maheuds, Khattaks and Yussufzais. Many members of all these tribes are enlisted in the Indian Army.

Pathology, the branch of biology or diseases in the structure or functioning of the body or mind. Among its many divisions are psychopathology, which concerns the malfunctioning of the mind and nervous centres; cellular pathology, with which the name of Virchow is connected, which considers cell disintegration and degeneration; pathogenesis, which traces the origins and course of pathological phenomena; etiology, the study of the causes of diseases and their symptoms; plant pathology and sexual pathology, the study of mental and physical sexual aberrations.

Patiala, an important commercial town and state of the Punjab, India. The town has carpet manufacturing and other industries. Area of state, 5,950 sq. m. Pop. (town) 55,000; (state) 1,625,000.

Patio, in architecture, an enclosed space, such as a courtyard, in front of, or connected with, a house or other building.

Patmore, Coventry, English poet, essayist, born at Wood Essex, best known as the author of *The An in the House*, and *The Unknown Eros*; was many years on the staff of the British Museum Library. (1823-1896).

Patmos, a barren rocky island in the Aegean Sea, S. of Samos, since 1924 an Italian possession; St. John is said to have written the New Testament Book of Revelation here.

Patna, city of British India, capital of the province of Bihar, at the junction of the Son, the Gandak, and the Ganges, trades in rice, oil seeds, cotton, salt and opium; has a university, and under its ancient name, Patliputra, was capital of the great Indian empire of Asoka two centuries B.C. Pop. 160,000.

Paton, Sir Joseph Noel, Scottish painter, born at Dunfermline; his "Quarrel" and "Oberon and Titania" are in the National Gallery, Edinburgh; he designed a rose window at Dunfermline Abbey. (1821-1909).

Patras, town in Greece, on the NW. corner of the Morean Peninsula, on the shores of the Gulf of Patras; has a fine harbour; is the chief western port of Greece, shipping currants, olive-oil, wine, and lemons. Pop. 61,000.

Patriarch, the name given originally to those and Alexandria, and later to those also of Constantinople and Jerusalem, who held a higher rank than other bishops, and exercised a certain authority over the bishops, is their

districts. The title is still used in the Eastern churches, but in that of the West is now purely honorary.

Patricians. See *Piebelans*.

Patrick, St. the apostle and patron saint of Ireland, probably born near Dumbarton, Scotland; was carried to Ireland, into slavery, as a child, escaped to Gaul, was ordained, and returned to Ireland to preach Christianity, seeing a great part of the country converted before his death and burial at Downpatrick. (c. 373-463).

Patron, in English church law, a person who has the right of appointment to a church living or benefice. The name is also applied to a Saint who is supposed to watch over the interest of a particular country, profession, or class of persons. Thus, St. George is Patron Saint of England, St. David of Wales, St. Andrew of Scotland, St. Patrick of Ireland, St. Luke of painters, St. Francis de Sales of journalists, Our Lady of Loretto of aviators and St. Christopher of travellers.

Patti, Adeline, operatic singer, born in Madrid, of Italian extraction; made her first appearance at New York in 1859, and in London at Covent Garden, as Amina in *La Sonnambula*, in 1861, and appeared in all European capitals, and several times in America; was married three times, her last husband being Baron Cederström. (1843-1919).

Pau, chief town of the French dept. of Basses-Pyrénées, on the Gave de Pau, 60 m. E. of Bayonne; is situated amid magnificent mountain scenery, and is a favourite winter resort; linen and chocolate are manufactured. Pop. 34,000.

Paul, the name of five Popes: **Paul I.**, Pope from 1664 to 1671; **Paul II.**, Pope from 1534 to 1549, was zealous against the Protestant cause, excommunicated Henry VIII. in 1536, sanctioned the Jesuit order in 1540, convened and convoked the Council of Trent in 1545; **Paul IV.**, Pope from 1555 to 1559, established the Inquisition at Rome, and issued the first *Index Expurgatorius*; **Paul V.**, Pope from 1605 to 1621, his pontificate marked by protracted strife with the Venetian republic.

Paul I., Czar of Russia, son of the Empress Catharine II., and her successor in 1796; was a despotic and arbitrary ruler; fought with the allies against France, but entered into an alliance with Napoleon in 1799; was murdered by certain of his nobles as he was being forced to abdicate. (1754-1801).

Paul, St., originally called Saul, Apostle of the Gentiles, born at Tarsus, in Cilicia, by birth a Jew and a Roman citizen; trained by Gamaliel at Jerusalem in the Jewish faith, and for a time the bitter persecutor of the Christians, till his conversion on the road to Damascus; thereafter he made three missionary journeys to Asia Minor and Greece. Returning to Jerusalem, he was arrested, appealed as a Roman citizen to Caesar, and was sent to Rome, where he awaited trial two years, during which time he wrote some of his Epistles. There is some evidence that he was released after a first trial, visited Spain, was re-arrested and condemned to death in A.D. 67 at a second trial, tradition declaring that he was executed at Three Fountains outside the city. By his preaching, Epistles, and missionary work, he probably did more than any other single man to develop Christianity from a Jewish sect into a world religion.

Paul-Boncour, Joseph, French politician; born at St. Aignan. Entered the Chamber of Deputies in 1905; was Minister for Labour in 1911; in 1931 left the Socialist party and became

Minister for War; was Premier for a month at the end of 1932, and Foreign Minister 1933-1934, when he became Minister of Finance. (1873-).

Paulinus, the first archbishop of York, sent with Augustine from Rome by Gregory to Britain in 601; laboured partly in Kent and partly in Northumbria, and persuaded Edwin of Northumbria to embrace Christianity in 629; d. 644.

Paul of Samosata, so called as sata, on the Euphrates; a Christian heresiarch who denied the Trinity; was bishop of Antioch, but deposed in 272.

Pausanias, a Greek traveller and topographer, lived during the reigns of Antoninus Pius and Marcus Aurelius; wrote an *Itinerary of Greece*, in 10 books, full of descriptions of great value both to the historian and the antiquary.

Pavia, city in Lombardy, Italy, burial-place of St. Augustine, and site of a famous Carthusian monastery. It was the capital of the ancient Lombard Kingdom; its University was founded by Charlemagne; it has metal and chemical manufactures. Stormed by Napoleon in 1796, Pavia was in Austrian possession from 1814 till its inclusion in the kingdom of Italy, 1859. Pop. 51,700.

Pavlova, Anna, Russian dancer, born in St. Petersburg. Toured Europe and America, including a London visit, in 1910; her interpretation of Saint-Saëns' "Swan" ballet was an enormous success. She danced with her own company in London 1923-1925, subsequently settled there, and died at The Hague. (1885-1931).

Pawnbroker, one who lends money in pawn, with him in pledge. Pawnbrokers in England must take out an annual Inland Revenue licence; they must issue a ticket for every article pawned. If pledges left with them are not redeemed, or the interest paid, within a year and seven days, they may be sold by auction, or, if under 10s. in value, forfeited. Pawnbrokers' charges and interest rates are fixed by law; they may not accept pledges from children under 14 or intoxicated persons.

Pawnees, N. American Indian tribe which inhabited Nebraska, Kansas and Texas; the few who remain live on reservations in Oklahoma.

Pawpaw (*Asimina triloba*), a tree of the natural order Annonaceae, indigenous to Latin America but now widely cultivated in the tropics, yielding a fruit the size of a melon, edible when boiled, whose juice renders tough meat tender.

Pawtucket, the city of Rhode Island, U.S.A., with textile and machinery manufactures; where the American cotton industry began in 1790. Pop. 77,000.

Paxton, Sir Joseph, architect of the Crystal Palace, London, born in Bedfordshire, originally a gardener in the service of the Duke of Devonshire at Chatsworth, where he displayed the architectural ability in building large glass conservatories which developed itself in the construction of the Great Exhibition of 1851, for which he received a knighthood. (1801-1865).

Paymaster-General, the officer it is to make payments on behalf of the various British Government Departments. He is a member of the Government, but not of the Cabinet, and is unpaid.

Paysandu, the capital of the dept. of R. Uruguay, in a great cattle-raising district; agriculture and cotton growing are also carried on. The town is chiefly noted for its great canned meat industry. Pop. (town) 31,000; (dept.) 78,000.

Pea, a leguminous plant of the genus *Pisum*. It is a climbing annual, a native of S. Europe, and a nutritious culinary vegetable containing saccharine and farinaceous matter. The two commonest species are the garden pea (*Pisum sativum*) and the field pea (*Pisum arvense*).

Peabody, George, American philanthropist, born in Danvers, now Peabody, in Massachusetts, U.S.A.; made a large fortune as a dry-goods merchant in Baltimore and as a stockbroker in London; gave away in his lifetime for benevolent purposes a million and a half pounds, including large sums for building working-class dwellings in London; died in London. (1795-1869).

Peace River, a river of W. Canada, which rises in British Columbia, flows through the Rocky Mts., approaches Lake Athabasca, where it changes its course northwards and finally enters the Great Slave Lake. Its estimated length is 1,100 m.

Peach, the fruit of a tree (*Prunus persica*) of the order Rosaceae, closely related to the almond, and Chinese or Persian in origin; but grown in England since the 16th Century. It is largely grown in the United States, whence the fruit is exported in cans.

Peacock, Thomas Love, English novelist, born 1st, in Weymouth; an intimate friend of Shelley. His best-remembered novels are *Headlong Hall*, *Maid Marian*, *Nightmare Abbey*, and *Gryll Grange*. (1785-1868).

Peacock Butterfly, a species (*Papilio agestor*) of British butterflies whose brownish-red wings are marked with large spots resembling eyes.

Peafowl, genus of gallinaceous birds (*Pavo cristatus*), native to India, is the best known; the male bird has a purple-crested head and breast, the back colouring being reddish-brown and green. The tail coverts of the male bird (peacock) are remarkable for their great length and the beauty of their metallic colouring; they are displayed to attract the female, which is comparatively sombre in appearance.



COMMON PEACOCK

Peak District, an upland area of Derbyshire, England; a continuation of the Pennine Chain. The district is barren and has a heavy rainfall. Among the greatest elevations are Blakelaw Stones, Kinder Scout (q.v.), Black Tor, Lord's Seat, and Hay Tor.

Peanut, or Earthnut, the seed of a Brazilian yellow-flowered leguminous plant (*Arachis hypogaea*) which is cultivated extensively in South America and W. Africa; the nuts are eaten raw or roasted, and an oil expressed from them is used in cookery and manufacturing butter substitutes.

Pear, a tree of the genus *Pyrus*, growing wild in Europe and Asia. The fruit has a saccharine aromatic juice and a soft liquid pulp. There are more than 200 varieties and France, N. Italy and the U.S.A. carry on the culture. Perry, a kind of cider, is made from pears. The wood is fine grained, yellow in colour and takes a brilliant polish.

Pearl, an iridescent secretion produced within the shells of certain molluscs, mostly bivalves. It is highly valued and classed as a gem. The chief pearl-forming molluscs are the pearl oyster, pearl

mussel, fresh-water mussel, and the giant-conch shell which produces the pink pearl. The chief fisheries are those of Ceylon, the Persian Gulf, Japan, N.E. Borneo, and the coasts of California and the Gulf of Mexico. Pearls have been famed as ornaments from early times. One was sold by Tavernier to the Shah of Persia for £180,000. The shells which contain pearls are split into layers for the sake of the mother-of-pearl. Artificial pearls are produced by placing irritants in the shells of living molluscs.

Pearl Harbour, inlet in the island of Oahu, Hawaii, 7 m. W. of Honolulu, used by the U.S.A. government as an air base and naval station.

Pearson, Sir Cyril Arthur, English newspaper proprietor; born at Wookey, Somerset; son of a clergyman; founder of *Pearson's Weekly*, 1890, and the *Daily Express*, 1900, and active in the early days of the Tariff Reform movement. After becoming blind in 1912, he devoted himself to philanthropic work for the blind, and was responsible for the foundation of "St. Dunstan's," the London institution for the blind in Regent's Park. He was accidentally drowned in his bath. (1866-1921).

Peary, Robert Edwin, American explorer. He made his first Arctic voyage in 1891, and followed it with others in 1893, 1895 and 1898. In 1902 he reached nearer the Pole than any one had before, and after another expedition in 1906 succeeded in 1909 in reaching the North Pole, the first man to achieve the feat. He wrote several books on exploration. (1856-1920).

Peasants' Revolt, a rising in the reign of Richard II. of England, in 1380-1381, in which the peasants of Kent and other counties, led by Wat Tyler (q.v.), marched on London with a view to the redress of their grievances regarding taxation and other matters. After a conference with the King the mob seized the Tower of London, murdered the Archbishop of Canterbury (Simon Sudbury) and others; at a second conference with the King, Tyler was slain by the Lord Mayor of London, Sir William Walworth, and the revolt collapsed soon after.

Peasants' War, an unsuccessful revolt of the peasantry in the S. and W. of Germany against the oppression and cruelty of the nobles and clergy which broke out at different times from 1500 to 1525. It was suppressed after considerable bloodshed.

Peat, a turfy substance consisting of decomposed vegetable matter, the remains of various mosses and marsh plants, used in Ireland and Scotland, where it is abundant, as fuel.

Pecan Tree, a N. American tree (*Carya pecan*) of the family Juglandaceae, a species of hickory, closely related to the walnut; its edible nuts, long popular in the United States, are a growing article of consumption in Great Britain.

Peccary, a pig-like American genus of the family Suidae, with short body and tall, and erect upper tusks. The flesh is edible. Varieties include the collared peccary and the white-lipped peccary.

Pe-Chi-Li, Gulf of, land-locked bay in the N.W. of the Yellow Sea, which receives the waters of the Hwang-he; on opposite tongues of land at the mouth of it stand Port Arthur and Wei-hai-Wei.

Peculiar, an ecclesiastical term parishes, churches or deaneries which by special provision were formerly exempt from the jurisdiction of the diocesan authorities. A "Court of Peculiars" still exists attached to the see of Canterbury in which cases under ecclesiastical law arising in such jurisdictions

are dealt with. The two chief Peculiars still existing are the Deaneries of Westminster and Windsor.

Peculiar People, a religious sect faith-healing, founded at Plumstead, London, in 1838 by John Banyard and J. W. Bridges.

Pediculosis, set up by irritation caused by certain parasitic insects, including the *pediculus capitis* (head louse); *pediculus vestimentorum* (body louse), and *pediculus pubis* (crab louse, which infects the short hairs of the body).

Pedigree, a tabular record of the family, whether of human beings, horses, dogs, bulls, or other selectively bred animals, indicating their relations to each other, and the times and places of their birth, marriage, death, and (in the case of man) burial. Public records of noble families are supervised by the College of Arms; stud-books of horses, dogs, etc., are compiled under the aegis of such bodies as the Jockey Club and the Kennel Club.

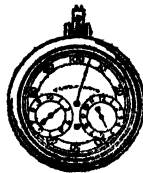
Pediment, in architecture, the triangular space above the entablature at the end of buildings or over porticoes. The pediment is surrounded by a cornice and is often ornamented with sculpture. The term is also used of the triangular finishings over doors and windows.



PEDIMENT

Pedometer, an instrument, resembling a watch in form, carried

in the pocket of a pedestrian to enable him to know what distance he has walked. The mechanism consists of a lever which receives an impulse with every step. The dial is graduated to indicate either distances, or the number of paces taken.



PEDOMETER

Pedro I., emperor of Brazil, second son of John VI. of Portugal; reigned from 1822 to 1831, when he abdicated in favour of his son. (1798-1834).

Pedro II., emperor of Brazil, son of Pedro I., preceding, ascended the throne in 1831; reigned till 1889, when a revolution obliged him to resign and retire to Europe. (1825-1891).

Peebles, a lowland Scottish county, lothian, Selkirk and Dumfries; comprises hilly pastoral land watered by the upper Tweed; Windlestraw, Hartfell, and Broadlaw are the highest of its grassy hills; the only towns are Innerleithen and Peebles (pop. 6,000), county town, engaged in tweed manufacture. Area, 347 sq. m. Pop. 15,000.

Peel, a fishing town and holiday resort on the W. coast of the Isle of Man, 12 m. NW. of Douglas; it is noted for its castle. Pop. 2,500.

Peel, Sir Robert, English statesman, born near Bury, Lancashire, the son of a wealthy cotton-spinner; entered Parliament as a Tory in 1809; was appointed Under-Secretary for the Colonies in 1811, and from 1812 till 1818 was Secretary for Ireland. In 1822 he became Home Secretary, and established the Metropolitan Police Force, the members of which body were then called Pealers or Bobbies. He withdrew from the Government in 1827 over Catholic financial

pation, but later changed his opinions, and introduced the measure which removed the disabilities. He became leader of the Conservative opposition in the Parliament of 1838; was Premier for a few months in 1834, and again in 1841. He carried the measure for repealing the Corn Laws in 1846; retired from office immediately after, and died as the result of a fall from horseback. (1788-1850).

Peelle, George, English dramatist, born in London; author of *Arrangement of Paris*, *Edward I.*, and *David and Bathsheba*, full of passages of beauty. (c. 1558-1597.)

Peel Towers, the name given to the fortresses of the moss-troopers on the Scottish border.

Peer, a member of the British hereditary nobility. All peers of England, Great Britain, or the United Kingdom are Peers of Parliament and have been such from the creation of their titles. Scottish Irish peers, however, elect some from their number to represent them in the House of Lords. No Imperial Peer and no Scotch peer can be a member of the House of Commons. Descent or succession commonly follows general rules, but there are variations, for though mostly limited to male heirs, in the older baronies conferred by writs of summons instead of patent, and in higher Scottish peerages, it is open also to females. The forfeiture of a peerage can only take place through attainder.

Pegasus, in Greek legend, the winged horse, begotten of Poseidon, and sprung from the body of Medusa when Perseus struck off her head. With a stroke of his hoof he broke open the spring of Hippocrene on Mt. Helicon, and mounted on him Bellerophon slew the Chimera; thereafter he ascended to heaven, and became a constellation in the sky.

Pei-ho, a river of North China, 350 m. long; formed by the junction of four other rivers, on the chief of which stands Peking; has a short navigable course south-eastward to the Gulf of Pe-Chi-Li, where it is defended by the forts of Taku.

Peiping. See Peking.

Peipus, Lake, a large lake between Russia and Estonia, 90 m. long and 32 m. at its greatest breadth. It receives the Embach, Kosa, and other rivers and discharges by the Narova R. into the Gulf of Finland. Its fish are marketed in Leningrad.

Pekin, until 1928 the capital of China, on a sandy plain in the basin of the Pei-ho, a walled city made up of the northern or Manchu city and the southern or Chinese. The former contains the Forbidden City, in which were the Imperial palaces. Outside this are the government offices and foreign legations, a great Buddhist monastery, a Roman Catholic cathedral, and Christian mission stations. The Chinese city has many temples, mission stations, schools, and hospitals, but its houses are poor and streets unpaved. Under the name of Cambaluc, it was Kubla Khan's capital, and was the metropolis of the empire from 1211 to 1321. In 1900-1901 it was occupied by European forces sent to relieve the besieged British legation. When the centre of administration was moved to Nanking by the Chinese Government it was renamed Peiping. At present (1938) it is in the hands of the Japanese. A provisional Government set up by them for the administration of the territories in their hands and composed of nominees of Chinese extraction has its centre here and the name has reverted to Peking. Pop. 1,456,000.

Pekinese Dog, a breed of pet dog, descended from the original breed which was found only in the Imperial Palace of Peking. Its principal points comprise a flat skull, flat, broad muzzle,

eyes and nostrils large, forelegs heavy and bowed below the "elbow," body small and lion-shaped, tapering to the waist, ears and legs feathered. The colours are a golden chestnut, as in the Goodwood strain, and varying shades of brown.

Pelagius, or, in Celtic, Morgan, a celebrated Christian heresiarch of the 5th Century, born in Britain or Brittany; denied original sin and the Augustinian doctrine of divine grace, a heresy for which he suffered banishment from Rome in 418. A modification of this theory went under the name of Semi-Pelagianism, which ascribes only the first step in conversion to free-will, and the subsequent sanctification of the soul to God's grace.

Pelargonium, a genus of perennial Geraniaceae, plants of the family Geraniaceae, commonly called geraniums.

Pelagi, a people who are supposed, in prehistoric times to have occupied Greece, the Archipelago, the shores of Asia Minor, and a great part of Italy, and who were supplanted by the Hellenes. They were probably the race responsible for the buildings and other relics of what is called the Mycenaean civilisation.

Pelée, Mount, a volcano in the NW. of the island of Martinique, an eruption of which, in May, 1902, completely destroyed the town of Saint Pierre and its 30,000 inhabitants. A further eruption took place in the following August, when the death roll was about 2,500 and Morne Rouge and other settlements were almost entirely destroyed.

Pelew, or Palau Is., a Pacific group of islands, in the Western Carolines, formerly German, and after the World War mandated to Japan. Area, 175 sq. m. Pop. c. 12,800.

Pelham, Henry, English statesman, younger son of first Baron Pelham; entered the Commons in 1717 as a Whig; Secretary-at-War, 1724; Paymaster of the Forces, 1730. From 1743 till his death, with two days' interval in 1746, was Chancellor of the Exchequer and nominal head of the ministry. (1695-1754).

Pelias, in Greek legend, king of Iolchus, son of Poseidon, was cut to pieces by his own daughters, and thrown by them into a boiling cauldron in the faith of the promise of Medea that he might thereby be restored to them young again. It was he who, to get rid of Jason, sent the latter in quest of the Golden Fleece in the hope that he might perish in the attempt.

Pelican, a genus (*Pelecanus*) of long and large, large-billed birds of the family

Pelecanidae; nine species are found in temperate and tropical parts of the world. They are fish-eaters, and are able to store fish in a pouch of naked skin which hangs from the lower mandible. A legend that the pelican fed its young with blood from its own breast made it in the Middle Ages a symbol of Christ.



DALMATIAN PELICAN

Pelion, highest mountain of a range in the E. of Thessaly, upon which, according to Greek fable, the Titans hoisted up Mount Ossa in order to scale heaven and dethrone Zeus.

Peloponnesian War, a war of thirty years' duration (431-404 B.C.) between Athens and Sparta, which ended in the victory of the latter. This war is the subject of the history of Thucydides.

Peloponnesus, the Southern peninsula of Greece, the ancient name of the Morea, the chief cities of which were Corinth, Argos, and Sparta.

Pelops, in the Greek mythology, the grandson of Zeus and son of Tantalus, who was slain by his father and served up by him at a banquet he gave the gods to test their omniscience. After his shoulder had been eaten, the gods ordered the body to be thrown into a boiling cauldron, from which Pelops was drawn out alive, with the shoulder replaced by one of ivory.

Pelvis, the bony girdle in vertebrate animals, including man, which forms the arch giving support to the lower or hinder limbs. It consists of four bones, the sacrum, coccyx, and the two haunch-bones, and in the cavity are several of the abdominal viscera and organs relating to reproduction and the urinary functions.

Pemba, an island off the E. coast of Africa, 42 m. long and 12 m. broad, lying some 25 m. N.E. of Zanzibar, to which Protectorate it belongs. Pop. 97,700.

Pembrokeshire, westernmost county of Wales; is washed by St. George's Channel except on the E. where it borders on Cardigan and Carmarthen. It is a county of low hills, with much indented coast-line. Two-thirds of the soil is under pasture; coal, iron, lead, and slate are found. St. David's is a cathedral city; the county town is Pembrokeshire on Milford Haven, and near it is the fortified dockyard and arsenal of Pembrokeshire Dock. Area, 614 sq. m. Pop. 37,200.

Pemmican, a food for long voyages, particularly in Arctic expedition, consisting of lean meat or beef without fat, dried, pounded, and pressed into cakes, as originally prepared by the Indians of N. America.

Penal Servitude, a form of imprisonment which took the place of transportation after the abolition of the latter in 1857. The shortest term for which it may be awarded is three years, the longest "life," which in effect means generally twenty years. Courts of summary jurisdiction cannot pass sentences of penal servitude. Conditional release on "ticket of leave" is generally granted after a considerable portion, usually about three-quarters, of the sentence has been served.

Penance, in the Roman Catholic Church a sacrament consisting of the three elements of contrition for sin, its confession, and its absolution by a duly authorised priest.

Penang, or Prince of Wales Island, a small fertile island near the northern opening of the Straits of Malacca, one of the British Straits Settlements; administratively it includes a small strip of the mainland known as Province Wellesley. Rugs, spices, and tobacco are exported. The capital is Georgetown, on the island. Area (including Province Wellesley), 400 sq. m. Pop. 374,000, over half Chinese.

Penarth, seaport of Glamorgan, W. Wales, 4 m. from Cardiff. There are docks, and it has some repute as a pleasure resort. Pop. 17,700.

Penates, the name given by the Romans to their household deities, individually and unitedly, in honour of whom a fire, in charge of the vestal virgins, was kept permanently burning.

Penda, Anglo-Saxon King of Mercia of the 7th Century, who headed a reactionary movement of heathenism against the domination of Christianity in England, but in spite of his victory over the Christian king at Maserfeld in 633, was himself killed in battle thirteen years later. (c. 577-655).

Pendulum, a rigid body so placed that it has a free horizontal swing. The time of swing of a pendulum depends solely on its length, not on the weight of the bob or the size of the swing.

Penge, urban district and parish in the county of Kent, England, a residential suburb of London. The Crystal Palace was situated in the district. Area, 770 acres. Pop. 25,800.

Penguin, a family of birds comprising rocks chiefly in Antarctic waters, though their range does extend as far N. as the Galapagos Is. in the Tropics. Their wings, useless for flying, are specialized for swimming. They are grey in colour, with white underparts; the toes are webbed, and the birds assume an erect attitude on land. They congregate in colonies. The most familiar species are the Jackass-penguins, the Rockhoppers, the King and the Emperor Penguins.



KING PENGUIN

Peninsula, almost an island, a portion of land almost surrounded by water and connected with the mainland by a narrow neck, called the isthmus, e.g., the Iberian Peninsula (Spain and Portugal), the Peloponnesus or Morea (Greece), Nova Scotia, etc.

Peninsular War, a war carried on Portugal from 1807 to 1814, between the French on the one hand and the Spanish, Portuguese, and British, chiefly under Wellington, on the other. It was ended by the victory of the latter over the former at Toulouse, just after Napoleon's abdication.

Penitential Psalms, a name given early times to Psalms vi., xxii., xxxviii., li., ciii., cxlvi., cxlii., which are especially expressive of sorrow for sin.

Penmaenmawr, urban district and seaside resort on the N. coast of Caernarvonshire, Wales, 4 m. SW. of Conway. The height of the same name is to the W. of the town. Pop. 4,000.

Penn, William, English Quaker leader and founder of Pennsylvania, the son of an admiral, born in London. He spent several periods of imprisonment writing books in defence of religious liberty, then travelled in Holland and Germany propagating his views. His father's death brought him a fortune and a claim upon the Crown which he commuted for a grant of land in North America, where he founded (1682) the colony of Pennsylvania as a refuge for persecuted religionists. After two years he returned to England, where his friendship with James II. brought many advantages to the Quakers. A second visit to his colony (1689-1701) gave it much useful legislation. The closing years of his life were clouded by mental decay. (1644-1718).

Pennant, a long, narrow flag, used for cluding signalling at sea, as an indication of the presence on a ship of an admiral or other high officer, and so on. The fly, or horizontal spread, may be from twice to four or five times as great as the hoist, or upright measurement.

Pennine Chain, a mountainous area extending from the Tyne Valley in W. Northumberland to Mid-Derbyshire and N. Staffordshire. It consists chiefly of uplands. The main peaks are Cross Fell, Wharfedale, Ingleboro, Pen-y-gant, and the Peak. Many rivers drain from its slopes to the E. and W. coasts.

Pennsylvania, except for New York, the most populous of the United States, lies N. of Mason and Dixon's Line, in New England, S. of New York; the country is traversed by the Blue Mts. and the Alleghany ranges, with many fertile valleys between the chains, extensive forests, and much picturesque scenery. The Allegheny R. is in the W. and the two branches of the Susquehanna in the centre water the state. It produces iron, petroleum, anthracite and bituminous coal; manufactures metal and food products, textiles, and chemicals.

Founded by the Swedes, it passed to English settlers in 1684; the first charter was granted to William Penn in 1681. There are several universities, including those of Pennsylvania (at Philadelphia) and Pittsburgh. The mining population includes many Irish, Hungarian, and Italian immigrants; of the agriculturists many are of Dutch descent. Harrisburg is the capital; the metropolis is Philadelphia, the second largest city in the country; while Pittsburgh, Scranton, Erie and Reading are among the many large towns. Area, 45,300 sq. m. Pop. 9,631,000.

Penny, originally a silver coin, weighed in the 7th Century 1/16th of a Saxon pound, but decreased in weight till in Elizabeth's time it was 1/4 of an ounce troy. It was at first indented with a cross so as to be broken for halfpennies and farthings, but silver coins of these denominations were coined by Edward I. Edward VI. stopped the farthings, and the halfpence were stopped in the Commonwealth. Copper pennies were first minted in 1672. The present size of the coin dates from 1860.

Pennyroyal (*Mentha Pulegium*), a species of mint formerly in considerable repute as a medicine, but now much neglected. It grows on damp moors and the flowers are purple.



PENNY-ROYAL

Pennywort, a name given to several plants with round or pellate leaves found in marshy places, especially to *Cotyledon umbilicus*, a succulent British plant bearing ornate yellowish-green flowers, and *Hydrocotyle vulgaris* or Marsh Pennywort.

Penrhyn, a district of Caernarvonshire, Wales, famous for its slate quarries.

Penrith, market town of Cumberland, England, and tourist centre for the English lakes. Brewing, ironfounding, and timber-sawing are its industries. Pop. 9,100.

Penryn, market town of Cornwall, England, at the head of Falmouth harbour. It has a considerable fishing industry, and ships the Penryn granite quarried near. Pop. 3,900.

Pensions, annual grants of money, usually in consideration of past services. In Great Britain, besides Old Age Pensions (q.v.), pensions are paid by the state to judges, civil servants, ex-Ministers, employees of local authorities, teachers, and others on retirement, and to members of the Crown forces; and certain special allowances, known as Civil List Pensions, are made to persons distinguished in art, science and literature, or their dependents in need of them. In 1916 the Ministry of Pensions was formed to take over the entire control of Navy, Army and Air Force wound and disability pensions, service pensions continuing in the hands of the Admiralty and War Office. State Pension schemes for the general public include non-contributory Old Age Pensions

and National Health Insurance Act Pensions, e.g., Widows and Orphans' Pensions. Pensions for the blind are payable at the age of 50, at the rate of 10s. weekly.

Pentacle, a 5-pointed star; supposed in the Middle Ages to have magical properties, it was employed by astrologers and alchemists; surmounted by a hammer and sickle, it is the badge of the modern Communist Party.

Pentateuch, the name given to the first five books of the Bible; modern criticism has shown that they are closely connected, and in their present form are made up of several documents of various dates and by various writers; the different strains can be separated by critical examination of their language and of such points as the varying names used for God.

Pentecost (i.e., 50th), a great feast of the Jews, so called as held on the 50th day after the 2nd of the Passover. It is called also the Feast of Weeks. The name is also applied to the Christian feast (Whitsunday) commemorating the descent of the Holy Ghost on the Apostles of Jesus.

Pentland Firth, is the strait between the Orkneys and the Scottish mainland, connecting the North Sea with the Atlantic, 12 m. long by 6 m. broad, swept by a rapid current very dangerous to navigation.

Pentland Hills, range of hills in Midlothian, Peeblesshire and Lanarkshire, Scotland, 16 m. long. Scald Law (1,898 ft.) and Carnethy (1,890 ft.) are the highest points.

Pentstemon, or **Beard Tongue**, a genus of American Scrophulariaceous plants. Many species, with blue, purple, lilac, rose-coloured or yellow flowers, are cultivated in Britain as border or rockery plants.

Penumbra, the name given to the partial shadow on the rim of the total shadow of an eclipse, also to the margin of the light and shade of a picture.

Penza, town of European Russia, in the Middle Volga Area, at the confluence of the Sura and Penza. Paper, leather, matches and soap are made. Pop. 119,000.

Penzance, town of Cornwall, England, on the rocky west shore of Mount's Bay, with a fine harbour and docks, and mackerel and pilchard fishing industries. Its mild climate makes it a favourite health resort. Pop. 19,800.

People's Palace, Mile End Road, London, an institution for the recreation and instruction of the East-end population, opened by Queen Victoria in May, 1887, owing its origin to the impulse given by Sir W. Besant's *All Sorts and Conditions of Men*. In it are a library, art galleries, concert and reading rooms, baths, gymnasium, etc. It was largely rebuilt, after a fire, in 1936.

Peoria, city of Illinois, U.S.A., on Illinois R. Glucose, agricultural implements, motor cars, starch, etc., are its manufactures. Pop. 105,000.

Pépin (called the Short), the son of Charles Martel, king of the Franks from 751, first of the Carolingians; a strong supporter of the Church, his gift of the Exarchate of Ravenna to Pope Stephen III. laid the foundation of the temporal rule of the Papacy. He conquered the Loire Valley for France, and was the father of Charlemagne. (714-768).

Pepper, the most important of the spices, is derived from a creeping vine (*Piper nigrum*) which is a native of the moist low-country forests of Ceylon and S. India and has also been introduced into Malaya, Siam, the Dutch East Indies and Borneo. Both "black" and "white" pepper are obtained from the same plant.

Peppercorn Rent, a nominal rent, in theory involving the annual payment from lessee to lessor of one peppercorn; it was used in connection with long leases as a device for giving a leasehold the practical effect of a freehold.

Peppermint (*Mentha piperita*), a mint with oblong, lanceolate leaves, probably a garden form of *Mentha aquatica*. An essential oil is distilled from the fresh flowers and used as a carminative. This oil is produced in British East Africa and the Seychelles.

Pepsin, an essential constituent of the gastric juice; for medicinal purposes it is extracted from the stomach of the calf, sheep, and pig, and used to supply any defect of it in the stomach of a patient. Its function is to render proteins soluble, and so digestible.

Pepys, Samuel, English civil servant and diarist; held a clerkship in the Admiralty, and finally its secretaryship; kept a diary of events from 1660 to 1669, which was published in part in 1825, and is of interest for the insight it gives into the manners of the time. Pepys left his library to Magdalene College, Cambridge, where it formed the foundation of the Pepysian Library. The famous diary was written in cypher which was first decoded in 1825. He was also the author of *Memories relating to the State of the Navy* (1690). (1633-1703).

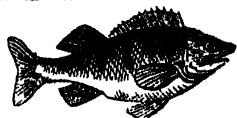


SAMUEL PEPPYS

Perak, one of the Federated Malay States, on the NW. coast of the Malay Peninsula. It is traversed by the R. Perak, flowing between 2 mountain ranges. Tin is the capital. Tin, sugar and coffee are produced. Area, 8,000 sq. m. Pop. 880,000.

Perceval, born in London; trained for the bar; entered Parliament as a supporter of Pitt, and held a succession of posts under different administrations, attaining the Premiership, which he held from 1809 to 1812, on May 11 of which year he was shot dead by a madman in the lobby of the House. (1762-1812).

Perch, a carnivorous river fish, *Perca fluviatilis*, greenish-brown in tint, becoming golden on the sides and white on the belly, with broad vertical dark bands passing down the sides. The average weight is about 5 lb. They are English representatives of the Perch (Percidae) family of fishes found in Europe, Asia and N. America, the majority in N. America where they are small fish known as "Darters." The Sea Perches of which there are many species, belong to the family Serranidae. They are carnivorous and found in tropical and sub-tropical seas.



PERCH

Percussion Cap, a small cylinder filled with fulminate of mercury and sometimes other explosive agents inserted in cartridges for detonating the bullet.

Percy, Thomas, English prelate and anti-quary, born at Bridgnorth; devoted himself to the collection of old ballads, and published, in 1765, *Reliques of Ancient English Poetry*; became bishop of Dromore in 1782; was blind for some years before he died. (1729-1811).

Percy Family, the descendants of William de Percy, a follower of William the Conqueror; William de Percy (c. 1182-1245) was one of the barons who opposed King John; his grandson, Henry (c. 1272-1315) settled in Northumberland and fought in the Battle of Neville's Cross, where he captured King David of Scotland; his grandson, Henry (d. 1408) was created 1st Earl of Northumberland, and with his son, Henry Hotspur, defeated the Scots at the Battle of Halidon Hill, but the latter was killed in rebellion against Henry IV. at the battle of Shrewsbury (1403); the 2nd and 3rd Earls were slain in battle at St. Albans and Towton respectively; after a forfeiture and restoration of the title the 7th Earl, Thomas, was executed in 1572 for supporting Mary, Queen of Scots; the 11th Earl died in 1870, leaving no male children; his granddaughter married Sir Hugh Smithson, who received the Earldom and adopted the name Percy, being created 1st Duke of Northumberland in 1786.

Peregrine Falcon

typical representative (*Falco peregrinus*) of the bird family Falconidae, a powerful bird of prey used formerly for the sport of falconry (q.v.); it is blue-black above, and white, striped with black, below.



PEREGRINE FALCON

Père-Lachaise Cemetery

a municipal cemetery in Paris, in which lie buried many famous Frenchmen and some foreigners, including Oscar Wilde. It was named after the Jesuit priest, François de Lachaise (1624-1709), founder of the College of Clermont.

Perennial, a plant that flowers year in its roots through the non-flowering season. A few plants that are annuals in England become perennials in hot climates.

Perfumes, aromatic liquids, still in the sources, generally plants, though there are a few animal perfumes, such as musk and ambergris; the centre of the European industry is Grasse (French Riviera). Most of the principal perfumes can now be imitated by synthetic chemical processes.

Pergamos, or Pergamum, an ancient city of Mysia, in Asia Minor; eventually the centre of a province of the name, which was bequeathed to Rome by its king, Attalus III. in 133 B.C. The city possessed a famous library, and parchment is said to have been invented there.

Pergola, the name of a series of climbing plants such as roses, creepers, jasmine, etc.

Perianth, the portion of a flower, usually divided into calyx and corolla, which protects the pistil and stamens from harm; the name perianth is generally used when the calyx and corolla are indistinguishable.

Pericardium, an almost conical membrane, braneous sac, enclosing the heart. It consists of two layers—one dense and tough in structure, the other an inner serous one reflected on the surface of the viscera. Pericarditis, or inflammation of the pericardium, is a frequent complication in rheumatic fever, chills, and some other diseases, and frequently supervenes upon sepsis in any part of the body.

Pericles, great Greek statesman, born in Athens; entered public life 467 B.C. as a democrat, and sought the unification of Greece in one confederacy, but was defeated by the jealousy of Sparta. In Athens he established himself as absolute ruler with the consent of the citizens, reforming the laws, adorning the city, and encouraging literature and the arts. Two years before he died came the outbreak of the Peloponnesian War (q.v.). He gathered around him nearly all the great artists and writers of his time to adorn his beloved city; he died B.C. 429 of a lingering fever.



PERICLES

Peridot, a pale, greenish-yellow, kind of chrysolite, used in jewellery; also a yellow variety of tourmaline found in Ceylon.

Perigee, the point in the orbit of the moon or a planet at which it most closely approaches the earth.

Périgueux, chief town of the dept. of Dordogne, France, on the Isle, 95 m. by rail N.E. of Bordeaux; has a remarkable cathedral resembling St. Mark's, Venice; iron and woollens are the industries; truffles and truffle pies are exported. Pop. 33,000.

Perihelion, the point in the orbit of a planet or comet at which it is nearest the sun.

Perim, a small barren, crescent-shaped island in the Strait of Babel-Mandeb, at the mouth of the Red Sea, part of the British colony of Aden, and used as a coaling-station.

Periodic Table, an arrangement of elements in order of atomic weight. Mendeleeff (q.v.) found that in such an arrangement similar elements fell in columns or periods under one another. The table showed clearly where an element was missing and enabled him to predict the properties of the unknown elements. Later work showed that some of the anomalies of the table disappeared if atomic numbers were substituted for atomic weights, as suggested by H. Moseley (q.v.).

Periosteum, a fibrous membrane of the bones is covered. It is subject to periostitis or inflammation, acute or chronic, the latter often arthritic or tuberculous in origin.

Peripatetic Philosophy, the name given to the philosophy of Aristotle, from his habit of walking about with his disciples in the shady walks of the Lyceum.

Periscope, an apparatus for making observations from a position where the observer is concealed. It is based on the use of two reflecting mirrors in a tube with parallel surfaces at an angle to the tube's axis. Such instruments were much developed during the World War, for use in trenches and submarines.

Peritoneum, a membrane lining the surface of the organs contained in it. It forms a closed sac in the male, but in the female communicates with the Fallopian tubes. Peritonitis, or inflammation of the peritoneum, may be acute or chronic, or either localised or generally diffused. The "acute" form is due to a micro-organism entering the cavity through wounds from the

outside or from the abdominal organs; or any condition leading to perforation of the stomach, bladder or bowels may produce it; it may supervene after childbirth, and in such an event is often fatal.

Periwinkle, an edible gastropod, shell-fish resembling a small snail, of the genus *Littorina*. They are to be found on most coasts of the world, and, in England, are generally known as "winkles."

Periwinkle, the popular name of a genus (*Vinca*) of flowering plants of the natural order Apocynaceae, indigenous to Southern Europe. They are trailing plants, with deep-coloured evergreen leaves and blue flowers, varying to white in the larger varieties. Familiar garden species are *Vinca major* (found wild in Britain though it is in reality a naturalized escape) and *Vinca minor*.



PERIWINKLE
(*Vinca minor*)

Perjury, the misdemeanour of false swearing in a judicial proceeding before some competent tribunal. To constitute perjury, the swearing must be on some point which is material to the issue or cause before the court. It is punishable in England with penal servitude up to seven years or imprisonment for two years with or without hard labour. Subornation of perjury, or procuring another to commit perjury, is punished as perjury. Giving false evidence before an arbitrator, or swearing a false affidavit before a commissioner for oaths are statutory perjuries. The term false swearing (e.g., making a false affirmation to procure a marriage licence) applies to false oaths not taken in the course of judicial proceedings.

Perkin, Sir William Henry, British chemist who first produced the aniline dyes and laid the foundations of the modern coal-tar dye industry. (1838-1907).

Pern, district of the U.S.S.R., producing iron, salt, coal, marble, etc. Area 127,500 sq. m. Pop. 4,000,000. Its capital, Pern, stands on the R. Kama. Is a university town, and its industries include tanning, distilling, copper founding, and the making of soap, candles, matches, rope and pottery. Pop. 170,500.

Permalloy, an alloy of about 80 per cent. iron, with remarkable magnetic properties, used for telephone apparatus.

Pernmanganates, compounds of permanganic acid with a base. Permanganic acid or hydrogen-permanganate is obtained from magnesium by decomposing its barium salt in sulphuric acid. Permanganate of potash is much used as a mild antiseptic and disinfectant.

Permian, the geological strata forming the top of the palaeozoic deposits, appearing in England in the narrow band of magnesian limestone which stretches from Sunderland to near Nottingham, and in the red sandstones of Cumberland, S. Devon, and elsewhere. Permian times were conspicuous for great volcanic activity and mountain-building movements, as well as the development of reptilian forms of life.

Permitted Hours, those during which, in England and Wales, intoxicants may be sold. By the Licensing Act, 1921, these are: outside the Metropolis, 8 hours each weekday (which licensing justices may extend to 8½), beginning not later than 11 a.m. and ending not later than 10 p.m., with a break of at least two hours after noon; in the Metropolis, 8 hours on each weekday, between 11.30 a.m. and either 10, 10.30 or 11 p.m., as the local justices decide. On Sundays, Christmas Day

and Good Friday, the limit is everywhere 5 hours—2 hours between noon and 3 p.m., and 3 hours between 6 and 10 p.m. In Wales and Monmouthshire Sunday opening is forbidden.

Permutations, in mathematics, the arranging the members of a group when a certain number only are to be selected and the order of selection counts; and the mathematical processes and formula by which the answer is reached. The formula used is nP_r , which indicates the number of arrangements of n things taken r at a time. This is elaborated into the form $n \times (n-1) \times (n-2) \dots \times (n-r+1)$ where n represents the number of things and r the number which are to be selected. Thus if there are n things, 2 only are to be selected, and the order of selection counts, the answer is $n \times (n-1)$ which equals $n \times (n-2+1)$, which equals $n \times (n-1)$. See also **Combinatorial Analysis**.

Permutit Process, a process for softening of hard water by means of zeolite minerals.

Pernambuco, or Recife, a seaport in N. Brazil, on a peninsula and near-by island; manufactures cotton, rum and tobacco, and has shipbuilding yards. It is the capital of a state of the name, producing coffee, sugar and cotton. Area (state) 49,550 sq. m. Pop. (state) 2,950,000; (town) 472,750.

Peronne, town of France in dept. Somme, on the R. Somme, 35 m. E. of Amiens. It fell to the Germans in 1914 and 1918, the town being practically destroyed. It was finally captured by the Australians. Pop. 4,500.

Perpendicular, the last period of architecture in England. It originated at the close of the 14th and continued till the end of the 16th Century. Characterized by profusion and minuteness of ornamental detail, its name is derived from the perpendicular lines of the mullions of the windows and the divisions of ornamental panel work.



PERPENDICULAR STYLE WINDOW

Perpetual Motion,

the continuous and uninterrupted motion of a body apart from any new supply of external energy. Although many claims have been made that perpetual motion machines have been invented, none are verifiable. The solution of the problem of perpetual motion requiring as it would an exception to the law of conservation of energy or perfect frictionlessness, is indeed impossible.

Perpignan, a town in the French Pyrenees-Orientales; has a cathedral of the 14th Century and a bourse in Moorish-Gothic, and manufactures wine and brandy. Pop. 72,000.

Perrault, Charles, French man of letters, born in Paris; distinguished as the author of inimitable fairy tales, which have immortalized his name, such as *Puss in Boots*, *Cinderella*, *Bluebeard*, etc., as also *Parallèle des Anciens et des Modernes*, in which his aim was to show that the ancients were inferior in everything to the moderns. (1628-1703).

Persephone, in the Greek mythology, the daughter of Zeus and Demeter, the Proserpine of the Romans.

Persepolis, the capital of the ancient Persian empire, destroyed in 331 B.C. by Alexander the Great. Its ruins, which stand 25 m. from the NW. shores of Lake Urmia, still remain as relics of its former glory.

Perseus, in Greek mythology, the son of Zeus and Danaë, who with the aid of Hermes and Athena cut off the head of the Gorgon Medusa (q.v.). It was foretold by an oracle that he should cause the death of his grandfather Acrisius.

Pershing, John Joseph, American general who, after serving in the Spanish war in 1898, was in charge of the Philippine expedition the following year. He was a military attaché in Japan, was in Mexico in 1916, and in 1917 commanded the American troops in France till the end of the World War. (1860-).

Pershore, market town of Worcester-shire, England, on the Avon, 9 m. S.E. of Worcester, with considerable fruit trade and an ancient abbey church. Pop. 3,500.

Persia. See Iran.

Persian Gulf, a great inland sea lying between Arabia and Iran, and entered from the Indian Ocean through the Gulf of Oman; is 650 m. long and from 50 to 250 m. broad. The Arabian coast is low and sandy, the Iranian high. The chief islands are in the W., where also is the Great Pearl Bank. The only river of importance received is the Shatt-el-Arab which brings down the waters of the Euphrates and the Tigris. There are important pearl fisheries.

Persian Wars, three wars between Greece, first in 490 B.C. under Darius, defeated by the Athenians under Miltiades at Marathon; the second, 480 B.C., under Xerxes, opposed by Leonidas and his 300 Spartans at Thermopylae, and defeated by the Athenians under Themistocles at Salamis; and the third, in 479 B.C., under Xerxes, defeated by the Greeks under the Spartan Pausanias at Platæa.

Persimmon, or **Date-plum**, an East Indian fruit tree, now grown in Europe and America, of the genus *Diospyros*, bearing edible plum-like fruits and a useful timber. The tree grows to 60 ft. in height, has tapering shining leaves and yellow flowers; the fruit is the size of a small orange.



Personality, or **Personal Property**, in English law, covers all that is not "real" property; roughly speaking every kind of property except lands held in fee simple, fee tail, or as life estates. Since the Law of Property Act, 1925, the legal distinction between personality and real property has been to all intents and purposes abolished, the rules of succession being the same for both.

Personation, the offence of falsely representing oneself to be another person entitled to vote at an election, or the act of voting, or attempting to vote, in the name of another, otherwise than by permitted proxy. The punishment is imprisonment with or without hard labour for up to 2 years.

Perspective, the art of representing solid objects on a flat surface so that when they are viewed the beholder is affected in the same way as he would be by viewing the objects themselves from a given point. Linear perspective deals with the apparent diminution in size of objects as they recede from the beholder, as is seen in looking along a stretch of railway line. Aerial perspective is the art of giving due diminution to the strength of light, shade, and colours of objects, according to their distance and other circumstances.

Perspiration, or **Sweat**, a fluid excreted by the microscopic sweat-glands, situated in the skin and scattered over the body, especially in the palms of the hand and the soles of the feet. It consists of 99 per cent. water, the remainder being composed of salts (sodium chloride and sodium phosphate) with a small quantity of urea. It is controlled partly by minute muscles and partly by the nervous system. Its function is to regulate the heat of the body, especially when its temperature rises as a result of external heat, of muscular exercise, or of some disease. "Insensible perspiration," however, amounts to about 1 pint a day. Disorders of the sweat glands produce either diminished or excessive perspiration. Excessive perspiration of the feet is known as bromidrosis. The disagreeable odour sometimes associated with perspiration is a result of bacterial decomposition.

Perth, the county town of Perthshire, Scotland, of which before the 15th Century it was the capital; on the Tay, 22 m. W. of Dundee; is a beautifully situated town, with fine buildings, the only old one being the restored St. John's Church. Its industries are dyeing and ink-making. At Scone, 2 m. distant, the kings of Scotland were crowned; and the murder of James I., the Gowrie conspiracy, and the battle of Tippermuir are among its historical associations. Pop. 31,800.

Perth, the capital of West Australia, on the Swan R.; has many fine buildings, including Anglican and Roman Catholic cathedrals, a university, and an important observatory. Pop. (including its port, Fremantle) 212,000.

Perth, **Earl of**, British diplomat; entered the Foreign Office, 1900; was first Secretary-General of the League of Nations whose original staff he organised; resigned 1932, and became British Ambassador to Italy, 1933. Succeeded his half-brother as Earl, 1936. (1876-).

Perthshire, county of central Scotland; noted for its beautiful scenery, especially in the mountainous N. and W., with their many rivers and lakes; the Trossachs and Loch Katrine are world-famed. In the E. is extensive woodland and the Carse of Gowrie, one of the most fertile of Scottish plains. Ben Lawers is the highest mountain, Loch Tay the largest lake. There are Roman and Celtic antiquities; the county is largely resorted to for shooting. County town, Perth. Area, 2,493 sq. m. Pop. 120,800.

Perturbations, in astronomy, irregular deviations in the movement of a heavenly body, due chiefly to the neighbourhood of another planet.

Peru, republic in the W. of South America, lies between Brazil and Bolivia and the Pacific, with Ecuador on the N. and Chile on the S. It consists of a seaboard plain, intersected by rich river courses, in which sugar, cotton and coffee are grown, with the mountainous Andes country and part of the Upper Amazon basin behind. Lake Titicaca is the largest in S. America. The chief articles of export are cotton, copper, petroleum, sugar, and wool. Lima, the capital, is 3 m. inland from its port Callao; has an old cathedral, and is the chief centre of commerce. The government is republican; over three-quarters of the population are Indians or half-breeds.

From the 12th to the 16th Centuries the Incas enjoyed a high state of civilisation and an extensive empire, attaining great skill in the industries and arts. The Spanish conqueror Pizarro, landing in 1532, overthrew the empire; after three centuries of oppression Peru threw off the Spanish yoke in 1821. The

history of the republic has been one of continual restlessness, and a war with Chile, 1879-1884, ended in complete disaster. Area, 482,000 sq. m. Pop. (est.) 6,160,000.

Perugia, Italian city on the right bank of the Tiber, 127 m. N. of Rome, with a cathedral of the 15th Century, university, observatory and library, is rich in art treasures and antiquarian remains. It was the centre of the Umbrian school of painting. Woollens and silks are produced. Pop. 82,500.

Perugino, his proper name Pietro Vannucci, Italian painter, born near Perugia; studied with Leonardo da Vinci at Florence; was one of the teachers of Raphael, painted religious subjects, did frescoes for churches that have nearly all perished, a "Christ giving the Keys to Peter" being the best extant. There are five paintings by him in the National Gallery, London. (1446-1524).

Peruvian Bark,

or Jesuit's Bark, an old name for one of the many different kinds of cinchona (q.v.), and so named from its being imported from Peru.

Pescadores,

or Bokoto, group of small Japanese islands, between Formosa and China. Millet, rice, etc., are grown, and there are important fisheries. Area about 60 sq. m. Pop. c. 70,000.

Peseta, a Spanish silver coin, of the approximate value at par of 9d., containing 100 centesimos. The exchange value (1938) is about 3d.

Peshawar, capital of the NW. frontier Province, British India, 10 m. from the entrance of the Khyber Pass, on the Kabul R.; a military station of first importance. Pop. 122,000.

Peso, name of the monetary unit of several Latin American countries, among them Argentina (par value, 1s. 8½d.; 1938 exchange value, 1s. 0½d.); Chile (par value 6d.; 1938 exchange value, 2d.); Colombia (par value 4s.); Cuba (par value 4s. 1d.); Mexico (par value 2s. 0½d.); Paraguay (par value 4s.); Uruguay (par value 4s. 3d.; 1938 exchange value, 1s. 8d.) and the Philippine Islands (par value, 2s. 0½d.; 1938 exchange value 2s.). It is usually divided into 100 centavos.

Pessimism, in philosophy the teaching that the universe is fundamentally evil, and that human life is rather a misfortune than a good. Traces of it are found in the Old Testament, especially in the Book of Ecclesiastes; and it is one of the mainprings of much Indian religious thought, reaching its highest expression in Hinayana Buddhism. In modern times it was taught by several German philosophers, notably Schopenhauer and Hartmann.

Pétain, Henri Philippe, French general. Joining the army in 1878, he was in charge of the 4th Brigade at the start of the World War; in September, 1915, he commanded the 33rd Corps, and was prominent in the Champagne offensive; he led the defence of Verdun in February, 1916, and in 1917 succeeded Nivelle in command of the armies of the north. In 1918, when Foch took command of all the Allied troops, Pétain was made general of France and commander-in-chief of the French armies, and headed the troops in Morocco in 1925-1926. (1858-).

Petard, a cone-shaped explosive machine, chine for bursting open gates, barriers, etc., made of iron and filled with powder and ball; in use in the 16th Century. It was fired by a fuse.



PERUVIAN BARK

Petchora, the largest river in northern Russia, rises in the Ural Mts., and flows N., W. and N. to enter the Arctic Ocean by a large, island-studded estuary, after a course of 1,000 m.

Peter III., Czar of Russia for a few months in 1762; a grandson of Peter the Great. He was murdered as the result of a plot headed by his wife Catherine, who succeeded him. (1729-1762).

Peter I., first King of Yugoslavia, born at Belgrade; fought for France in the War of 1870; led the North Bosnian rising, 1874-1876; and was placed on the Serbian throne after the assassination of King Alexander Obrenovich in 1903; became ruler of Yugoslavia on its formation in 1918. (1844-1921).

Peter, St., originally called Simon, was a fisherman on the Sea of Galilee; one of the first called by Christ to become a disciple. He was the principal figure in the history of the early Christian church, but was soon eclipsed by Paul. Tradition has little to tell of him except that he finished his career by martyrdom, being crucified upside down in the city of Rome. He is represented in Christian art holding the keys, and a sword in symbol of his martyrdom. The two epistles under his name in the New Testament are of disputed authorship; it is now generally agreed that the second, at any rate, is not his. Feast, June 29.

Peterborough, city in Northamptonshire, on the edge of the Fen country, 76 m. N. of London; has an old town hall, manufactures of farm implements, and a trade in malt and coal; its cathedral is one of the finest in Britain, of varied architecture, and was restored in 1890. Pop. 46,000. The area surrounding the city, known as the Soke of Peterborough, was separated from Northamptonshire in 1838 to form an administrative county by itself. Area, 83 sq. m. Pop. 51,850.

Peterborough, manufacturing town of Ontario, Canada, 70 m. NE. of Toronto. Lumbering, flour milling, the making of canoes, agricultural implements, furniture, machinery, etc., are among its industries. Pop. 22,300.

Peterhead, a seaport on the E. coast of Aberdeenshire, Scotland, 30 m. NE. of Aberdeen; built irregularly of reddish granite; is the seat of a convict prison; the chief industry is herring-fishing. Pop. 12,600.

Peterhof, a town on the Gulf of Finland, 18 m. W. of Leningrad, with a palace of the Czar built in 1711 by Peter the Great. Pop. c. 9,000.

Peterloo, Massacre of, name given to a gathering in 1819 of workers in St. Peter's Field, Manchester, to demand Parliamentary reform. It was dispersed by the military at the sacrifice of 13 lives and the wounding of 600 people, a proceeding which excited widespread indignation.

Peter's, St., church on the Vatican hill most public Papal functions; built over the alleged tomb of St. Peter, and on the site of the basilica erected by Constantine and Helena in 306. The present building was begun in 1450, and finally consecrated by Urban XIII. in 1626. It is the largest and grandest church in Christendom, covers an area of over 26,000 sq. yds., the interior of it in length being 206 yds., the transept 150 yds., the nave 150, and the dome 465. It contains 30 altars, and is adorned with numerous statues and monuments.

Peter's Pence, an annual tribute of household in England to support the chair of St. Peter at Rome, which continued more as

less to be levied from the end of the 8th Century till the days of Elizabeth, when it ceased. The name is still applied to the voluntary contributions collected from Roman Catholics in England and elsewhere for the support of the Holy See.

Peter the Great, Emperor of Russia, son of the Czar Alexis, born in Moscow; succeeded to the throne as part ruler in 1682, and as sole ruler in 1689; organized a Europeanized army, and later a navy, with the help of Western artificers. From 1697 to 1698 he visited the countries on the Baltic and England, working as a shipwright in the Dutch yards, and finally taking back with him an army of mechanics.



PETER THE GREAT

On his return he vigorously reformed the Russian press, schools, and church, introduced European manners and literature, and encouraged foreign trade. In 1700 he began a long contest with Sweden, marked first by many defeats, notably that of Narva, then the seizure of Ingria, and the founding of the new capital, St. Petersburg, 1703, the victory of Pultowa, 1712, seizure of the Baltic provinces and part of Finland, 1713, and finally by the peace of 1721, which ceded the conquered territories to Russia. In 1722 war with Persia secured him three Caspian provinces. His son Alexis was put to death for opposing his reforms. (1672-1725).

Peter the Hermit, a monk, born in Amiens, whose preaching kindled the enthusiasm in Europe which led to the first Crusade, in which he himself took part. The first detachments were defeated before reaching Palestine, the fifth army suffered disastrously before Antioch. He afterwards founded a monastery near Liège, where he died. (1050-1115).

Petiole, the leaf-stalk of a plant, the blade. Generally half cylindrical, often channelled above; in some monocotyledons it is cylindrical, and in others it is a sheath.

Petition, a request for the redress of a grievance. The right to petition Parliament has been unquestioned since the expulsion of the Stuarts; the petition may be addressed to either Lords or Commons, and must conform with the regulations of the House addressed. Separate sheets of signatures may be attached, but at least one signature must be present on the sheet containing the actual petition. An election petition against a member's return in the case of an improperly conducted election is addressed to two judges of the King's Bench division.

Petition of Right, a petition presented by Charles I., by the Commons in 1628, seeking redress for certain grievances, including taxation or levying of money without consent of Parliament, imprisonment without cause shown, billeting of troops and recourse to martial law in time of peace. The name is also applied to a claim for damages or debt made by a subject against the government, since the Crown in Great Britain cannot be sued until its own consent has been obtained by a fiat of the Attorney-General.

Petitot, Jean, Swiss miniature-painter in enamel, born at Geneva. He worked for some time in England under Charles I., and later went to France with Charles II., working there for Louis XIV., and returning home after the revocation of the Edict of Nantes. He was probably the greatest of all painters in enamel, using many new colours in his art. (1607-1661).

Petrarch, Francesco, Italian lyric poet, born in Arezzo, in Tuscany:

spent his youth in Avignon; intended for the profession of law. His sonnets in praise of Laura, a lady he met in 1327, have done most to immortalize him. After travel in France and Germany he retired in 1337 to the valley of Vaucluse, where he composed most of his poems, and in 1341 was crowned laureate in the Capitol of Rome. After moving from place to place he settled in Arqua in 1370, where he died. His Latin works include an epic on the Second Punic war, Epigrams, Epistles in verse, and Letters of value, giving the details of his life. (1304-1374).



PETRARCH

Petrel, a family, including over 100 species, of sea-birds, known as the Procellariidae. The subfamily Pelecanoidinae includes the Diving Petrels, birds which dive into and rise from the sea in search of their prey without closing their wings. The True Petrels are included in the sub-family Procellariinae. Shearwaters found in British waters are species of True Petrels. So are the Fulmar Petrel (*Fulmarus glacialis*) and the "Mother Carey's Chickens," two of which, the Storm-Petrel (*Procellaria pelagica*) and Leach's Fork-Tailed Petrel (*Oceanodroma leucorhoa*) also breed on British shores.

Petrie, Sir William Matthew Flinders, British archaeologist after explorations at Stonehenge, surveyed the pyramids and temples of Gizeh in 1881-1882; excavated for the Egyptian Exploration Fund Naukratis, Am, and Dafenneh; achieved many other important excavatory works in Palestine and elsewhere. (1853-).

Petrifaction, the process by which animals or plants are so acted upon by chemical influences from minerals as to turn them into a solid stone-like substance which maintains their shape and form. See Fossil. A national park in Arizona, U.S.A., includes a "Petrified Forest" of coniferous trees.

Petrograd, the name given in Russia to St. Petersburg at the start of the World War. It is now called Leningrad (q.v.).

Petrol, also called motor spirit or benzine, a fraction collected in the refining of petroleum, and, as it forms an explosive mixture with air, used as the source of power for motor-car and other internal combustion engines; also for carburetting coal-gas, and for dry cleaning. Duties on the sale of the enormous quantities of petrol used for motor-cars are one of the chief sources of revenue of many governments, including those of Great Britain and the States of the U.S.A.

Petroleum, a thick, greenish-black, liquid occurring in large subterranean deposits in the United States, Iran, Iraq, Rumania, Russia, the East Indies and a few other localities. It is a complex mixture of hydrocarbons, together with small quantities of nitrogen and sulphur compounds; the actual composition varies from district to district. Various opinions have been held as to the origin of petroleum, the commonest view maintaining it to represent the decayed remains of microscopic marine organisms. It is extracted by drilling holes or wells through the overlying rock until layers of oil are reached. Sometimes the petroleum is under great pressure and spurts up from the well as a "gusher," but after a time the flow ceases and the gusher becomes an ordinary well from which the petroleum has to be

raised by pumps. The crude petroleum is refined by a process of distillation, advantage being taken of the fact that the various constituents of the oil have different boiling-points. The principal fractions into which the natural petroleum is thus separated are light naphtha, petrol, heavy naphtha, paraffin oil or lamp oil, lubricating oil, "vaseline," and paraffin wax. The residue is a black, pitch-like substance known as "petroleum pitch," used in road-making.

Petrology, a branch of geology dealing with the mineral and chemical composition of rocks, including the changes they have undergone through physical and other agencies. Microscopic examination and chemical analysis are the usual methods pursued.

Petty Officers, a grade of non-commissioned officers in the Navy, corresponding in function and responsibility to non-commissioned officers in the army.

Petty Sessions, a magisterial court trial, without a jury, of trivial offences, or for inquiry into more serious ones before committal to a higher court. A petty sessional court consists of at least two justices of the peace (q.v.) or a police or stipendiary magistrate, or the Lord Mayor or an Alderman of the City of London.

Petunia, a garden family Solanaceae, with funnel-shaped flowers and viscid leaves; colours white, blue, purple or violet; from 2-4 ft. in height.

Pevensay, a village in Sussex, England, 4 m. from Eastbourne, close by the landing-place of William the Conqueror in 1066; it has the ruins of an old Norman Castle. Pop. c. 800.

Pewter, originally a tin-lead alloy containing a proportion of about one-fifth lead; but the term is now often applied to tin alloys containing small quantities of copper and antimony. It is used mainly for making drinking vessels, plates, and other table-ware.

Pforzheim, a town in Baden, Germany, in the N. of the Black Forest; manufactures gold and silver ornaments, and has chemical and other industries. Pop. 80,000.

Phædra, in Greek legend, the wife of her stepson of making improper advances to her. He was slain while hunting, and after his death his innocence became known to his father and Phædra made away with herself. The theme has been dramatized by Euripides and Racine.

Phæthon, (i.e., the shining one), in the Sun, or Helios; persuaded his father to allow him for one day to drive the chariot of the sun across the heavens, but was too weak to check the horses, so that they rushed off their wonted track and nearly set the world on fire, whereupon Zeus transfixed him with a thunderbolt. The aridity of the Sahara was said to be due to his careless driving.

Phæton, an open four-wheeled carriage name has been extended to early motor-cars whose bodies were built on a like principle. They have now disappeared.

Phagocytes, cells in the blood, especially the white corpuscles or leucocytes, which absorb and digest disease bacteria and other undesirable foreign elements in the blood stream.



PETUNIA

Phalanger, a small Australian marsupial of which several species exist, including the flying phalanger, a bat-like species (the koala (q.v.)) and a small species about 8 in. in length, the dormouse phalanger. They are frequently called opossums.

Phalanx, among the Greeks a body of heavy infantry armed with long spears and short swords, standing in line close behind one another, generally 8 men deep; it was brought to perfection in the Macedonian armies of Philip and Alexander the Great, but gave way before the Roman formation based upon the legion.

Phalaris, a tyrant of Agrigentum, in Sicily, in the 6th Century a.c., alleged to have roasted the victims of his tyranny in a brazen bull.

Phalarope, genus of birds of the plover species (*Phalaropus lobatus* and *hyperboreus*) visit Britain. The former, the Grey Phalarope, breeds in the Arctic; it has a straight, thin, pointed bill. The latter, which sometimes breeds off the Scottish islands, is known as the Red-necked Phalarope. Its plumage is dark grey with white marks about the neck.

Phallus, the male generative organ, or a symbol thereof, especially as an object of worship representing the generative powers of nature. Phallic worship was and is believed by many peoples to be desirable or even necessary for inducing fertility in flocks and herds, and in the soil. It is still widely practised in India, especially by Siva-worshippers or Saivas.

Phanerogamia, a great division of the plant kingdom, including all flowering plants, as opposed to Cryptogamia, or non-flowering plants. They are themselves divided into the two classes of angiosperms, whose seeds are contained in an ovary, and gymnosperms, or naked-seeded plants.

Pharaoh, a title given to the kings of ancient Egypt, derived from the name of the sun-god Phra, whose earthly representatives they were considered to be.

Pharisees, a Jewish sect, which arose about 150 a.c., who in opposition to the Sadducees (q.v.) insisted on the authority of tradition as well as of the written Mosaic law. They maintained the reality of a spiritual world, and kept aloof from nationalist politics. They came into strong conflict with Jesus, who is shown in the New Testament as repeatedly denouncing them for hypocrisy.

Pharmaceutical Society of Great Britain, an organisation founded in 1841 to safeguard the interests of chemists and druggists and advance the studies connected with their profession. It conducts examinations for students of pharmacy, success in which is a condition of the registration on which the right to use the title Pharmacist depends. It also maintains research laboratories.

Pharmacopoeia, an official list of drugs with tests for determining their purity and instructions as to the doses to be administered. Since 1858 the General Medical Council has published from time to time a book called the *British Pharmacopoeia*, containing a list of medicines, etc., which is deemed by Statute to be the Pharmacopoeia of Great Britain and Ireland.

Pharmacy, the art or practice of preparing, compounding, and preserving medicines, and of administering them according to the prescriptions of medical practitioners. Chemists and others who practise the art in England must be registered under the Pharmacy Acts. Only those

approved by the Pharmaceutical Society of Great Britain may use the title Pharmacist.

Pharos, an island of ancient Egypt, off Alexandria, on which the first lighthouse was erected by Ptolemy Philadelphus in 48 B.C.

Pharsalia, a district in the N. of Greece, the southern portion of the modern province of Larissa; was the scene of Caesar's victory over Pompey, 48 B.C.

Pharynx, a muscular membranous pouch at the back of the nasal cavities, mouth and larynx, extending from the base of the skull to the cricoid cartilage; it is continued below the oesophagus, and connects above with the nasal passages, mouth, larynx and Eustachian tubes. Inflammation of the mucous membrane of the pharynx (pharyngitis) may be merely due to an ordinary cold; but it may be the sequel to diphtheria or scarlet fever. Hoarseness or chronic pharyngitis may be due to strain on the vocal chords, to excessive smoking, or to alcohol.

Phases of the Moon, are the changes in the appearance of the moon's disc consequent upon variations in the area of the illuminated portion seen from the earth; from new moon (when none is visible), through first quarter (when the right-hand crescent is visible), full moon (when the whole is visible), and last quarter (when the left-hand crescent is visible), to new moon the time is 29 days 12 hours 44 minutes $2\frac{1}{2}$ seconds.

Pheasant, bird of the family Phasianidae, of which the *Phasianus colchicus*, native to SE. Europe, and bred in Great Britain as a game bird, is the type. The male bird is brilliantly coloured in blue, brown and green, with red wattles; the female is a dull, mottled brown.

An allied species is the Argus Pheasant (q.v.) of Malaysia. The pheasant-shooting season in Britain extends from Oct. 1 to Jan. 31.

Phenacetin, a white crystalline solid used as an antipyretic (temperature-reducing) drug, having the advantage of being non-toxic.

Phenol, or Carballic Acid, a crystalline substance which turns pink on exposure to air, obtained as one of the products in the distillation of coal tar; in solution and mixed with powders it is used as a disinfectant; from phenol, picric acid, many drugs and dyes are manufactured.

Phenomenon, in philosophy, sense to real existence, or the noumenon. All that is attainable in human experience is necessarily phenomenal, since man has no means of attaining real existence through his senses or thoughts, though he may or may not have by other spiritual faculties.

Phi Beta Kappa, a society founded in 1776 as a student association at William & Mary College, Virginia, U.S.A., in imitation of which various other student societies, fraternities, and "sororities" have grown up at nearly all American universities, mostly under titles which, like that of the parent society, consist of three letters of the Greek alphabet.

Phidias, the greatest sculptor of ancient Greece, born in Athens; flourished in the time of Pericles, and was appointed by him to direct the works of art projected to the beautifying of the city. The chief work that he superintended was the erection of the Parthenon, much of which he himself adorned; of the statues he executed, the most



PHOENIX (MALE)

famous were one of Athena of Ivory and gold for the Parthenon, and a colossal one of Zeus, his masterpiece, also of Ivory and gold, for Olympia; he died while in prison on a charge of impiety, 432 B.C.

Philadelphia, largest city in Pennsylvania of the U.S.A., on the Delaware R., 100 m. from the sea and 90 m. by rail SW. of New York; its splendid public buildings include the town hall, of white marble; a white masonic temple and Government offices of granite, and the Mint; there is a university. The manufactures include leather goods, carpets, cigars and cigarettes, sugar refining, and chemicals. Founded by William Penn in 1682, it was the central point of the War of Independence; the first Congress met here, and the Declaration of Independence was signed (1776) in a building still standing; here too the Federal Union was signed (1778) and the constitution drawn up (1787), and from 1790 to 1800 it was the capital of the United States. Pop. 1,951,000.

Philadelphia, ancient city of Asia Minor, in Lydia, named after Attalus Philadelphus of Pergamum. Its site is now occupied by Ala Shehr.

Philæ, an island of syenite stone in the Nile, near Assuan, in Nubia, 1,200 ft. long and 50 ft. broad; is almost covered with ancient buildings of great beauty, among which is a temple of Isis, with a great gateway dating from 361 B.C.; these are now submerged owing to irrigation works which maintain the river at a high level.

Philately, the study of postage stamps. As a hobby it sprang into favour soon after the issue of the first postage label on May 1, 1840. On that day the famous "Penny Black" of Great Britain came into existence. Philatelists are of two kinds, those who collect any and every sort of stamp and those who concentrate upon a definite area or type. Apart from the actual varieties sought for, there are added considerations of minute colour shades, eccentricities of printing, differences of perforation, varying kinds of paper, etc. One of the most famous collections of postage stamps was that in the possession of the late King George V.

Philby, Harry St. John Bridger, English explorer; born in Ceylon. In charge of the British mission to Central Arabia, 1917-1918, he crossed Arabia from Uqair to Jidda, being the first European to visit South Nejd. In 1930-1932 he returned to Arabia, crossing the Rub' al Khali desert. His published works include *The Heart of Arabia*, 1922. (1885-).

Philemon, Epistle to, shortest book of the New Testament, a letter by Paul to a member of the Church at Colossæ on behalf of a slave, Onesimus, who had deserted his service.

Philip II., known as Philip Augustus, Louis VII. in 1180. His grand aim was to secure to himself some of the English possessions in France; his alliance with Richard of England in the third crusade ended in a quarrel; an exhausting war lasted till 1199. On Richard's death Philip supported Arthur against John of England in his claim to Anjou, Maine, and Touraine. After Arthur's murder, the capture of Chateau Gaillard in 1204 gave him possession of these three provinces, with Normandy and part of Poitou. The victory of Bouvines, 1214, secured his throne, and the rest of his reign was spent in internal reforms and the beautifying of Paris. (1165-1223).

Philip IV., called the Fair, King of France, succeeded his father Philip III., in 1285; by his marriage with Joanna of Navarre added Navarre, Champagne, and Brle to his realm. His fame

rests on his contest with Pope Boniface VIII. over his attempted taxation of the clergy, in which his envoy, de Nogaret, imprisoned the Pope. In 1305 after Boniface's death he made Clement V. Pope, kept him at Avignon, and so commenced the 70 years' "captivity"; he forced Clement to decree the suppression of the Templars, and became his willing instrument in executing the decree. He died at Fontainebleau. (1268-1314).

Philip VI. King of France, succeeded Edward III. of England contested his claim; thus began the Hundred Years' War between France and England, 1337. The French fleet was defeated off Sluys in 1340, and the army at Crécy in 1346; a truce was made when the war was followed by the Black Death. The worthless king afterwards purchased Majorca. (1293-1350).

Philip, King of Macedon, the father of Alexander the Great, usurped the kingdom in 360 B.C.; entered on a series of aggressive wars, making expeditions into Thrace and Thessaly, and at length was appointed by a league of Greek cities commander-in-chief in a projected war against the Locrians, but the Athenians and Thebans opposed his coming. The defeat of their armies at Chæronea, 338 B.C., placed all Greece at his feet. While preparing an expedition against Persia, he was assassinated at Aegae. (382-336 B.C.).

Philip II. King of Spain, only son of the Emperor Charles V., married Mary Tudor in 1554, and spent over a year in England. In 1555 he succeeded his father in the sovereignty of Spain, Sicily, Milan, the Netherlands and Franche-Comté; a league between Henry II. of France and the Pope was overthrown, and on the death of Mary he married the French princess Isabella, and retired to live in Spain, 1559. He encouraged the Inquisition in Spain, and introduced it to the Netherlands; the latter revolted, and the Seven United Provinces achieved their independence, after a long struggle, in 1579. His effort to overthrow Protestant England ended in the disaster of the Armada, 1588. His last years were embittered by the failure of his intrigues against Navarre, raids of English seamen on his American provinces, and by loathsome disease. (1527-1598).

Philip V., grandson of Louis XIV., first Bourbon king of Spain; inherited his throne by the testament of his uncle Charles II. in 1700. The rival claim of the Archduke Charles of Austria was supported by England, Austria, Holland, Prussia, Denmark, and Hanover; but the long War of the Spanish Succession terminated in the peace of Utrecht, and left Philip his kingdom. After an unsuccessful movement to recover Sicily and Sardinia for Spain, he joined England and France against the Emperor, and gained Sicily for his son Charles III. He died an imbecile at Madrid. (1683-1746).

Philip, St., the apostle, a native of Bethsaida of Galilee, one of the first followers of Jesus, probably, from his name, a Greek. According to Polyrates he laboured and died at Hierapolis in Phrygia.

Philippeville, seaport of Algeria, in Constantine province. It has a good harbour and exports the products of the district—dates, esparto grass, grain, cotton, iron, etc. Pop. 66,000.

Philippi, a Macedonian city, founded by the scene of a victory gained in 42 B.C. by Octavian and Antony over Brutus and Cassius, and the seat of a church, the first founded by St. Paul in Europe, to the members of which St. Paul addressed the *Epistle to the Philippians* (a.v.).

Philippians, *Epistle to the,* an *Epistle* written by St. Paul at Rome during his imprisonment there to the church at Philippi, in Macedonia. Its genuinely Pauline authorship is accepted.

Philippic, the name originally applied to Demosthenes' three great orations against Philip of Macedon, then to Cicero's speeches against Mark Antony; now denotes any violent invective written or spoken.

Philippine Is., a large and numerous group in the north of the Malay archipelago, between the China Sea and the Pacific, Luzon and Mindano being the two largest islands; are mountainous and volcanic, subject to eruptions and continuous earthquakes. Rice, manila, hemp, sugar, tobacco and fruit are cultivated; the forest yield timber, gums, and resins, and the mines coal and iron, gold and chromium; the chief exports are sugar, hemp, copra, and coconut oil. The aboriginal Negritoes are now few; half-castes are numerous; the population is chiefly Malayan, mainly Roman Catholic, but there is a large independent Filipino church. The official language is Tagalog, but English and Spanish are largely used. Discovered by Magellan in 1521, they were annexed by Spain in 1569, and in 1899 ceded to the U.S.A. In 1934 they were granted a form of Home Rule, with the proviso that in 1945 they should become fully independent. The capital is Manila, on the W. coast of Luzon; Cebu, Iloilo, Zamboanga and Laoag are among the largest towns. Area, 114,400 sq. m. Pop. 13,266,000.

Philippopolis. See *Plovdiv*.

Philip the Bold, Duke of Burgundy, fourth son of John the Good, king of France; taken captive at Poitiers 1356. On his return to France he received the duchies of Touraine and Burgundy. On his brother's accession to the French throne as Charles V. he exchanged the former duchy for the hand of Margaret of Flanders, on the death of whose father he assumed the government of his territories. His wise administration encouraged arts, industries, and commerce. (1342-1404).

Philip the Good, Duke of Burgundy, grandson of the above, raised the duchy to its zenith of prosperity, influence and fame. He was alternately in alliance with England, and at peace with his superior, France, ultimately assisting in driving England out of most of her Continental possessions. He captured Joan of Arc in 1430, selling her to the English six months later. (1396-1467).

Philistines, a people, generally believed to have been originally emigrants from Crete, who settled in the coastal plain of Palestine between Joppa and the southern desert, some 40 m. long by 15 m. broad, and whose chief cities were Ashdod, Askalon, Ekron, Gaza, and Gath. They were a trading and agricultural people, continually at war with the Israelites, who eventually subdued them, so that by the Christian era they were practically forgotten.

Phillips, Stephen, English poet, born at Somerton, Dorset, 1792; spent some years on the stage, then devoted himself to literature, producing the poetical dramas *Paolo and Francesca*, *Herod*, and *Ulysses* among others; also published *Marpessa* and other volumes of verse. (1808-1815).

Phillipotts, Eden, English novelist; born in India; has written numerous novels, plays, and poems, largely on Devonshire themes, including *The Human Boy*, 1899; *My Devon Year*, 1903; *The Secret Woman*, 1905; *The Broom Squire*, 1932. He collaborated several times with Arnold Bennett. (1862-).

Philology, the science of language; philologists have classified the languages of the world into three main divisions: (1) isolating languages, of which Chinese is typical; (2) Agglutinative languages, where suffixes are added to roots to indicate various relations; (3) inflectional languages, represented by the two groups of the Semitic and Indo-European languages. Comparative philology treats of the kinship of languages, and examines the evidence as to their common origin. For the Indo-European group, for example, which comprises the Sanskrit, Iranian, Armenian, Greek, Albanian, Italic, Celtic, Teutonic and Slavonic groups, a common source has been found in a supposed primitive Indo-Germanic tongue.

Philomela, in Greek legend, daughter and sister of Pandion, king of Athens, and sister of Procne. Tereus cut out her tongue to prevent her exposing him. With her sister Procne she made away with Itys, Tereus' son, and served him up to his father at a banquet. They escaped his vengeance, Philomela by being changed into a nightingale and Procne into a swallow.

Philosopher's Stone, a substance sought for by the ancient and medieval alchemists, supposed to have the power of turning base or cheaper metals into gold. The search for the Philosopher's Stone occupied fruitlessly the attention of alchemists for nearly a thousand years, but in its course led to many important chemical discoveries.

Philosophy, literally "love of wisdom," originally any branch of investigation of natural phenomena, but now usually restricted to an enquiry into the nature of being and of knowledge, and of man's relation with the universe. Its main periods are (1) the Greek, whose greatest figures were, among others, Plato and Aristotle; (2) the Hellenic, when Platonism was combined in a mystical synthesis with elements of Eastern thought; (3) the Medieval or Scholastic, which attempted to reconcile reason with the requirements of Christian theology, and was much influenced by Jewish and Arab speculation; (4) the Modern, beginning with Descartes, Leibniz and Spinoza, flowering in Kant and Hegel, and now endeavouring, in the persons of such thinkers as Bergson and Whitehead, to correlate the enormous body of new material disclosed by modern scientific discovery, and determine its meaning in relation to the intuitive needs and aspirations of man. Apart from the main stream of European philosophy, India and China have philosophical traditions of their own, hardly, if at all, of less value or importance. The present trend of philosophy is a return to idealism, in one of many competing forms.

Philostratus, a Greek writer, born at Lemnos. He taught rhetoric at Athens and Rome, and was a favourite of the Emperor Septimius Severus. His most famous work was a life of the possibly legendary travelling philosopher and miracle-worker Apollonius of Tyana. (c. 175-250).

Philtre, the name given to certain concoctions of herbs, often deleterious and poisonous, supposed to secure for the person administering it the love of the person to whom it was administered. Such love potions were popular in the declining days of Rome, throughout medieval Europe, and have been used even in modern times by the superstitious.

Phiz, the pseudonym of Hablot K. Browne (1815-1882), the illustrator of the first edition of the *Pickwick Papers* of Dickens.

Phlebitis, inflammation of the inner membrane of a vein, due to an extension of inflammation from proximate

tissues. It results in the formation of a thrombus or clot, which if it becomes detached, may lead to serious danger.

Phlogiston Theory, a theory of combustion and related phenomena, which held that all combustible bodies owe their combustibility to the presence in them of a substance which, while not actually fire, is the "principle" of fire; this substance is phlogiston, and when a body is burned the phlogiston is taken up by, and absorbed into, the air, the ashly residue of the body being left. Its overthrow was the work of the celebrated French chemist, Lavoisier, who obtained experimental evidence that when a substance burns, it combines with a gas in the air. Priestley, in 1774, found a method of obtaining this active constituent of the air in the pure state, and Lavoisier was then able to show that the increase in weight during combustion was due to the combination of the burning substance with the active part of the air. This part he afterwards called oxygen (q.v.), its properties being subsequently determined.

Phlox, a genus of ornamental plants of the natural order Polemoniaceae, mostly perennial, with salver-shaped white, red, blue, or variegated corollas. There are 60 species, native to N. America, and Siberia, and in cultivation many varieties have been produced. They are extensively cultivated in Britain as border and bedding plants, the best known of the half-hardy annuals being *Phlox Drummondii*, of Texas, discovered by Drummond in 1836.



PHLOX

Phnôm-Penh, town and capital Indo-China, at the junction of the Mekong and Tonle-sap rivers; there is a large trade in rice, fish, pepper, etc. Pop. 102,700.

Phocis, a province of ancient Greece, W. of Boeotia and N. of the Gulf of Corinth; was traversed by the mountain range of Parnassus, and contained the oracle of Apollo at Delphi; allied to Athens in the Peloponnesian War, the Phocians were crushed in the "Sacred War" after ten years' fighting, by Philip of Macedonia, 346 B.C.

Phæbus (i.e., the radiant one), an alternative name for the Greek god Apollo (q.v.).

Phœnicia, a country on the E. shore of the Levant, stretching inland to Mount Lebanon, embracing 200 m. of coast, with the towns of Tyre, Sidon, Gebel and Arvad. The Phœnicians, a Semitic people of remarkable industry and enterprise, emerge from history with Sidon as ruling city about 1500 B.C. and reach their zenith under Tyre 1200-750 B.C., thereafter declining, and ultimately merging in the Roman Empire. Their manufactures, purple dye, glass ware and metal implements were in demand everywhere; their ships carried the merchandise of every country, and their colonists settled all over the Mediterranean, Aegean and Euxine, and even in Africa and in Britain. Her greatest colony was Carthage, the founding of which (823 B.C.) sapped the strength of the mother-country, and which afterwards usurped her place, and contended with Rome for the mastery of the world. The alphabet from which our own has developed has been claimed as a Phœnician invention.

Phœnix, a fabulous bird supposed to immolate itself in flames, and rise renewed in youth from the ashes.

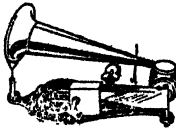
Phœnix, capital of Arizona, U.S.A., on Rio Verde. It is an agricultural centre, with a trade in fruit and livestock. Pop. 48,000.

Phoenix Park, a large public park (Ireland), N. of the Liffey, one of the finest "lungs" of any European capital; it contains the Dublin Zoo and the official residence of the President (formerly the Viceroyal lodge). It was the scene of the murder of Lord Frederick Cavendish in 1882.

Phonetics, that part of the study of speech sounds and their varieties, and with the signs or letters used to represent them in writing. It includes the study of accent, stress or emphasis, tone of voice, and the quantity or duration of a sound. Speech sounds are divided into (1) vowels, produced by the vibration of the vocal chords modified in the pharynx by the tongue and the soft palate without audible friction; and (2) consonants, produced either by audible friction, or by the stopping of the breath in some parts of the mouth or throat.

Phonograph, a device for the mechanical reproduction of

sound-waves, invented by Edison in 1877. It is not different in essential principles from the gramophone (*q.v.*), but the name phonograph is generally applied to the earlier types of the instrument, especially those with cylindrical reproducing records and external horns.



PHONOGRAPH

or **Carbonyl Chloride**, is a **Phosgene**, colourless gas made by the direct combination of carbon monoxide with chlorine. The action proceeds at a negligible rate in the dark, but takes place quickly in bright illumination, hence the name of the gas (Greek, "produced by light"). Phosgene is extremely poisonous, and has been used in chemical warfare.

Phosphates, the salts of phosphoric acid (*q.v.*). They play a leading part in the chemistry of animal and vegetable life, the most important being the phosphates of sodium, calcium and magnesium. In agriculture the adequate supply of phosphates to plants in the form of manures is a matter of necessity to depleted soils. These phosphatic manures consist, for the most part, of bones, ground bones, mineral phosphates (apatite, phosphorite, coprolites), basic slag, super-phosphates and reduced phosphates, (both prepared by treating broken-up bones with sulphuric acid), bone-ash and phosphatic guano.

Phosphorescence, the phenomenon substances after exposure to light continue to emit light when placed in the dark, it is of practical value in the making of luminous paint (*q.v.*).

Phosphoric Acid, an acid obtained by decomposing bone ash with sulphuric acid. It is a thick liquid used, diluted, in medicine as a stomachic stimulant.

Phosphorus, a non-metallic chemical element belonging to the same group as nitrogen, arsenic, antimony and bismuth. Symbol P; atomic number 15; atomic weight 31.04; it owes its name (Greek, "light-bearer") to its property of shining in the dark with a bluish-green light. Phosphorus is an essential element of living matter, and is an important mineral constituent of bones and egg-shells. Large quantities of calcium phosphate are found as "rock-phosphate" or "phosphorite" in various parts of the world, e.g., Morocco, Algeria and Tunisia. Phosphorus is com-

crystals. The yellow form is excessively poisonous, and takes fire spontaneously in the air at temperatures not far above the average; hence it is kept in air-tight containers or, in small quantities, under water. Red phosphorus is not poisonous when swallowed, though it is toxic like yellow phosphorus if injected into the blood. Phosphine or phosphoretted hydrogen is a colourless, offensive-smelling gas, sometimes produced during the decay of fish and very readily inflammable. Phosphorus sulphide is used in the manufacture of matches.

Photo-chemistry, the study of reactions that are affected by light. It was noticed by Dalton that a mixture of chlorine and hydrogen, stable in the dark, explodes if brought into bright sunlight. Many other examples of chemical reactions accelerated by light have since been discovered (see for example, **Photography**), the efficiency of the light depending upon its wave-length and, therefore, upon the energy associated with it: the shorter the wave-length the greater the energy, so that blue, violet and especially ultra-violet are more efficient than red or yellow.

Photo-electricity. When light is allowed to fall on a metal, electrons are given off from the latter. The extent of the emission varies, but is especially great with potassium. Hence in a photo-electric cell the essential feature is an evacuated glass globe, the inner surface of which (except for a small area to admit light) is coated with a thin film of potassium; the globe contains also a metallic ring which can be maintained at a potential of over 100 volts higher than the potassium. The ring and the potassium are connected to terminals, and when light is allowed to fall on the potassium through the aperture, the electrons emitted pass across the intervening space to the ring. Hence a small electric current is set up, which can be amplified to any desired extent, e.g., to work a switch operating a burglar alarm, or to operate countless other devices. The selenium cell works on the principle that the so-called "metallic" form of selenium (*q.v.*) is a conductor of electricity only when illuminated. Photo-electric cells are finding a varied and steadily increasing application, and are the basis of the "talking-pictures" of the cinema.

Photo-engraving, a process engraving on a metal plate may be made from a photograph. The plate, generally copper, is given a prepared surface, bitumen or asphaltum dust being used for this purpose. A bichromated gelatine negative is then developed on to the plate, which is afterwards etched in a bath of perchloride of iron. The plate thus has on its face an etched design, cut to varying depths according to the light and shade of the gelatine print originally transferred to it. The etching may be finished off by hand if required; it is then given a steel facing.

Photography. Many silver compounds are converted into metallic silver by the action of light, and it is upon this fact that photography is based. The first photographs seem to have been obtained in 1802 by Thomas Wedgwood (1771-1805). Further progress was made by the brothers Niepce and by Daguerre (1789-1851), but present-day processes have developed from the work of the Englishman, Fox Talbot. The use of glass plates for supporting the sensitive film was suggested in 1845 by Niepce de St. Victor, and in 1871 R. L. Maddox put the suggestion into operation. In 1889 G. Eastman produced the first roll-films, and two years later improved technique by inventing daylight-loading.

The film on a photographic plate or "film" consists of gelatine in which are suspended minute granules of silver halide, i.e., silver bromide and iodine. On exposure to light, a small quantity of silver halide in the immediate neighbourhood of the nucleus is reduced to metallic silver, the bromide or iodine being taken up by the gelatine. The image so formed is, however, invisible to the naked eye if the exposure is short.

The next stage is development, which consists of immersing the exposed plate in a solution of a suitable reducing agent (e.g., alkaline pyrogallol or hydroquinone); the function of the developer is to continue the reduction of the silver halide, and since this process takes place more rapidly where the initial formation of silver was greater, the image gradually appears but with the light-values reversed, i.e., more silver is deposited in those parts of the image where illumination was great than in those less brightly illuminated. The image is consequently negative.

Development is interrupted when the image has reached the desired depth, and the plate is immersed in a "fixing" solution; this is a slightly acid solution of "hypo" (sodium thiosulphate) which dissolves out the unchanged silver halide and so renders the image stable to light. After drying, positive images may be obtained by exposing silver-halide-coated paper to light through the negative, developing if necessary, and fixing as before. See also **Camera**.

Photometer, an apparatus for comparing the intensities of differing light sources. A number of differing devices are in use, one of the best known being Bunsen's, in which a sheet of paper with a spot of grease on it is placed between two lights in varying positions until its appearance is the same from either side, the distance of the paper from the light sources being then measured and the intensity calculated from known constant formulae.

Photophone, a device for transmitting sounds on a beam of light, invented in 1878 by Bell and Tainter; it involves the use of a mirror so arranged that it vibrates under sound impulses, and reflects rays to a receiver connected with a selenium cell and telephone.

Photosphere, name given to the luminous atmosphere enveloping the sun.

Photo-synthesis, the building up of from carbon dioxide in plants in the presence of sunlight; the chlorophyll in the green leaves is the active agent in the process.

Phragmites. See **Reed**.

Phrenology. See **Physiognomy**.

Phrygia, a country originally extending over the western shores of Asia Minor, but afterwards confined to its western uplands; famous for its wool, wine, and marble in classical times. The Phrygians were an Armenian people, with an orgiastic religion, and were successively conquered by Assyrians, Lydians, and Persians, falling under Rome in 43 B.C.

Phthisis, or **Consumption**, tubercular disease of the lungs, now generally known as tuberculosis (q.v.).

Phylacteries, strips of vellum inscribed with certain Biblical texts, enclosed in small cases of calf-skin, and attached to the forehead or left arm; they have been used in Jewish worship since the giving of the Mosaic law.

Phylloxera, an insect of the family **Aphidæ**, originating in America, one species of which, *Phylloxera vastatrix*, does great damage to the vine in Europe. The eggs, when hatched in great

numbers, produce galls on the leaves and in the roots. *Phylloxera quercus* is a species which deposits its eggs in the oak tree.

Physical Training, of "keeping fit," while popular on the continent of Europe, has in the British Isles been generally overshadowed by athletics and outdoor games. It is pursued to a certain extent at most schools for both boys and girls, and daily broadcasts from foreign stations possibly induce a few Englishmen and women to perform "physical jerks"; but so far the B.B.C. has given no "physical training" broadcasts, and even the "National Fitness Campaign" of 1937 and after has concerned itself little with the purely "drill" and gymnastic aspects of "fitness," which is familiar to the army as "P.T."

Physician, one who holds a licence from a competent authority, such as the Royal College of Physicians, to practise medicine. Strictly speaking, a physician differs from a surgeon in that the former prescribes remedies for diseases, while the latter performs operations; but many are qualified in both branches. The General Medical Council regulates the conditions under which persons may enter the medical profession, and keeps a register of those qualified in medicine, surgery and midwifery.

Physicians, **Royal College of**, a body incorporated in 1518 through the exertions of Thomas Linacre, its first president, to license and supervise physicians practising in the neighbourhood of London. It holds examinations, grants diplomas of membership and licentiatehip, and elects fellows; Edinburgh has a separate Royal College of Physicians, associated for examination purposes with two other Scottish medical associations.

Physics, a general term signifying the aggregate of the sciences dealing with such natural phenomena as motion, force, heat, light, sound, electricity, magnetism, elasticity, capillarity, diffusion, solution and change of state. Its scope extends over all properties of matter which are not specifically biological or chemical. Among the physical sciences dynamics (q.v.) has premier place, as its fundamental concepts—matter and motion—are pre-eminently simple and concise.

In the development of physics there has been a continual effort to explain all physical phenomena in terms of the dynamics of matter and ether. Great advances were made in this direction during the 19th Century and great physicists of that period were Laplace, Poisson, Fourier, Fresnel, Young, Faraday, Helmholtz, Hertz, Joule, Maxwell and Gauss. A greater change still took place near the end of the last century with the discovery of X-rays, radioactivity and the ionisation of gases, and modern scientists are conducting active research into the whole domain of high vacuum technique and the properties of the atom.

Physiognomy, the art of judging the face. The creator of this art was Johann Lavater (1741-1801). Lombroso attempted to evolve a criminal type by drawing conclusions as to character from prognathous jaws and other physiognomical peculiarities. Phrenology, an allied study, is an attempt to estimate the intellectual faculties and moral character of the individual by the magnitude and form of several parts of the skull.

Physiography, that branch of geography which studies the earth's natural features and physical configuration. It is closely connected with geology, meteorology and biology, and makes use for its own purposes of the results obtained by those sciences.

Physiology, the study of the functioning of plants and animals, and its significance. After Harvey's discovery, in the 17th Century, of the circulation of the blood, researches were made into the composition of the blood, lymphatic system, respiration, digestion, etc., and studies in metabolism (q.v.) were begun. In the 19th Century the cell-structure of the body, and the importance of oxygen and other gases in the life-process were established. The processes attendant on the breaking up of food-stuffs (metabolism) and digestion received further study, and the working of the glandular system, particularly the thyroid, came to be more generally understood. Pasteur's researches on micro-organisms exploded the theory of spontaneous generation, and the work of Von Baer gave a profound impetus to embryology. In the 20th Century research has concentrated with success on the anatomy and function of the endocrine system.

Piacenza, Italian city on the Po, 43 m. S.E. of Milan; has a cathedral, and a church for which Raphael painted his *Sistine Madonna*; it manufactures silks, cottons and hats. Pop. 64,000.

Pia mater, the inner membrane of the brain and the spinal cord; it is of a delicate vascular tissue.

Piano, properly *Pianoforte*, a musical instrument of the keyboard type, developed from the harpsichord, with its strings struck by hammers instead of being plucked by plectra; the notes can be sustained and the volume of sound varied, effects outside the scope of the harpsichord. Its invention is ascribed to Cristofori, a Florentine, in 1690, two of whose pianofortes are still in existence. The upright piano, strung vertically instead of horizontally, was an invention of the early 19th Century. The modern piano has a compass extending over seven octaves. The automatic player-piano, operating by the propulsion of a perforated paper roll through the instrument, has been developed since 1842.

Piastre, a currency unit of several Eastern countries, including Egypt (par value roughly 2½d.; 100 piastres make one Egyptian pound), French Indo-China (par value 2s.), Syria (par value about 3s. 2½d.), Turkey (par value, about 2d.); 100 piastres make one Turkish pound, or lira; exchange value in 1938, 620 piastres to the pound sterling).

Piauhv, a northern state of Brazil, on the Atlantic coast, principally devoted to cattle-rearing. Capital, Therezina. Area, 116,500 sq. m. Pop. 609,000.

Piave, a river in N.E. Italy, rising in Austria and flowing SW. and E. to the Adriatic Sea, N. of Venice. In the World War the Italian line was formed behind the Piave, following the Austrian offensive of 1917; an attack in 1918 failed, and in Oct. 1918 the Austrians were driven back beyond the Piave in complete rout.

Piazza, a square open space surrounded by buildings or colonnades; often improperly applied to a pathway under cover, or an arcaded walk, and sometimes even to a verandah.

Picardy, a province in the N. of France, Amiens; it is now included in the depts. of Somme, Pas de Calais and Aisne. It was the scene of much fighting in the World War.

Picaresque Novel, a novel dealing and adventures of rogues and "shady" characters, a particularly popular literary form in the 17th and 18th Centuries. Great examples include Defoe's *Moll Flanders*, Le Sage's *Gil Blas*, and Fielding's *Jonathan Wild*. The Spanish word "pícaro" means a rogue.

Picasso, Pablo, Spanish artist, and with Braque, the founder of Cubism. Born in Malaga, he studied painting in Paris from 1900, being an orthodox painter in his early days. Later he produced work in which straight lines replaced curves and art was geometrised, but in his later work has turned away from the Cubist technique. Real name Pablo Ruiz. (1881-)

Piccard, Auguste, Swiss physicist, born at Lutry (Vaud); became Professor at Brussels University, 1922. To examine electric and atmospheric conditions in the stratosphere, he made the first ascent into it in 1931 by balloon—rising to a height of 51,793 ft. In 1932, with Max Cosyns, he rose from Dübendorf, near Zurich, about 54,120 ft. (1884-)



GONDOLA OF
PICCARD
BALLOON

Piccolo, a small flute, having the same compass as the ordinary orchestral flute, its sounds one octave higher than the written notes.

Picketing, the practice of placing men on strike in order to prevent workers going on duty. Declared illegal in 1875, the 1906 Trades Disputes Act sanctioned it for purposes of "peaceful persuasion." The Trades Disputes Act of 1927 makes picketing unlawful if carried on in connection with an unlawful strike.

Pickford, Mary, American cinema actress, born at Toronto; from 1920 to 1935 the wife of Douglas Fairbanks, also a film actor; since 1937 of Charles Rogers, also a film actor. Her first screen appearance was at the age of sixteen. (1893-)

Pickle, any foodstuff preserved in vinegar or brine, particularly onions, cabbage, walnuts, cucumbers, and other vegetables. Fish are also largely treated in this way, especially the herring and mackerel.

Picotee, a name given to a variety of the carnation in which the edges of the petals differ in colour from the ground tint.

Picric Acid, an acid with a very bitter taste, more familiar as a military high explosive under the name of lyddite or mellinite, made by dissolving phenol ("carbolic acid") in concentrated sulphuric acid and then adding concentrated nitric acid. It is a yellow crystalline solid soluble in water and explodes violently when quickly heated, or struck.

Picts, a race who formerly inhabited eastern Scotland, and possibly the rest of the British Isles; they disappeared as a separate people after the conquest of all Scotland by Kenneth I. (q.v.), the Scottish leader. Their name is supposed to have arisen from their custom of tattooing the skin. The earthworks found in much of Scotland are still commonly called "Picts' houses."

Picture-writing, the method of keeping written records in vogue before the invention of syllabic or alphabetic writing; both the modern European alphabets and the ideographic signs of the Chinese appear to have developed from it. The earlier Egyptian hieroglyphics are a form of picture writing.

Pidgin (or Pigeon) English, a jargon used in dealings between foreigners ignorant of Chinese and the lower social ranks of Chinese who do not speak Western languages. It is composed of English, Chinese and Portuguese words, arranged in accordance with Chinese syntax.

Piedmont, a district in north-western Italy, formerly a principality ruled by the house of Savoy; sur-

rounded by the Alps, the Apennines, and the R. Ticino, occupies the W. end of the great fertile valley of the Po, a hilly region rich in vines and mulberries, and a mountainous tract, with forests and grazing land intersected by lovely valleys, which send streams down into the Po; textile manufactures are extensive, and wheat, rice, fruits and the vine are grown. Turin, the largest town, was the capital of Italy, 1859-1865. Area of modern department, 11,330 sq. m. Pop. 3,566,000.

Pier, in architecture, a support or pillar for an arch, bridge or beam; also a rectangular narrow projection on a wall to give additional support to a beam or other load. A pier template is a stone cover on a brick pier to distribute the load over the whole section.

Pierce, Franklin, the fourteenth President of the United States, born in New Hampshire, was in early life a lawyer; served in the Mexican War, and was elected President in 1852; his period of office was one of trouble; he supported the States' rights doctrine, and served with the South in the Civil War. (1804-1869).

Pieria, a district in Macedonia, E. of Olympus, inhabited by Thracians, and famous as the birthplace and main seat of the worship of the Muses, thence called Pierides; giving rise to the phrase Pierian Spring as the source of poetic inspiration.

Pieta, the name given to a picture or statue representing the dead Christ in the embrace of His sorrowing mother, accompanied by sorrowing women and angels; that sculptured by Michelangelo, in St. Peter's at Rome, is a famous example.

Pietermaritzburg, capital of of South Africa, 73 m. by rail N. of Durban; well situated on the Umsundusi R. Pop. 49,600 (22,500 Europeans).

Piezometer, a device for measuring the compressibility of a liquid. It consists of a glass vessel filled with water over a layer of mercury. The liquid to be tested is placed in a long-necked glass bulb, and immersed in the water so that the mouth of the neck is in the mercury; pressure is then applied to the water by a piston, and the pressure on the liquid in the bulb is indicated by the rise of the mercury.

Pig, properly a young swine, but in popular use any swine. The domesticated British breed is a hybrid of the tawny wild boar, which survived in this country until the late 17th Century, and the Chinese pig. The chief British breeds are the White Yorkshire, the large variety of which has a broad snout not turned up, while the Middle variety has a shorter head and a turned-up snout; the Berkshire, which is black with white feet; the Lincoln or curly-coated pig; the Tamworth, with a fine snout and reddish hair; and the Ulster.

Pigeon, a bird of the family Columbidae; the name is practically equivalent to "dove." The largest British species (*Columba palustris*) is called both Wood-Pigeon and Ring-Dove. Pigeons have somewhat crossed bills and usually long wedge-shaped tails. The bird has been largely domesticated, especially as the homer and carrier pigeon, used for conveying messages in war and sport; this, like all the domesticated varieties, is specialised from the blue rock-pigeon.

Pigott, Richard, Irish journalist, born in Co. Meath, editor and proprietor of *The Irishman* and other papers, notorious as the person who supplied forged documents to the *Times* purporting to involve Parnell in responsibility for the Phoenix Park murders. At the investigation which followed he was convicted of perjury, fled to Madrid and shot himself. (1828-1889).

Pig-sticking, a form of sport developed in India, where it has attained great popularity amongst the finest horsemen, and practised in Central Europe. The prey is the wild boar, a fierce and cunning animal, which is hunted on horseback.

Pika, a genus (*Ochotona*) of rodents of the sub-order Duplicitentata. They are about the size of a guinea-pig, with short ears, no tail, and have the shin-bones united. They are related to the hares and are found in Asia and E. Europe.

Pike, a family (Esocidae) of large voracious fresh-water fish, found in most temperate waters; when young it is called a "jack," has a long



flat snout, large mouth, bands of small pointed teeth and a series of strong fixed upright teeth each side of the lower jaw. The colour is grey above and silvery white below. The British species, *Esox lucius*, grows up to 3 ft. 6 in. in length and can weigh over 20 lb.

Pike, a sharp-pointed military weapon from 15 to 20 ft. long, consisting of a long shaft or handle with an iron head; a common infantry weapon before the invention of firearms, and even later, as in the English civil wars, to perform the office later undertaken by the bayonet.

Pilaster, in architecture, a rectangular pillar, with a base and capital, particularly one engaged in a wall, or, in other words, a portion of a square column projecting from a wall. If free from the wall, such a column is usually called a pier or pillar.

Pilatus, Mount, an isolated mountain, almost 7,000 ft. in height, at the W. end of Lake Lucerne, opposite the Rigi. A lake below the summit is said to be the last receptacle of the body of Pontius Pilate, hence the adoption of the name.

Pilau, or Pilaf, an Eastern dish of meat and vegetables cooked with rice and seasoned with spices.

Pilchard (*Clupea*, or *Sardinus*, *pilchardus*), a fish of the family Clupeidae, similar to but plumper than the herring, and common from the Mediterranean to Cornwall; average length 9½ in. The young fish, caught off France and Portugal and tinned in oil, are called sardines. The pilchard fishing for the Italian market has been in the past one of the chief Cornish industries, but the irregular appearance of the fish has resulted in great reduction in the fleets.

Pilcomayo, a tributary of the Rio Paraguay, in South America, which it joins after a S.E. course of 1,700 m. from its source in the Bolivian Andes. Part of it forms the boundary between Argentina and Paraguay.

Pile Dwelling, an erection on piles in a lake, used by prehistoric man as a habitation. Traces of them are found in the Alpine regions of Europe, and they are still built by primitive peoples in the E. Indies and elsewhere.

Piles, in building construction, are pieces of timber, steel or reinforced concrete material, sunk into ground, especially under water, in order to increase its resistance to vertical loads, or to a lateral force. Timber piles are most widely employed, and are sawn into round, square or hexagonal cross-sections, tapering from the head to the butt. They are driven in by means of a drop- or a steam-hammer.

Piles, or *Hæmorrhoids*, small tumours arising from inflammation of the veins in the neighbourhood of the anus; they may be external or internal. Many persons in middle age are troubled to some extent by

this condition, particularly those of sedentary habits who indulge in over-eating and suffer from constipation; and also women who have borne many children. Habitual constipation is, perhaps, the chief cause of piles, but, in some cases, they are a symptom of disease further up in the portal system.

Pileus, the botanical name for the fleshy cap of a mushroom.

Pilgrim, one who travels to a distance holy place or shrine. A pilgrimage to Mecca is incumbent on every Moslem during his life. Famous places of pilgrimage by Catholics in Europe at the present day are Lourdes, Loretto, Lisieux, and of course Rome. Recently the ancient English custom of making pilgrimages to the shrine of the Virgin Mary at Walsingham, Norfolk, has been revived.

Pilgrimage of Grace, a peasant rising in the northern counties of England in 1536 against the royal policy of suppressing the religious houses, led mainly by Robert Aske. The rebels succeeded in capturing York, but were afterwards ruthlessly suppressed.

Pilgrim Fathers, the name given to the Puritans, some 100 in all, who sailed from Plymouth in the *Mayflower* in 1620 and settled in Massachusetts to escape religious persecution.

Pilgrim's Progress, The, John Bunyan's descriptive allegory of the progress of a Christian through life, written in Bedford gaol and published in 1678.

Pilgrim's Way, an ancient track in southern England, so called because it was used by pilgrims to the shrine of St. Thomas at Canterbury. It runs largely along the bank of the North Downs, from Winchester passing through Farnham, Boxhill, Mersham and West Malling to Canterbury. It appears to have followed the line of an older, perhaps pre-Roman roadway.

Pilgrim Trust, founded in 1930, by Edward S. Harkness, an American, in recognition of Great Britain's fulfilment of its obligations since the World War. This gift appropriates the interest on £2,000,000 to British charities selected periodically by trustees whose president is Earl Baldwin. Already the trust has distributed over £500,000.

Pillar, a column (q.v.) either used as a support or ornament in a building or, standing alone, as a monument; it may support a statue, as in the case of the Nelson Column in Trafalgar Square, London.

Pillar-Saints, or *Stylites*, a class of Christian recluses who retired to the tops of pillars for purposes of prayer and mortification; the best known was St. Simeon Stylites, subject of a poem by Tennyson. They were confined to the East.

Pillars of Hercules. See *Hercules*, *Pillars of*.

Pillory, a former instrument of punishment, consisting of a platform, an upright pole, and at a convenient height cross-boards with holes, in which the culprit's neck and wrists were placed and fastened; so fixed, he was exposed in some public place to the insults and noxious missiles of the mob. Formerly in England the penalty of forgery, perjury, &c., it became after the Commonwealth a favourite punishment for seditious libellers. It was last inflicted in London in 1830, and was abolished by law in 1837.

Pilot, one who holds a licence or certificate from a proper authority, authorising him to navigate vessels through certain channels, rivers or roadsteads, or into or out of certain ports. He is taken aboard at a

fixed place and dropped again when the ship is out at sea. Where pilotage is compulsory, the master must employ a qualified pilot unless he himself, or a mate, holds a pilot's certificate. The Corporation of Trinity House controls pilotage matters for the Port of London and the English Channel, and there are local authorities for other districts. One who after prescribed training and tests is granted a certificate to navigate aircraft is also called a pilot.

Pilot Fish, a tropical fish, *Naucrates* anguilla, resembling a mackerel; it is greyish-blue and about 1 ft. in length. It is an oceanic fish, associates with sharks and often follows ships.

Pilsen (Czech, *Pilsen*), a town of Czechoslovakia, in Bohemia 52 m. SW. of Prague, famous for its beer and having manufactures also of sugar, machinery, leather, etc. Pop. 114,700.

Pilsudski, Joseph, Polish Marshal and politician. Born in Vilna, he was engaged before the War in various illegal nationalist activities, joined the Austrian army against Russia in 1914, in 1918 returned to Warsaw and became commander of the Polish forces and head of the State; in 1920 led the war against Russia; retired in 1923; in 1926 refused election as President, but became Minister for War and virtual dictator; was Prime Minister in 1926 and 1930. (1868-1935).

Pitdown Man, or *Eoanthropus Dawsoni*, a supposititious prehistoric species of man, belief in whose existence is based on the remains of a skull found in 1912 at Pitdown in Sussex by Charles Dawson; he probably lived in the second or third interglacial period, some 300,000 years ago.

Pimento, or *Allspice*, a spice prepared from the dried fruits of the Jamaican tree, *Pimenta officinalis* of the natural order Cuphorbiaceae.

Pimpernel, a genus of trailing plants (*Anagallis*) of the order Primulaceae, bearing small and numerous flowers. The Common Pimpernel or "poor man's weatherglass" (*Anagallis arvensis*) is a common English cornfield flower; Scarlet Hog-Pimpernel (*A. tenella*) is common in the fens and marsh districts of Lincoln and Norfolk. The Yellow Pimpernel (*Lysimachia nemorum*) bearing bright yellow flowers is an allied plant. The flower of the Common Pimpernel closes in cold and dull weather.

Pin, a small piece of metal, pointed at one end, and used as a fastening. Early pins, which doubtless developed from thorns, were made of bone, bronze and other metals, often beautifully worked and ornamented. Pin manufacture is one of the miscellaneous metal industries of the Birmingham district, the pins being nipped from lengths of wire, pointed, headed, cleaned, tinned and polished.

Pinar del Rio, Western province of Cuba, with an area of 5,200 sq. m. and a pop. of 347,700; also its capital; pop. 63,300.

Pinchbeck, a copper and zinc alloy used for cheap-jack jewellery; hence a synonym for anything sham or spurious.

Pindar, the greatest lyric poet of Greece, born near Thebes in Boeotia. He excelled in every department of lyric poetry and wrote odes in honour of the victors at the Greek Games. When Alexander destroyed Thebes he spared the house of Pindar. The famous tag "Water is best" is a quotation from one of his Odes. (522-443 B.C.).

Pindus, a range of mountains in Greece, Epirus and Thessaly, running NW. to SE. parallel with the Western coast.

Pine, a genus (*Pinus*) of coniferous trees, species of which are wide-spread. The Scots pine or fir (*P. sylvestris*) is native in Britain and probably once formed extensive forests over the whole country. In maturity, the lower branches are lost, and the summit flattens out till there is a slender naked trunk with a high picturesque semi-rounded crown; bark smooth and reddish-brown; leaves like twisted needles. Other foreign species grown in Britain include the Corsican (*P. Laricio*), with long paired needles; Weymouth or White (*P. Strobus*), named after a Lord Weymouth of the 18th Century; Cluster (*P. Pinaster*), well known in Bournemouth, and Stone (*P. Pinea*), with umbrella head. Other notable species are the Douglas fir (*q.v.*) (*P. ponderosa*), the Pitch-pine (*P. palustris*) and the Yellow Pine (*P. echinata*).

Pineal Gland, a small cone-shaped body of yellowish matter in the brain, the size of a pea, and situated in the front of the cerebellum, formerly surmised to be a rudimentary survival of a third eye, but now recognised as an important organ of unknown function.

Pineapple, the fruit of a tropical *sativa*, introduced into England in 1690, and is now easily grown in hothouses. The flowers rise in a large conical spike, surmounted by a crown of spiny leaves, which becomes enlarged and juicy, thus constituting the fruit.

Pinero, Sir Arthur Wing, English dramatist, born in London; trained for the law, he became an actor and later a playwright, among his best-known plays being *The Second Mrs. Tanqueray*, *The Gay Lord Quex* and *Trelawney of the Wells*. (1855-1934).

Ping-Pong, or **Table Tennis**, a game played on a table of about 9 or 10 ft. by 5 ft. with a net about 6 or 7 in. high, with light wooden bats and small celluloid balls. The serving player has 5 services in succession, and the ball must pitch on the table on the server's side and thence bounce on to his opponent's court. Volleying is not allowed. Game score is 21 points, or more if both reach 20.

Pinguicula. See *Butterwort*.

Pink, a genus of beautiful caryophyllaceous flowers comprising all varieties of *Dianthus*. The carnation (*q.v.*) is a larger and fuller-leaved *Dianthus* than the so-called pink of the florists. Many pinks are hardy perennials; single and double Japanese Pinks are hardy annuals; the hardy annuals supply many shades of pink, rose, crimson and white. The Bearded Pink (*Dianthus barbatus*) is better known as the Sweet William.

Pinkie, a Scottish battlefield, near Musselburgh, Midlothian, where the Protector Somerset, in his expedition to secure the hand of Mary Stuart for Edward VI., defeated and slaughtered a Scottish army, 1547.

Pinnace, historically, a small vessel in attendance on a larger one, having two schooner-rigged masts and capable of being rowed; now generally means a man-of-war's double-banked eight-oared boat. Every large warship also carries a small steam pinnace nowadays.

Pint, an English measure of capacity for liquids and solids, one-eighth of a gallon. In the United States the liquid pint is one sixth less than the British pint.

Piozzi, a female friend of Dr. Johnson (*q.v.*) under the name of Mrs. Thrale, after her first husband, a brewer in Southwark, whose home for her sake was the rendezvous of all the literary celebrities of the period; married afterwards

to Johnson's disgust, Piozzi, an Italian music-mastress; left *Anecdotes of Johnson and Letters*, was authoress of *The Three Warnings*. (1741-1821).

Pipe. The tobacco pipe was invented in America and specimens have been found in ancient Indian mounds. In form and material pipes vary greatly—from the calabash of the Indians to the ordinary short straight British pipe of to-day, and the long-stemmed Turkish chibouque. The chief materials employed are wood, porcelain, meerschaum and pipe-clay. Briar pipes are made from the bruyère root of the Mediterranean countries.

Pipe, an old English measure of capacity for liquids, generally of 105 gallons; the pipe of port contains 113 gallons, that of brandy 114. In the U.S.A. the pipe is 126 gallons.

Pipeclay, a plastic pure variety of clay, or kaolin, and used for pipes, pottery, casting moulds, and as a cleaning material for unglazed leather.

Pipe Fish, general name for any fish with a tube-shaped snout, but properly applied only to members of the family Syngnathidae, in which the jaws are united into a cylindrical tube, the body is enclosed in a series of bony rings, and the fins, formed of rays, are remarkable for their vibrating and undulatory movement. Several species are found round British shores, including the Deep-nosed or Lesser, the Great, and the Snake Pipe-fish. In some species the male has an abdominal marsupial pouch into which the eggs of the female pass, and where the young are hatched and where they shelter.

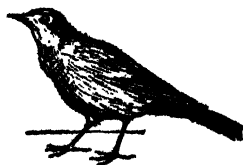
Pipe-Line, in hydraulic engineering, the final stage in conveying water to machines; it is constructed of steel plate, cast-iron, wood-stave, or reinforced concrete. Such pipe-lines are variously known as power conduit, penstock, or supply pipe. Also, a steel pipe, in jointed sections, for conveying petrolum over any required distance, as the pipe-line of the Turkish Petroleum Company, which conveys the oil from the Mosul Oil Wells to Haifa and Aleppo.

Piperaceae, a family of tropical plants, mostly with pungent-flavoured leaves, of which *Piper* (pepper) is the typical genus.

Pipette, a glass tube with open ends for measuring liquids, used by sucking the liquid into the tube to the height of the graduation mark it is desired to reach, and stopping the end with the finger.

Piping Crow, the popular name of a Australian birds of the Shrike or Butcher-bird family. They are a crow-like bird with excellent powers of mimicry and a flute-like warble.

Pipit, a genus of small slender-billed sombre-coloured birds, akin to the wagtail, and not unlike larks in appearance, habit and song. The commonest British species are the meadow pipit (*Anthus pratensis*), also called "tit-lark," found on moorlands; the rock pipit (*Anthus petrosus*), a larger and darker bird; while the tree pipit (*Anthus trivialis*), a summer visitor, is so named because it sings from the trees. A number of other species occur in Britain as stragglers.



ROCK PIPIT

Piquet, a card game for two players with three, four, five and sixes of the full pack being thrown out.

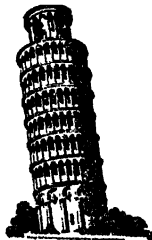
Piracy, robbery on the high seas. In English law it is a felony punishable with penal servitude for life, or if actual violence endangering life is used, with death. Cases of piracy are of rare occurrence in civilized countries to-day, but the crime is, or was, until very recently, common in China, notably in Bias Bay.

Piraeus, Greek town and port of Athens, 5 m. SW. of the city, planned by Themistocles, built in the time of Pericles, and afterwards connected with the city for safety by strong walls; it was destroyed by the Spartans at the end of the Peloponnesian War. Recovering in recent years, it is now an important manufacturing centre and the chief seaport of Greece. Pop. c. 140,000.

Pirandello, Luigi, Italian dramatist and novelist, born at Girgenti, Italy; of his early novels, *The Late Mattia Pascal* was the most successful; his best-known plays are *Sei Personaggi in Cerca di Autore* ("Six Characters in Search of an Author") and *Enrico IV.* (Henry IV.). (1867-1936).

Pirke Aboth (i.e., Sayings of the treatises of the Jewish Talmud, a collection of representative sayings of ancient Rabbis in the manner of the apocryphal book of Ecclesiastics).

Pisa, city of Italy, on the Arno, 49 m. W. of Florence; its port is now at Leghorn. There are a magnificent cathedral, rich in art treasures, a peculiar campanile which deviates 16 ft. from the perpendicular, known as the Leaning Tower of Pisa, several old and beautiful churches, a university, school of art and library. Silks and ribbons are woven, and coral ornaments cut. In the 11th century Pisa was a prosperous mercantile republic, but became merged in Tuscany about 1550. Pop. 72,500.



LEANING TOWER OF PISA

Pisano, Andrea, Italian goldsmith and sculptor. Designed two doors of the Baptistery in Florence cathedral, 1330; completed its campanile. Built facade of Orvieto cathedral, 1347. (c. 1270-1349).

Pisano, Giovanni, one of the greatest of Pisan sculptors; son of Nicola Pisano. He built the Campo Santo at Pisa and the tomb of San Donato at Arezzo. (1250-1330).

Pisano, Nicola, Italian sculptor and architect of Pisa; his most famous works are the pulpit in the Baptistery at Pisa, and that for the Duomo at Siena, the last being the fountain in the piazza of Perugia. (1206-1278).

Pisces, or The Fishes, the twelfth sign of the zodiac, which the sun enters on Feb. 20.

Piscina, the swimming reservoir in the Court of a Roman bath; also, in medieval churches, a stone basin in a niche near the altar, in which the priest washed his hands before celebrating the Eucharist and afterwards cleansed the chalice.

Pisgah, a mountain range E. of the Lower Jordan, one of the summits of which is Mount Nebo, from which Moses beheld the Promised Land, and where he died and was buried.

Psidia, a division of ancient Asia Minor, N. of Pamphylia, and traversed by the Taurus chain.

Pisistratus, tyrant of Athens, a friend and relative of Solon; in 560 B.C. took possession of the citadel and seized the sovereign power. Twice compelled to retire, he at last made good his ascendancy, reigning peacefully for 14 years, and leaving his power in the hands of his sons Hippias and Hipparchus. To him we owe the first written collection or complete edition of the poems of Homer. (600-527 B.C.).

Piso, cognomen of a distinguished Roman family, of whom famous members were Gaius Calpurnius Piso, proconsul in Narbonese Gaul, defended on an accusation of plunder by Cicero; Lucius Calpurnius Piso, whom Cicero attacked in his speech *In Pisonem*, and whose daughter married Julius Caesar; and Gnaeus Calpurnius Piso, who committed suicide in A.D. 19 when charged with murdering Germanicus.

Pissarro, Camille, French artist. Born in Paris when 25 and studied under Corot. Much of his early work was destroyed in the 1870 siege of Paris, after which he moved to London. (1830-1903).

Pistachio Nut, a product of a *Pistacia vera*, now also grown in Europe and Africa; the crushed nut yields a valuable culinary oil.

Pistoia, a town of N. Italy, at the foot of the Apennines, 21 m. NW. of Florence; it is said that pistols derived their name from the city, which manufactured them; now produces iron and steel wares and macaroni. Pop. 72,000.

Pistol, a small firearm adapted for use with one hand. The first pistols came about 1540 from Pistoia, Italy; they were first used by the English cavalry about the middle of the 16th Century, but earlier by the German mercenaries known as pistoliers. The earliest pistol was fitted with a wheel-lock; this was superseded in turn by the flint-lock and the percussion cap. In the 19th Century the invention of the revolver largely replaced the pistol, except for duelling, but in the present century the revolver has in turn largely given way to the automatic self-loading pistol of the Colt or Mauser type.



DOUBLE-BARRELLED FLINT-LOCK PISTOL (1823)

Pistole, an obsolete gold coin of Europe, originally Spanish, of varying value, but averaging about 17s.

Piston, an apparatus acted upon by the pressure of a fluid in a hollow tube, or imparting pressure to such a fluid; in a steam engine it has the former function, in a pump or compressor the latter. It may be of any shape corresponding accurately to the bore of the tube, but is in fact almost always a cylindrical disc fitted to a rod.

Pitcairn Island, a small volcanic island 2½ m. long and 1 m. broad, in the Pacific, 5,000 m. E. of Brisbane, where, in 1790, 9 men of H.M.S. *Bounty* who had mutinied landed with some Tahitian women; from these sprang a small community who later sent a colony to Norfolk Island. The island is a British Colony under the jurisdiction of the High Commissioner for the Western Pacific. Pop. c. 200.

Pitch, or Coal Tar, a dark resinous substance obtained by the partial distillation of tars, petroleum pitch or other fusible organic substances; used for caulking ships, briquette-making, bituminous paints, etc.

Pitch (musical), the relative height or depth of a sound. Standard pitch is the number of vibrations per second for a given note. The note A is taken for orchestras; the note C for piano-tuning. The classic pitch from Purcell to Beethoven, Mendelssohn and Rossini was between C = 498 and C = 515. The leading orchestras now adopt the standard A = 435. The British military bands until recent years played up to high pitch, C = 538, as required by the Kneller Hall rules, but in 1928 the War Office adopted the new philharmonic pitch of 435. This low standard is now generally used at concerts.

Pitchblende, or **Uraninite**, an oxide of uranium, thorium, radium, lead, etc., valuable for its radio-active elements. The name refers to the pitch-like appearance of the hard compact specimens of the oxide. It is found in association with nickel, copper ores, etc., in Cornwall, Colorado and parts of Germany.

Pithecanthropus, a genus of sub-men whose

existence was deduced from the discovery in Java of certain skull and thigh bones in 1891. He probably represented a stage of development intermediate between the great apes, especially the orang-utan, and man.

Pitlochry, a Scottish village and summer resort in Perthshire, on the R. Tummel, 3 m. S. of the Pass of Killiecrankie, site of a Jacobite victory in 1689. Pop. c. 2,500.

Pitman, Sir Isaac, inventor of the shorthand system, which bears his name, born at Trowbridge, Wiltshire; his first publication was *Stenographic Sound-Hand* in 1837, and in 1842 he started the *Phonetic Journal*. (1813-1897).

Pitt, William, English statesman, second son of the Earl of Chatham (q.v.), born near Bromley, Kent. He entered Parliament in 1781, and at the age of 23 became Chancellor of the Exchequer under Lord Shelburne. On Shelburne's resignation he refused the Premiership, but soon formed a government with a majority of 100 against him at the age of 24; he gradually won over the House and the country, and the dissolution of 1784 gave a majority of 120 in his favour. During his long administration, broken only for one month in 20 years, he greatly raised the importance of the Commons, stamped out direct corruption in the House, and abolished many sinecures. He revised taxation, improved the collection of revenue and the issue of loans, and set the finances in a flourishing condition; he reorganized the government of India, and aimed strenuously to keep England at peace. (1759-1806).

Pitt, William, (the Elder). See Chatham, Earl of.

Pittsburgh, second city of Pennsylvania, U.S.A., 350 m. by rail W. of Philadelphia, where the junction of the Allegheny and the Monongahela Rr. forms the Ohio; seat of 2 universities. Much power is obtained from the natural gas, which issues at high pressure from shallow borings in isolated districts 20 m. from the city. Standing in the centre of an extraordinary coal-field—the edges of the horizontal seams protrude on



WILLIAM PITT

the hillsides—it is the largest coal-market in the States. It is the main centre of the United States Steel Corporation, and manufactures also metal goods, earthenware, furniture and motor cars. Originally called Fort Duquesne, it took its later name from the Elder Pitt. Pop. 670,000.

Pituitary Body, a ductless gland in a hormone, pituitrin, of importance in regulating growth and other functions. Its failure to function properly may produce excessive obesity, arrested sexual development, or acromegaly, the abnormal growth of the extremities and front of the head.

Pityriasis, one of a group of various skin affections, mainly forms of eczema, in which small particles of the skin flake off in scaly forms.

Pius, the name of eleven Popes, of whom eight call for particular mention: P. II., pope from 1458 to 1464, of the family of the Piccolomini, known to history as *Aeneas Sylvius*, an eminent scholar and diplomat, distinguished for organizing a crusade against the Turks. P. IV., from 1559 to 1565; during his popehood the deliberations of the Council of Trent were brought to a close, and the "Creed of Pope Pius IV." is still the official summary of Roman Catholic doctrine. P. V., St. Pope 1566 to 1572, excommunicated Queen Elizabeth, revised the Church Service books and was responsible for the combination which broke Turkish power in Europe in the naval victory at Lepanto in 1571. P. VI., Pope from 1775 to 1799, did much to improve the amenities of Rome; called on by Napoleon to renounce his temporal sovereignty, he refused, was made prisoner, and died in France. P. VII., Pope from 1800 to 1823, concluded a concordat with France, crowned Napoleon emperor at Paris, who thereafter annexed the papal territories to the French Empire, which were in part restored to Rome only after Napoleon's fall. P. IX., or *Pio Nono*, from 1846 to 1878, was a "reforming" Pope, and by his concessions awoke in 1848 a spirit of revolution, under the force of which he was compelled to flee from Rome, to return again under French protection; in 1854 he promulgated the doctrine of the Immaculate Conception, and in 1870 the Infallibility of the Pope; upon the outbreak of the Franco-Prussian War in 1871 his temporal dominions were annexed by Italy, and he retired into the Vatican, where he lived in seclusion till his death. P. X., from 1903 to 1914; condemned the Modernist movement, and died of grief at the outbreak of the World War. P. XI., born near Milan, became Pope in 1922, and in 1929 signed the Lateran (q.v.) Treaty, under which the temporal power of the Papacy was restored, his sovereignty over the Vatican City being recognised. (1864-).

Pixies, mischievous sprites in English, especially Devonshire, folklore, said to be the spirits of infants who died unbaptized.

Pizarro, Francisco, Spanish adventurer, the conqueror of Peru, born at Truxillo; having distinguished himself in Panama, set out by way of the Pacific on a voyage of discovery with another soldier named Almagro; after landing on an island off Peru, returned to Spain for authority to conquer the country; sailed with three ships in 1531, and on his arrival at Peru found a civil war raging, of which he availed himself to butcher the emperor and terrorise his subjects; quarrelled with Almagro and put him to death, but was assassinated at Lima by the latter's party. (1478-1541).

Placenta, the organ by which, in the higher mammals, the foetus is connected with the mother, and vascular connection between the two maintained. It ultimately comes away as the afterbirth.

Placer, in mining, a detrital surface deposit containing minerals which can be worked at a profit. The method of working is generally by some form of washing, and is known technically as "placer mining."

Plague, Great, an epidemic disease which spread to England from Europe during 1665 and led to the death of over 100,000 persons in London out of a population of 460,000, though it was even more destructive in Europe. The disease is supposed to have been a variety of bubonic plague such as caused the Black Death of the 14th Century, in which a quarter of Europe's population perished. The narrow and ill-drained streets of London encouraged its spread. Defoe gives a vivid account of the visitation in his *Journal of the Plague Year*.

Plaice, an edible flat fish (*Pleuronectes platessa*) of the Heterosomata order, distinguished by its red spots. It feeds on bivalve mollusks, crushing the shell with its blunt pharyngeal teeth. The average weight is 2 or 3 lb. They are found mainly on W. European mudbanks.

Plain, a flat area at an elevation not greatly above sea-level; a higher area of flat land is generally called a plateau. Steppes, Pampas and Prairies are all varieties of plain. Plains are generally grass-covered, thus affording good grazing land; but some great plains, such as the Sahara, are infertile owing to lack of rain or other causes. Plateaux or tablelands, as in the case of Tibet, may be at a considerable height above sea-level, and are sometimes shut in by mountain barriers.

Plain-song, the unmeasured music of the chants of the Roman Catholic church, developed probably from a combination of classical Greek and Hebrew synagogue music. See *Gregorian Chant*.

Planchette, a small and generally heart-shaped table, with a pencil attached, which is used at spiritualist séances to enable spirits to write messages. The hand of the medium is placed upon the planchette which is alleged to move without his conscious co-operation.

Planck, Max, German physicist, professor at Berlin; carried out many researches in connection with specific heat and radiation; his greatest work was the enunciation of the Quantum Theory. He was awarded a Nobel Prize in 1919. (1858-).

Plane, tree of the order Platanaceae, and sole genus of that order. *Platanus Orientalis*, or the oriental plane, grows to 100 ft. high and 30 ft. in girth, having large, glossy leaves which, when young, are covered with brownish hairs and bullet-shaped buds; the bark peels in scales, leaving pale patches. The London plane (*P. acerifolia*) may be either a distinct species or a hybrid between the oriental and the Western or American plane.



Plane, in geometry, a surface such that, if any two points on it be joined by a straight line, that line will lie wholly in the surface. A plane is regarded as extending indefinitely in any direction. The term is also used in astronomy to denote an ideal surface supposed to cut or pass through a solid body, or in various directions; as the plane of the ecliptic, the plane of a planet's orbit.

Planetoids. See *Asteroids*.

Planets, the celestial bodies which round the sun, their order from the sun outward and mean distances in millions of miles

therefrom being Mercury, 36; Venus, 67½; the Earth, 93; Mars, 141½; Jupiter, 483½; Saturn, 886; Uranus, 1,783; Neptune, 2,793; Pluto, 3,670. There are also over a thousand tiny planets or asteroids (*q.v.*), mostly between Mars and Jupiter.

Planimeter, an instrument for recording the area of any plane figure. It consists essentially of two bars, freely jointed to each other; in the elbow is placed a graduated wheel which revolves round an axis parallel to one arm.

Plankton, general name for the plant drift freely in seawater, including radiolarians, foraminifera, diatoms, etc.; the ooze found at the bottom of the oceans consists largely of the remains of these animals and plants, *e.g.*, globigerina ooze.

Planquette, (Jean) Robert (Julien), French composer, born in Paris. He gained immense fame, 1877, with the three-act comic-opera *Les Cloches de Corneville*. Composed altogether 16 operettas and operas, including *Trip Van Winkle*, 1882, and *Mam'zelle Quat'sous*, 1897. (1850-1903).

Plant, any member of the vegetable kingdom; it is defined by Linnaeus as "an organized body possessed of life but not of feeling." Some plants, however, have a certain sensitiveness when touched. The lowest animals and plants are so closely akin—*e.g.*, sponges and infusoria—that it was once a moot point to which kingdom they belonged; but sponges are now regarded as compound animals and infusoria are in the category of algae (*q.v.*). Plants, generally, are composed mainly of carbon, hydrogen and oxygen; animals have nitrogen in addition; plants absorb carbon dioxide and give out oxygen; animals reverse the process. A plant consists of a root and organs of vegetation and reproduction. Plants are classified into annuals, biennials and perennials; a cross-division is that into herbs, shrubs and trees. A plant may be evergreen or have deciduous leaves. One cardinal division of the vegetable kingdom is the Cryptogamia or flowerless plants, which have no flowers and reproduce themselves by spores; among these are the algae, fungi, ferns and mosses. The Phanerogamia or flowering plants reproduce by seeds containing an embryo, and such plants are again classified into Gymnosperms (*q.v.*) and Angiosperms which latter group are divided into Dicotyledons and Monocotyledons, according to the number of seed leaves present.

Plantagenets, a dynasty of kings of England, who reigned from the extinction of the Norman line to the accession of the Tudor, that is, from the beginning of Henry II.'s reign in 1154 to the end of Richard III.'s on Bosworth Field in 1485. The name was adopted by Geoffrey of Anjou, the husband of Matilda, the daughter of Henry I., whose badge was a sprig of broom (*planta genista*) which he wore in his bonnet.

Plantain, a small fruit-tree (*Musa para-disiaca*) akin to the Banana, but differing in the absence of purple spots on the stem. It is widely grown in India. The name is also given to a genus of herbs of the order Plantaginaceae, mostly weeds. Five species are found in Britain, including *Plantago major* (greater plantain), *P. media* (hoary plantain), *P. lanceolata* (rib-wort plantain), and *P. maritima* (the sea-side plantain).

Plantin, Christophe, a printer of Antwerp,werp, born near Tours, in France; celebrated for the beauty and accuracy of the work that issued from his press, the most notable being the "Antwerp Polyglot Bible." His house at Antwerp is now a museum. (1514-1589).

Plasma. See *Blood*.

Plassey, a great battlefield in Bengal, scarcely 100 m. N. of Calcutta, now swept away by changes in the course of the river; was the scene of Clive's victory in 1757 over Suraj-ud-Dowlah, the ruler of Bengal, which laid that province at the feet of Britain, and led to the foundation of the British Empire in India.

Plaster of Paris, a paste, formed by removing the water from gypsum or calcium sulphate dihydrate, used for making casts in moulds, and in surgery to make casing for holding broken limbs in position while healing.

Plastics. The manufacture of artificial plastic materials has rapidly assumed the status of a major industry. There are three types of such materials, viz., (i) those derived from cellulose and cellulose esters; (ii) condensation products; and (iii) casein products. Among the members of the first type the most familiar is celluloid; this is a solid solution of cellulose nitrate and camphor, and was originally put on the market in America in 1869. Cellophane is a transparent cellulose hydrate, prepared by converting carefully balanced bleached cellulose into its soluble sodium xanthogenate deriva-

formaldehyde; a typical example is bakelite. Other such plastics are formed from urac and formaldehyde. Of the third type, galalith is the best known; it is manufactured from the casein of milk, is practically non-inflammable, can be dyed to any colour, takes a high polish, and is cheaper than celluloid.

Plata, Rio de la. See **La Plata**.

Plataea, a city of ancient Greece, in western Boeotia, neighbour and ally of Athens, suffered greatly in the Persian and Peloponnesian Wars. It was destroyed by the Persians 480 B.C., by the Peloponnesian forces 429 B.C., and again by the Thebans 387 B.C. In 479 B.C. it was the scene of a great battle in which Greece defeated Persia. There were 300,000 men in the Persian army of whom only 3,000 survived, the Persian power being broken for ever.

Plateau. See **Plain**.

Platinum, a metallic chemical element, related to osmium and iridium. Symbol Pt; atomic number 78; atomic weight 194.8. It occurs free in many parts of the world, e.g., the Ural mountains, U.S.A., Brazil, South Africa and New South Wales. It is a white metal of higher density than gold; it is very resistant to chemical action, though it will dissolve in *aqua regia* (a mixture of concentrated nitric and hydrochloric acids). It is widely used in chemistry as a catalyst, and in jewellery as a setting for diamonds and for wedding rings.

Plato, Greek philosopher, born at Athens, in the second year of the Peloponnesian War; at 20 became a disciple of Socrates, and passed eight years in his society; at 30, after the death of Socrates, quitted Athens, and took up his abode at Megara; then travelled to Cyrene, Egypt, Italy, and Sicily; his idealist philosophy is expounded in a series of dialogues, of which the principal are the *Republic*, *Phaedrus*, *Phaedo*, *Symposium*, and *Timaeus*; the influence of his thought has remained almost unabated till the present day, and even the 20th-Century political philosophies of Fascism and Communism are in debt to him. (427-347 B.C.).

Platonic Love, love between persons of different sexes, without an element of physical passion; the name arises from Plato's doctrine that a man finds supreme happiness in communion with his soul's counterpart or complement.

Platoon, historically, a small body of soldiers acting simultaneously in any duty separately from the main body; in modern military language, a sub-division of a battalion.

Platte, a river of the U.S.A. formed by the North and South Platte, which rise in Colorado and after making a junction meet the Missouri near Omaha. The total length of the streams is about 1,400 m.

Platypus. See **Duck-billed Platypus**.

Plauen, a town in Saxony, on the Elster, 78 m. S. of Leipzig, with embroidery, lace, and other textile manufactures. Pop. 114,000.

Plautus, Titus Maccius, Latin comic poet, born in Umbria; began to write plays for the stage at 30, shortly before the outbreak of the second Punic War, and continued to do so for 40 years. He wrote about 130 comedies, but only 20 have survived, the plots mostly borrowed from Greek models. Among them are the *Captivi*, *Menaechmi*, and *Aulularia*; they have supplied material for dramatic treatment in modern times. (254-184 B.C.).

Player-piano. See **Piano**.

Playfair, Sir Nigel, English actor-manager, born in London. His first professional appearance on the stage was in *A Pair of Knickerbockers* at the Garrick, London, 1902. He assumed management of Lyric Theatre, Hammersmith, 1918; revived old plays and operas there, including a phenomenally long run of Gay's *Beggar's Opera*. Knighted, 1928. (1874-1934).

Plea, in its legal sense, generally the answer of a defendant to the allegations of the plaintiff in civil, or the prosecutor in criminal, proceedings. A criminal plea may be of Guilty, Not Guilty, *Autrefois Convict* or *Acquit*, that is, already convicted or acquitted on the charge now before the court, or that the alleged offence has already been pardoned by the Crown.

Plebeians, or **Plebs**, one of the two sections into which the population of ancient Rome was divided, the other being the Patricians. They probably were the descendants of subdued Latin tribes settled on Roman territory. The history of the Roman republic is largely concerned with their long struggle for equality of political rights with the Patricians, which they gradually secured.

Plebiscite, a vote on some disputed matter, point taken among all the members of a given community. Examples are the plebiscites taken after the World War in Silesia, and later in the Saar, to decide the future government of those areas. A plebiscite of the whole German people ratified the annexation of Austria in 1938.

Pléiade, La, the name given to a movement in the middle of the 16th Century that aimed at the reform of the French language and literature on classical models. It was led by a group of seven men—Ronsard, Du Bellay, Belleau, Baif, Daurat, Jodelle, and Pontus de Tyard.

Pleiades, (i.e., the sailing stars), in Greek mythology, seven sisters, daughters of Atlas, transformed into stars, six of them visible and one invisible.

Pleistocene, name for the most recent geological deposits of the last glacial age, laid down immediately before the recent alluvial strata formed in historic times. The deposits are chiefly clay or sand containing stones of various ages, and were laid down where the glaciers had dropped the material they had worn away. Their fossil remains are largely of existing species, including in Britain reindeer, lions and hippopotamuses.

Plesiosaurus, an extinct aquatic reptile with a small head, resembling a lizard's, and a long neck: abundant in mesozoic times.

Pleura, the serous membrane that lines the interior of the thorax or chest and invests the lungs. It is subject to the serious disease of pleurisy, or pleural inflammation, which is often associated with pneumonia. In "dry pleurisy" the chief symptoms are a sharp pain in the side, felt in respiration, and a short dry cough. "Effusive pleurisy" begins with shivering and fever, the pain abating as the serous fluid effuses into the pleural cavity between the lung and the chest lining. If the fluid is not eventually absorbed, empyema results.



PLESIOSAURUS

Plevna, or **Pléven**, a town in Bulgaria, in a dept. of the same name, where in 1877 Osman Pasha's Turkish army surrendered to the Russians; manufactures woollens and wines. Pop. (dept.) 802,000; (town) 31,500.

Plimsoll, **Samuel**, English social reformer, born in Bristol. Entering Parliament in 1868, he secured the passing of the Merchant Shipping Act in 1876 levelled against the overloading of ships and other abuses in the mercantile navy. His name has been given to the circle with a horizontal line through the centre (the "Plimsoll Line"), now placed by the Board of Trade on the side of every vessel to indicate to what depth she may be loaded in salt water. (1824-1898).

Plinlimmon (i.e., five rivers), a Welsh mountain 2,469 ft. high, with three summits, on the confines of Montgomery and Cardigan, near the source of the Severn.

Plinth, in architecture, the lower division of the base of a column; also, the plain projecting face at the bottom of a wall, immediately above the ground.

Pliny, **The Elder** (**Gaius Plinius Secundus**), Roman author, born in Como, was for a space procurator in Spain, and spent much of his time afterwards studying at Rome. Being near the Bay of Naples during an eruption of Vesuvius, he landed to witness the phenomenon, but was suffocated by the fumes. His *Natural History* is a repository of ancient botanical and zoological knowledge. (23-79).

Pliny, **The Younger** (**Gaius Plinius Cæcilius Secundus**), nephew of the preceding, the friend of Trajan; born at Como; filled various public offices, and was governor of Bithynia in 111, whence he wrote to the Emperor Trajan for instructions as to the treatment of the Christians; his fame rests on his *Letters*. (61-c. 115).

Pliocene, the name given by geologists to those above the Eocene and below the Pleistocene; in England extensive areas of these rocks are found in East Anglia and are known as *crags*, forming the coastline from Cromer to Felixstowe; the fauna of this period included many living species of mammal and it is probable that the first men appeared at the end of Pliocene times, though the Taungs skull found in Africa in 1925 may possibly date from the Miocene.

Plotinus, an Alexandrian philosopher of the Neo-Platonic school, born at Lycopolis, in Egypt. He taught at Rome a philosophy which combined Plato's speculations with a doctrine of emanations, placing man's highest achievement in a mystical union with God, conceived as the Absolute Unity. (207-270).

Plough, an implement for furrowing land and making a bed for seed. The primitive plough, little more than a forked stick, was probably one of the earliest human inventions, and is still used in almost the same form by primitive peoples to-day. The more developed plough is drawn by animals (horses or oxen) or steam-driven, and is now being replaced by the tractor.

Plovdiv (**Philippopolis**), second city of Bulgaria, about 80 m. S.E. of Sofia, on the R. Maritza. It is an important trading centre. Pop. 100,000.

Plover, the common name of all the species of the family Charadriidae; mainly frequenting damp meadows and moors. A number of them are found in Britain, including the sandy-brown Kentish plover (*Charadrius alexandrinus*) which breeds at Romney Marsh; the handsome Ringed Plover (*Charadrius hiaticula*) also known as the dotterel, the Golden Plover (*Pluvialis apricaria*) and the Lapwing (q.v.) or Green Plover (*Vanellus vanellus*).

Plum (*Prunus domestica*), fruit-tree of the natural order Rosaceae, a domesticated variety of a tree (the *Prunus communis*) native to Russia and E. Asia; also the name of the fruit. By cultivation of the wild plum many fine varieties have been obtained, the most important commercially being the Victoria (above all), the Czar, the Pershore, Denniston's Superb Gage, Greengage, and Coe's Golden Drop Gage. The wood of the plum tree is hard, close, beautifully veined, and takes a fine polish.

Plumbago, or **Leadwort**, a herbaceous plant with greyish-blue flowers, grown in Great Britain as a greenhouse plant.

Plumbism. See **Lead Poisoning**.

Plumer, **Herbert Charles Onslow Plumer**, 1st Viscount, English field-marshal; born at Torquay. Served in the Sudan, and the Matabele campaign of 1896; in the South African War, 1899-1902, commanded the Rhodesian Field Force; commanded second British army in France, 1915-1917, contributing greatly to success at Messines and in the Flanders offensive. Was posted to Italy after the battle of Caporetto; commanded the British army of occupation in Germany, 1918-1919. Governor of Malta, 1919-1924; High Commissioner for Palestine, 1925-1928. Viscount, 1929. (1857-1932).

Plunkett, **Sir Horace Curzon**, pioneer of Ireland; co-operative agriculture in Ireland; entered Parliament in 1892; founded, in 1894, the Irish Agricultural Organisation Society; in 1899, became president of the Council of Agriculture. Chairman of the Irish Convention, 1917; Irish Free State Senator, 1922-1923. (1854-1932).

Pluralism, in philosophy, the belief that the universe cannot be reduced to a single principle, as in monism, but is based on at least two disparate principles, whether mind and matter, or others. In ecclesiastical law the word is used of the simultaneous holding of more than one benefice.

Plush, a textile fabric resembling velvet, but with a longer pile. It is used mainly for upholstery, but the name was formerly used with a derogatorily humorous connotation of the velvet breeches of footmen, coachmen, etc.

Plutarch, Greek author, born at Chaeronea, in Boeotia; studied at Athens; paid frequent visits to Rome, and formed friendships with some of its distinguished citizens; spent his later years at his native place, and held a priesthood. His fame rests on his *Parallel Lives* of 46 distinguished Greeks and Romans, one of the most valuable works we possess on the illustrious men of

antiquity. He also wrote on a variety of other subjects. (c. 50-120).

Pluto, in Greek mythology, god of the nether world, son of Kronos and Rhea, brother of Zeus and Poseidon, and husband of Persephone; on the dethronement of Kronos, Pluto took charge of the infernal kingdom, as did Zeus of the sky and Poseidon of the ocean.

Pluto, outermost planet of the Solar system, whose existence had been predicted by Percival Lowell, and which was discovered at the Lowell Observatory in 1930; is possibly about the size of Mars, and is about 3,675,000,000 m. distant from the sun, around which it travels in about 250 years.

Plutonic Rocks, name given to those igneous rocks which consolidated at a great depth and have been exposed as the result of the denudation of the overlying deposits or of earth movements, e.g., granites, gabbros and diorites.

Plutus, in Greek mythology, the god of riches, son of Jason and Demeter. Zeus is said to have put out his eyes that he might bestow his gifts without respect to merit, that is, on the evil and the good impartially.

Plymouth, largest town of Devonshire, England, on the N. shore of Plymouth Sound, 250 m. W. of London; with Stonehouse and Devonport it forms the "Three Towns." Industries are printing, flour-milling, and chemical manufactures; there are large fisheries. It is a port of call for many ocean-going steamers. Devonport has one of England's premier dockyards, and is a naval station of first importance. Many great English sailors, including Drake and Raleigh, were connected with the town; and from it sailed the fleet that vanquished the Armada, and the *Mayflower* with the Pilgrim Fathers. Pop. 206,000.

Plymouth Brethren, a Protestant sect of Christians formed about 1830. They accept, along with pre-Millenarian views, generally the Calvinistic view of the Christian religion, and exclude all unconverted men from their communion. They have no recognized ministry. They are known also as Darbyites (q.v.) from the name of one of their founders, John Nelson Darby.

Plymouth Sound, a portion of the English Channel at the mouth of the Plym, on which Plymouth stands; one of its branches, the Hamoaze, is used as a naval harbour by the British fleet. It is protected by a breakwater a mile in length.

Plywood, name given to thin boards made of layers of wood, usually three in number, and cemented or glued together under pressure, the grain of the middle layer being placed at right angles to that of the outer layers.

Pizén, See *Pheas*.

Pneumatics, the branch of physics concerned with the mechanical properties of gases, especially air. Its principal application is in the use of compressed air for power transmission; a system frequently used in industrial establishments, but not in Great Britain, as it is in the case of the Paris pneumatic Post, adapted to any extent for public services. Pneumatic power is used for manipulating tools of various kinds, including the rock drill, pneumatic hammer, and the familiar road-breaker.

Pneumonia, inflammation of the lung tissue. Its various forms include *acute lobar* or *croupous pneumonia*, the commonest form, affecting a limited area, usually a lobe or lobes of the lung; *catharrhal*, *bronchial* or *lobular pneumonia*, which originates in bronchitis, is more

diffuse in the area of distribution and longer in duration than lobar pneumonia; *interstitial pneumonia* or cirrhosis of the lungs, a more chronic form of inflammation which affects the fibrous tissue of the lung and is akin to phthisis. Pneumonia may also be a very serious complication of other diseases; thus it may occur in cases of typhoid fever or supervene in cases of serious heart trouble.

The symptoms of lobar pneumonia are well marked from the outset; after an incubation of two to six days, the face assumes a characteristic dusky flush, the attack begins with shivering, or, in young children, convulsions, quickly followed by pain in the chest and vomiting, quickened pulse, high temperature, and rapid shallow breathing. The crisis usually occurs between the 7th and 10th day from the attack. Bronchial pneumonia occurs most frequently in children, often as the sequel to some other illness in which the bronchi are inflamed, as, e.g., measles or whooping cough. In weakly persons, it may run rapidly to a fatal termination, and it may, in certain cases, lead to interstitial pneumonia or to tuberculosis.

Po, the largest river of Italy, rises 6,000 ft. above sea-level in the Cottian Alps, and flows through the great Lombardy plain NE. and E., receiving the Ticino, Adda, Mincio, and Trebbia tributaries, entering the Adriatic by a rapidly growing delta. Its total course is 360 m. The chief towns on its banks are Turin, Piacenza, and Cremona.

Pocahontas, daughter of an Indian chief in Virginia, who favoured the English settlers there, saving the life of Captain Smith the colonizer. She afterwards married John Rolfe, one of the settlers, and came to England. Several Virginian families trace their descent to her; d. at Gravesend, 1617.

Pochard, the name of two ducks occasionally seen in Britain. The Pochard (*Nyroca ferina*) breeds in very restricted localities; it is, however, a not uncommon winter visitor, and is imported in some quantities for the table.

In summer both sexes have a dark brown head and neck and greyish white face, the rest of the body being brown and grey. The Red-crested Pochard (*Netta rufina*) can be distinguished in winter by the crest in the male. Both haunt inland waters and feed on crustaceans, worms and aquatic plants.



POCHARD (MALE)

Pocket Borough, a borough in the Reform Act of 1832, the influence of some local magnate determined the voting in elections.

Poe, Edgar Allan, American poet, and short story writer, born at Boston, Massachusetts, a weak, highly-strung man who suffered greatly from poverty and humiliation. He married, 1836, a fourteen-year-old cousin, Virginia Clemm, who succumbed to the hardships of their existence. On Oct. 7th, 1849, he was found dying in the streets of Baltimore. He is remembered as the author of *The Raven*, and of *Tales of Mystery and Imagination*, in which his power in handling the supernatural and creating atmospheres of terror and horror had full scope. He was also a critic of note, being an early appraiser of Tennyson and Dickens, and one of the creators of the detective story. (1809-1849).

Poetry, a form of literary expression whose boundaries cannot be exactly defined, but which is generally distinguished from prose by some kind of

rhythmic, often repetitive, construction, using such devices as rhyme, alliteration, the arrangement of verbal stresses, or a regular metrical scheme to secure this end. Poetry probably began with spontaneous song and developed into epic, that is, the narrative poem in celebration of great men and great events, of which the *Iliad*, the *Aeneid*, and the Hindu *Mahabharata* are examples, but the highest reach of the poet's art is generally considered to be lyric poetry, i.e., the short emotional poem originally intended to be sung to the lyre. Notable lyric poets have been Shelley, Catullus, Shakespeare (in his songs), etc. Poetry has also been used as a medium of instruction, cf. Lucretius' didactic poem *De Rerum Natura* ("Concerning the Nature of Things"), and at certain periods has become so formalized (as in the Augustan poets of England) or so overset with metaphysical conceit (as by certain English poets in the 17th Cent.) that it has lost its emotional appeal and sometimes even its meaning.

Poets' Corner, a corner in the SW. minster Abbey, so called as containing the tombs of Chaucer, Spenser, and other eminent English poets.

Pogrom, an anti-Jewish riot, often property and destruction of life, such as took place frequently in Russian cities before the World War, and has occurred since in Poland and other Eastern European countries. Pogroms on a large scale occurred in European Russia in 1881 and 1905.

Poilu (French "Hairy"), nickname for a French soldier, corresponding roughly to the English "Tommy Atkins."

Poincaré, Raymond Nicolas Landry, French statesman. He entered the Chamber of Deputies in 1887, filled several Cabinet offices, and became Prime Minister in 1912, and in 1913 President of the Republic, in which capacity he visited England and Russia. Frequently with the armies in the World War, he held office till 1920, when he re-entered the political field as an ardent Nationalist and anti-German, becoming Prime Minister in 1922, and being largely responsible for the occupation of the Ruhr. Defeated in 1924, he was again Premier from 1926 until 1929. (1860-1934).

Poinsettia (*Euphorbia pulcherrima*), a plant of the order Euphorbiaceae, native to Mexico; cultivated in greenhouses for the large red bracts that surround its small yellow flowers.

Pointer, a breed of large sporting dog, originally Spanish, but afterwards crossed with the British foxhound. It is generally black, yellow or brown marked with white, but may be a uniform black.

Point-to-point, a steeplechase horse-race, especially for hunters, usually over a course of 3 or 4 m. Such races were formerly run over a straight course, i.e., from one point to another across country.

Poison, a substance which, if applied or introduced to the body, causes death by non-mechanical means; it may be a natural animal, vegetable or mineral product, or a synthetic chemical. Corrosive poisons, such as sulphuric acid, destroy the tissues; convulsant poisons, such as strychnine, set up spasmodic reactions; narcotic poisons operate on the brain and nervous system. Some materials, such as arsenic or lead, accumulate in the system to produce poisonous effects. The symptoms of poisoning and the treatment to counteract it vary with the nature and amount of the poison taken. The sale of poisons in Great Britain is in many cases restricted by various statutes; the more deadly poisons may be sold only to qualified medical practitioners.

Poison Gas, general name for various chemicals used in warfare either to kill or incapacitate troops. First used in the World War by Germany in April, 1915, it was later adopted by the Allies. It later played a part in the Italo-Ethiopian war of 1935, and defensive measures against its possible use against civilians in future wars became from that time a major pre-occupation of all Governments. In the United States mild forms of "tear gas" have been used for police purposes in dealing with popular demonstrations, labour disputes, etc.

Poisonous Plants. A large number of British wild and cultivated plants contain narcotic or irritant poisons, among them henbane, belladonna, foxglove, herb paris, monkshood, thornapple, cuckoo-pint, and hemlock. Many of these contain alkaloids of great medicinal value. A large number of fungi, including the common toadstool, are likewise poisonous.

Poitiers, the capital of the dept. of Tours, Vienne, France, 61 m. SW. of Tours; has a number of interesting buildings, a university and a fine cathedral, and manufactures hosiery and beer. Pop. c. 40,000. In its neighbourhood Clovis defeated Alaric II. in 507, Charles Martel the Moors in 732, and the Black Prince the troops of King John in 1356.

Poitou, former province in France, lying S. of the Loire, around Poitiers; passed to England when its countess, Eleanor, married Henry I., 1152; was taken by Philip Augustus 1205, ceded to England again 1360, and retaken by Charles V. 1369.

Poker, a card game played with a full pack of cards, generally including the joker, in which the winner is determined by the value of the combination he holds. It is played by 2 to 6 people each holding 5 cards. The combinations in rising order of value are, pair, three, straight (five in consecutive number), flush (five all of one suit).

Pola, Italian port in Istria, 73 m. S. of Trieste, in the Adriatic; its harbour sheltered most of the Austrian fleet in the World War, after which it was occupied by Italy. Pop. 46,000.

Poland, a republic situated between the Baltic, Lithuania, Russia, the Ukraine, Czechoslovakia, and Germany. It is mainly agricultural, producing cereals, potatoes, sugar beet and flax. There are large forests and rich coal and salt mines, other minerals worked being iron, zinc, petroleum and natural gas. The chief towns are Warsaw (the capital), Lodz, Lwow, Poznan, Cracow, and Wilno (Vilna). In the Middle Ages an independent state, it gradually lost its sovereign status, until in 1795 its remnants were divided between Russia (with by far the largest share), Prussia, and Austria; after the World War in 1918 it regained its independence, and is now one of the world's most important states after the "Great Powers." The majority of the people are Roman Catholics and Slavs, but there are many Jews and large German-speaking sections. Area, 150,000 sq. m. Pop. 34,250,000. See also Polish Corridor.

Polar Bear, a species of bear (*Ursus maritimus*) found

throughout the Arctic regions on the edge of the Polar ice-cap. It may attain a length of 9 ft. or more, is white in colour, a good swimmer and diver, and lives mainly on fish, seals and carcases of large animals. Their heads are smaller in proportion than in most bears.



POLAR BEAR

Polarization, the effect produced by causing light waves, reflected from a smooth surface or passed through crystals, to travel in a single plane. The plane of polarization may be altered by passing the light through certain solutions and this fact is used in chemistry for the estimation of the strengths of solutions. Polarized light may also be used to determine whether glass is free from strain.

Polders, low marshy lands in the Netherlands, drained and reclaimed from sea or river; that of Haarlemmeer, extending over 70 sq. m., was the largest, but is surpassed by those formed by the draining of the Zuider Zee, now in progress.

Pole, the name given to the extremities of the pole, the imaginary axis of the earth, round which it revolves. The N. Pole was first reached by Peary in 1909, the South by Amundsen in 1911. In 1937 a Russian meteorological expedition spent some months at the North Pole, and made valuable observations.

Pole, in mechanics, denotes the point of forces of opposite qualities are centred, as the poles of a magnet, the north pole of a needle, the poles of a battery, etc.

Pole, Reginald, English cleric and statesman, born at Stourton Castle, Staffordshire; was favoured by Henry VIII. until he opposed the divorce of Catherine of Aragon, when he left the country; was appointed a cardinal, and on Mary's accession came to England as Papal legate to reconcile the country to Rome, being created Archbishop of Canterbury on Cranmer's death in 1556. (1500-1558).

Polecat (*Putorius fectidus* or *Putorius putorius*), an animal of the family Mustelidae, closely resembling the weasel, but larger, being often 18 in. long. From its hair artists' brushes are made. It is notorious for its unpleasant smell. It is the wild form of the domesticated ferret.

Pole-star, or **Polaris**, a star in the northern hemisphere, in Ursa Minor, the nearest conspicuous one to the N. Pole of the heavens, from which it is at present 1° distant. A straight line joining the two "pointers" in Ursa Major passes nearly through it.

Police, the body of persons appointed to crime, and perform various similar services. The London Metropolitan Police were founded in 1829 by Sir Robert Peel, and similar forces were soon created in the provinces. The Metropolitan Force is directly controlled by the Home Office, the police of the rest of England by county or borough councils. In London there are now nearly 20,000 members of the force, which has its headquarters at New Scotland Yard. The area supervised by the Metropolitan Police is about 700 sq. m., and includes London (except the City), Middlesex and parts of Essex, Kent, Herts. and Surrey within a radius of 15 m. from Charing Cross.

Police-court, a court presided over by a stipendiary magistrate, roughly equivalent in its powers to a petty sessional court (see *Petty Sessions*). In theory, it is a criminal court of summary jurisdiction, but in practice it deals with a number of matters on behalf of the poorer classes which would ordinarily fall within the jurisdiction of the county courts. Thus, apart from investigating charges of crime with the view of committing for trial and the trial of persons summarily, the police court deals with summonses for non-payment of rates, maintenance orders, etc.

Polish Corridor, a strip of territory, formerly German, awarded to Poland after the World War to give her access to the Sea. The port of

Gdynia has been constructed on its shores, though by the Peace Treaties Poland has also certain rights in the port of Danzig (q.v.). There is still a considerable German population in the Corridor, and the conflicting interests of Germany and Poland therein make it one of the danger-spots of Europe.

Politics, the science and art of Government; it was first treated as a separate branch of study in the west by the Greek philosopher Aristotle in his treatise of that name. In modern times the word has come to be used frequently with a slightly derogatory connotation, as referring to the tactics and principles of a single party in the state. In England it received little attention as a science until the time of Hobbes, whose *Leviathan* was an attempt to justify the principle of absolute monarchy. All political speculation is dependent on the working out of some theory of the nature of the state, the supreme organ of political rule, and the aim of any practical politics must be to work for such changes in the constitution and function of the state as will help to bring about that condition which the speculator considers desirable.

Polk, James Knox, eleventh President of the United States, of Irish descent; admitted to the bar in 1820, entered Congress in 1825, and became President in 1844, his term of office being signalled by the annexation of Texas and California. (1795-1849).

Pollack, a cod-like fish (*Gadus pollachius*) smout; it is found mainly in the North Sea and Mediterranean, especially along the Spanish coasts. It lives on rocky bottoms, and may attain a weight of 20 to 22 lb. Its liver is a source of cod-liver oil.



POLLACK

Pollarding, the practice of cutting off the top of a tree so as to leave it surmounted with a dense cluster of young branches.

Pollination, in flowering plants, the (the male cell) from the stamens to the stigma of the same (self-pollination) or of another (cross-pollination) flower of the same species, a necessary preliminary to fertilisation.

Pollux, the twin brother of Castor (q.v.).

Polo, a ball game similar to hockey, played on ponyback with mallets. Originally played in Persia thousands of years ago, it spread to India, China, and Japan, and was first played in England in 1869. The governing authority of the game is the Hurlingham Club, on whose London ground many important matches are played.

Polo, Marco, Italian traveller, born at Venice, in 1271, accompanied his father and uncle while a mere youth to the court of the Great Khan, the Tartar emperor of China, by whom he was employed on several embassies. On his return to Europe he wrote an account of his travels, which did much to interest the medieval West in the Eastern world, and remains a popular book to this day. (1254-1324).

Polonium, a metallic chemical element of highly radioactive character; it rapidly disintegrates, 1 gram of Polonium being reduced to $\frac{1}{4}$ gram in 135 days, and yielding lead and bismuth. Symbol Po; atomic number 84; atomic weight 210.

Poltava, a city of the Ukraine S.S.R., and capital of the region of the same name, 450 m. from Moscow. Tobacco manufacturing and milling are among its industries. It is the site of the victory of Peter I. over Charles XII. of Sweden, 1709. Pop. 98,500.

Poltergeist, a German word meaning ghost. The name is applied to the "spirits" supposed to be responsible for the cases recorded from time to time of unexplained noises, removings of articles of furniture, etc., in "haunted" houses.

Polyandry, the name given to a certain peoples, particularly in Tibet, by which a wife is shared between several husbands, usually brothers.

Polyanthus, the popular name for a number of hardy primulas, yellow spring flowers of the order Primulaceae, related to the common cowslip, from which they are possibly derived. It is grown as a garden flower.

Polygamy, usually means that form of marriage in which a man has more than one wife, though strictly it also includes polyandry (q.v.). The former variety is common in many parts of the world unaffected by Christianity. By Mohammedanism a maximum of four wives for each husband is allowed, but of recent years polygamy has been legally forbidden even in Islamic countries such as Turkey. It is illegal in Europe and America.

Polyglot, a term generally applied to a version of the Bible in which the text is printed side by side in differing languages. The most famous is the Complutensian Polyglot, of the early 16th Century, in which the Old Testament is printed in Hebrew, Greek, Latin and Syriac, and the New Testament in Latin and Greek.

Polygon, a portion of a plane bounded by finite straight lines. Polygons having all their sides equal are called equilateral; those having all their angles equal are called equiangular; and those which are both equilateral and equiangular are called regular polygons. Similar polygons are to one another as the squares of their homologous sides.

Polygonaceae, a natural order of dicotyledonous plants including the rhubarb, buckwheat, and sorrel. They have no petals, and the stipules are usually united into a tube round the stem. Many have purgative properties.

Polygonatum, or Solomon's Seal, a perennial herb of the order Liliaceae, with bell-shaped flowers and red or purple berries.

Polygonum, an alternative name of the buckwheat (q.v.).

Polyhedron, a solid bounded by polygons (q.v.) called faces. When the faces are regular polygons, the polyhedron is also said to be regular; the only regular polyhedrons are the regular tetrahedron, hexahedron octahedron, dodecahedron, and icosahedron, having four, six, eight, twelve and twenty sides respectively.

Polyhymnia, one of the nine Muses (q.v.); she is represented as in a pensive mood, with her forefinger on her mouth; she was the inventress of the lyre and the mother of Orpheus.

Polymerization, in chemistry, the change of a compound into another of the same atomic composition but of higher molecular weight, by the forced combination of several molecules of the former substance into one of the new. The agent used may be heat or a chemical reagent; in some cases the polymerization is spontaneous. The chemical properties of the substance undergo a complete change, as in the polymerization of acetylene into benzene.

Polynesia is the collective name of all the islands of the southern Pacific of coral or volcanic origin. Those of New Zealand are the largest; the other main

groups are the Gilbert, Ellice, and Tokelau Is., belonging to Great Britain; Samoa, partly British and partly American; and the Society, Marquesas, Austral and Tuamotu Is., which are French. The name is sometimes extended to include Melanesia, Micronesia, and the Hawaiian group; there are also many small and scattered islands not included in any group.

They cover a stretch of ocean 7,000 m. from N. to S., and 8,000 from E. to W. With the exception of the two chief members of the New Zealand archipelago they are mostly small, and exhibit wonderful uniformity of climate. They are extremely rich in flora; characteristic of their vegetation are palms, bread-fruit trees, and edible roots like yams and sweet potatoes, forests of tree-ferns, myrtles, and ebony. Their fauna is poor, the population consists of various mixed strains. Traces of extinct civilizations are found in Easter I. and the Carolines. Most of the islands are now more or less Christianized; the native races are dying out before the immigration of Europeans and Asiatics.

Polyphony, a kind of musical composition in which several melodic strains are simultaneously developed without being in subordination to each other. Polyphonic music reached its climax with the work of Palestrina (q.v.) in the 16th Century.

Polypus, with a stem, usually occurring on a mucous membrane, especially in the nose, ear, rectum or uterus. Nasal polypi are the most frequent; they may cause slight difficulty in breathing or complete obstruction. Surgical treatment is desirable, as they may slough or become malignant.

Polytechnic, an institution for instruction in various branches of technology and applied art. The well known London Polytechnic in Regent Street, the type of such institutions in England, was founded by Quintin Hogg in 1880. They are now to be found in most large towns of England, and are usually maintained by the local education authorities.

Polytheism, a belief in a plurality of gods, usually the result of a personification of natural forces, as in ancient Greece, Rome and Scandinavia, or of the fusion of various races and the consequent "pooling" of their divinities.

Polyuria, excessive discharge of urine; it is a symptom rather than a disease, and is found most commonly in connection with kidney complaints, nephritis and diabetes. It may occur as an alternative to perspiration if for some reason the latter is impeded.

Polyzoa, a phylum of invertebrates consist of a colony of individuals formed by budding from a single individual. There are a large number of groups and genera, differing widely in appearance and way of life. Each member of the colony dwells in a separate chamber, with its own nutritive and reproductive organs.

Pomegranate, a dense shrub of the Punicaceae, family Punicaceae, from 8 to 20 ft. in height, extensively cultivated in S. Europe. The fruit is as large as an orange, having a hard rind filled with a soft pulp and numerous red seeds. It is astringent.

Pomerania (Pommern), a part of Prussia, Germany, S. of the Baltic and N. of Brandenburg; a flat, sandy district with numerous lakes; principally agricultural; Stettin is the largest town. Before the 19th Century much of the province was for a time Swedish territory.

Pomeranian Dog, a toy breed of dog with long and silky white, black or brown hair, strongly

built, with sharply pointed muzzle and a thick bushy back-curved tail. It is sometimes known by its German name of "Spitz." **Pomona**, in the Orkneys. Almost cut in two by the inlets Kirkwall Bay and Scaja Flow; the only towns are Kirkwall and Stromness.

Pomona, in the Roman mythology, is the goddess of fruits, who presided over their ripening and in-gathering, and was generally represented bearing fruits in her lap or in a basket.

Pompadour, Louis XV., born in Paris, for 20 years exercised great influence over him and the affairs of the kingdom, filling all positions in the state with her own nominees and reversing France's traditional policies. She was a patroness of art and numbered Voltaire in her circle. (1721-1764).

Pompeii, an ancient Italian seaport on the Bay of Naples, a popular pleasure resort of the ancient Romans; devastated by an earthquake in 63, it was restored, but in A.D. 79 was buried in an eruption of Vesuvius. Since 1748 the city has been largely disinterred, many temples, houses, and other buildings having been brought to light, with a portion of the city walls.

Pompey (Gnaeus Pompeius), surnamed the Great, Roman general and statesman; entered into public life after the death of Marius; associated himself with Sulla; distinguished himself in Africa and in the Mithridatic War; was raised to the consulate with Crassus in 71 B.C.; cleared the Mediterranean Sea of pirates in 67-66; formed against the Senate, along with Caesar and Crassus, the first triumvirate, and in 54 entered into rivalry with Caesar; after a desperate struggle he was defeated at Pharsalia, and, escaping to Egypt, was assassinated there by order of Ptolemy XII. (106-48 B.C.).

Pompey's Pillar, a red granite column dedicated to Diocletian, 98 ft. in height including the capital and pedestal, erected at Alexandria in the 4th Century, A.D., and so-called from being mistakenly supposed to indicate Pompey's burial-place.

Poncho, a cloak or shawl, of woollen or alpaca cloth, oblong in shape, with a slit in the centre, through which the wearer passes his head, worn by natives of South America.

Pondicherry, a small French colony on the E. coast of India, 53 m. S. of Madras; was first occupied in 1674. It was captured by the Dutch in 1693, and by the English successively in 1761, 1778, and 1793, but on each occasion restored. Pop. 179,000. The capital, Pondicherry, is the chief town of the French possessions in India. Pop. 49,000.

Pondweed, a genus of waterweeds, or submerged and translucent leaves, and green flowerets. The Cape pondweed flowers freely in winter in Great Britain. It is the typical genus (Potamogeton) of its natural order. There are 11 British species.

Ponsonby of Shulbrade, Arthur Augustus William Harry Ponsonby, first Baron, British Labour politician; son of Sir Henry Frederick Ponsonby, private secretary to Queen Victoria. In diplomatic service, 1894-1899; in Foreign Office, 1900-1902. Entered the Commons as Liberal in 1906; as a Labour member in 1922. Held minor government offices in 1924 and 1929-1931. Ennobled, 1930. Chancellor of the Duchy of Lancaster, 1931. Leader of Opposition in House of Lords, 1931-1935, after which he became a propagandist of pacifism in connection with the Peace Pledge Union. (1871-).

Pontefract, market-town of Yorkshire, England, 13 m. S.E. of Leeds; has a castle in which Richard II. died, and which suffered four sieges in the Civil War, a well-known grammar school, and market-gardens, where liquorice for the manufacture of Lomfret cakes is grown. Pop. 19,900.

Pontevedra, a province of NW. Spain, on the Portuguese frontier and the Atlantic, mainly occupied in agriculture and fishing. Area, 1,690 sq. m. Pop. 582,500. Its capital of the same name, 15 m. N.E. of Vigo, has a pop. of c. 25,000.

Pontifical, a Roman Catholic service and directions for those services such as confirmation, ordination, and the consecration of churches, which can be performed only by bishops.

Pontine Marshes, a district in the Campagna of Rome, formerly the most unhealthy of the malarial districts of Italy, used as grazing ground for herds of cattle, horses and buffaloes. The area is now being drained under the auspices of the Italian government, the reclaimed area constituting the new province of Littoria.

Pontius Pilate, Roman procurator of Judaea and Samaria, in the days of Christ, from A.D. 26 to 36; handed over Jesus to the Jewish priestly authorities for crucifixion. He is alleged to have died by suicide at Vienne, and to have been buried at Mons Pilatus on Lake Lucerne.

Pontoon, a floating bridge, particularly one constructed to enable troops to cross a river or other piece of water. It is usually constructed on a light flexible wooden framework of floats connected by ropes; the floats are occasionally hollow metal cylinders.

Pontus, the classical name of a country on the SE. shores of the Black Sea, stretching from the R. Halys to the borders of Armenia; is represented by the modern Turkish provinces of Trebizond and Sivas. Originally a Persian province, it became independent shortly after 400 B.C., and remained so till part was annexed to Bithynia in 65 B.C., and the rest constituted a Roman province in A.D. 63.

Pontypool, a town of Monmouthshire, England, 18 m. from Monmouth, and on the edge of the S. Wales ironstone and coal district. There are manufactures of heavy iron work and tin plates. Pop. 41,000.

Pontypridd, market town of Glamorgan, Wales, on the R. Taf, 12 m. from Cardiff. It has iron and coal mines and cable works. Pop. 40,100.

Pony, a small variety of the domesticated horse, ranging in height from 8 or 9 to 14 hands. Of the many varieties the following are typical: Connemara, at one time Irish, usually of a dun colour; Dartmoor, a small pony with good shoulders, brown, grey and black; Exmoor, a very hardy pony capable of carrying enormous loads on little food; Highland, a good saddle pony with great powers of endurance; New Forest, handsome animals with an Arab strain.

Poodle, a pet breed of dog, with long curling hair, which in domestication is often partially clipped or shaved; it is noted both for affection and intelligence, and is frequently trained to perform tricks of various kinds. The best breeds are pure white or pure black.

Poole, largest town of Dorsetshire, England, 5 m. W. of Bournemouth; a fishing port, with a trade in potters' clay; Poole Harbour, a stretch of water 7 m. long containing Brownsea or Branksa I. is a favourite yachting centre. Pop. 67,000.

Poona, town in British India, 119 m. S.E. of Bombay, the chief military station in the Deccan, and in the hot season the centre of government in the Bombay Presidency. Silk, cotton, paper, and jewellery are manufactured. It was the capital of the Mahrattas, and was annexed by Britain in 1818. Pop. 250,000.

Poor Law, until 1930, was administered in England under a system dating back to 1601, when overseers of the poor were first established for each parish. In 1834 the system was overhauled and Boards of Guardians (*q.v.*) set up. In 1930 these were abolished and their duties transferred to County and County Borough Councils, who now relieve necessitous persons and perform kindred duties through Public Assistance Committees, operating under the general supervision of the Ministry of Health.

Pope, a title in the western church used only by the Bishop of Rome, as, in the belief of Roman Catholics, supreme head of the Church, successor of St. Peter, and vicar of Jesus Christ, infallible in his official teaching in matters of faith and morals. See also **Papacy**. In the eastern orthodox communion the name is applied to any parish priest.

Pope, Alexander, English poet, born in London, of Roman Catholic parents, was a sickly child, and marred by deformity, and imperfectly educated; began to write verse at 12. His *Pastorals* appeared in 1709, *Essay on Criticism* in 1711, and *Rape of the Lock* in 1712; in 1715-1720 appeared his translation of the *Iliad*, and in 1723-1725 that of the *Odyssey*. Afterwards, in 1728, appeared the *Dunciad*, a scathing satire of all the poets and critics who had annoyed him, and in 1732 the first part of the famous *Essay on Man*. (1688-1744).



ALEXANDER POPE

Poperinghe, a town of Flanders, Belgium, 7 m. SW. of Ypres. It was the railroad for the Ypres area during the World War and was taken by the Germans in their first advance, but soon recaptured by the Allies. The famous institute known as *Too H* (*q.v.*) was established there in 1915. Pop. 12,000.

Popish Plot, an imaginary plot of England devised in 1678 by Titus Oates (*q.v.*); as a result of his impostures a number of innocent people lost their lives.

Poplar (*Populus*), a genus of catkin-bearing trees found in Northern temperate regions and included with the willows in the natural order Salicaceae. The chief of the 20 species are the White (*Populus alba*), the Black (*P. nigra*), the Balsam (*P. balsamifera*) and the Aspen (*P. tremula*).

Poplar, a metropolitan borough in the N. bank of the Thames, connected with the opposite bank by the Blackwall and Greenwich tunnels. The East India, West India and Millwall Docks occupy much of its southern portion. Pop. 140,300.

Popocatepetl (*i.e.*, mountain of smoke), a volcano in Mexico, 45 m. S.E. of Mexico City; it has an altitude of 17,880 ft.

Poppæa, *Sabina*, Roman empress, the second wife of Nero, who murdered his first wife Octavia in order to wed her; she had previously been married to Otho, Nero's second successor. She died shortly after marriage as a result of her husband's treatment.

Poppy, name for any plant of the genus *Papaver* which comprises some

110 species found in Europe, Asia, America, South Africa and Australia. They are herbaceous plants, all bearing large, brilliant but fugacious flowers. The White or Opium Poppy (*Papaver somniferum*) yields the well-known opium of commerce which is obtained by cutting notches in the half-ripened seed capsules. Most are natives of Europe. Four species, including *Papaver Rhæas*, the Common Poppy, are found in Britain.



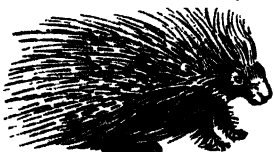
Population. In all civilized countries a census of the population is now taken periodically by the State; in the United Kingdom at 10-yearly intervals. The most notable feature of the returns during the early 20th Century has been the decline in western Europe of both the birth rate and the death rate. The lower birth rate is largely attributable to the deliberate limitation of families; the lower death rate to better methods of combating disease, especially among infants.

Density of population is affected by the growth of wealth and conditions which make it easy to support life. In early times, when water was the first necessity of life, the basins of such rivers as the Nile became centres of dense population, but in modern times industrial development has seen the growth of large and densely populated towns as a result of the wealth in the soil, *e.g.*, coal and iron, conditions favourable to the establishment of centres of commerce, *e.g.*, London, New York.

Porcelain, name for the finer varieties of white china or earthenware. It is made from clay and hardened by heat, the body being vitrified and translucent. It was first made in China between the 6th and 8th Centuries. In England it appeared best as Spode ware in 1800, but earlier types were the soft paste varieties of Bow and Chelsea. Among the first is that of Sèvres, in France. Derby and Worcester are centres of English porcelain industry.

Porcupine, the common name of two families of rodents, the

Hystriidae or Old - World Porcupines, and the Erethizontidae, or New-World Porcupines, all having bodies covered, especially on the back,



COMMON PORCUPINE

with spike-like structures, called quills. The Common Porcupine (*Hystrix cristata*) is found more rarely now in S. Europe and N. Africa. Some of the American species are arboreal.

Pork, the flesh of swine, one of the most important and widely used species of animal food. It is coarse and ranker than beef or mutton, but when of good quality and well-cured develops a richness and delicacy of flavour superior to that of other salted meat. It was forbidden as food by the Mosal law, and is regarded by Jews and Mohammedans as unclean, while in China it is eaten almost to the exclusion of other mammalian flesh foods. It contains less fibrine, albuminous and gelatinous matter than beef or mutton, and the abundance of fat renders it a suitable diet for cold countries.

Porphyry, an igneous rock with a compact ground through which crystals of another tint are scattered, so as to

give it a speckled aspect. The original type was the purple-red antique porphyry of Italy. **Porpoise**, a genus (*Phocaena*) of cetacean mammals belonging to the dolphin family. One species, the *Phocaena phocaena* or *Phocaena communis* is common in British waters. It is one of the smallest but attains a length of 5 to 7 ft. It feeds on herrings; schools of porpoises cause much destruction to the herring shoals.

Porsena, a king of Etruria, famous in the early history of Rome, who took up arms to restore Tarquin, the last king, in 509 B.C., but was reconciled to the Roman people from the brave feats he saw them accomplish, especially that of Cincinnatus, who defended the head of the bridge while the Romans destroyed it.

Port Adelaide, a city in S. Australia, 8 m. S. of Adelaide, of which it is the port; it is now incorporated with Adelaide.

Portadown, a linen-manufacturing town in Armagh, Northern Ireland, on the R. Bann, 10 m. N.E. of Armagh. Pop. 12,000.

Port Arthur, a naval station on the peninsula extending S. into the Gulf of Pe-Chi-Li; leased by China to Japan until 1914. Fought for in the Russo-Japanese War of 1904, it was captured by Japan and ceded to her at the end of the war, China renewing the lease in 1915. Pop. c. 25,000.

Port-au-Prince, capital of the republic of Haiti, on the W. coast; has a fine harbour, and exports coffee, logwood, etc. Pop. 115,000.

Portcullis, a strong grating, resembling a harrow, hanging over the gateway of a fortress, let down in case of necessity to prevent hostile ingress.

Port Elizabeth, a town in Cape Province, South Africa; stands on Algoa Bay, 85 m. S.W. of Grahamstown; principal exports wools, hides, and ostrich feathers. Pop. (white) 53,500.

Port Glasgow, a port in Renfrewshire, Scotland, on the Firth of Clyde, 3 m. E. of Greenock; founded by Glasgow in 1668 as a port for that city before the deepening of the river was projected. In the beginning of the 18th Century it was the chief port on the Clyde, but has since been surpassed by Greenock and Glasgow itself. There are shipbuilding, iron and brass founding industries, and extensive timber ponds. Pop. 19,600.

Portcawl, an urban district and holiday resort of Glamorganshire, Wales, 30 m. W. of Cardiff. Coal and iron are exported. Pop. 6,400.

Port Huron, a city of Michigan, U.S.A., on the R. St. Clair, 50 m. N.E. of Detroit. It has shipbuilding, engineering, and motor-car manufacturing industries. Pop. 31,400.

Portico, a row of columns, generally in a building, front of the entrance of a building, though any erection consisting of a row of pillars connected with an adjoining wall by a covering roof, or a double row in which the intervening space is roofed over, may be so called.

Portishead, an urban district and holiday resort of Somerset, England, on the Severn estuary, 8 m. W. of Bristol. Its dock belongs to the port of Bristol. Pop. 3,900.

Port Jackson, a fine natural harbour of New South Wales, Australia, upon the shores of which Sydney is situated.



PORTICO

Portland, largest city and principal seaport of Maine, U.S.A., on a peninsula in Casco Bay, 108 m. N.E. of Boston by rail. It has a good harbour and fishing, shipbuilding and shoemaking industries. Longfellow was born here. Pop. 70,800. (3) Largest city in Oregon, U.S.A., on the Willamette R., nearly 800 m. N. of San Francisco; there are iron-foundries, canneries, and flour-mills; the river being navigable for ocean steamers, it is a thriving port of entry. Pop. 302,000.

Portland, Isle of, a rocky peninsula in England, connected by Chesil Bank with the mainland; is the source of great quantities of fine building limestone; here is also a convict-prison, opened 1848, accommodating 1,500 prisoners.

Portland Cement, a building material manufactured from the river deposits of the Thames and Medway estuaries, containing a mixture of three parts of calcium carbonate to one part of clay. It is used in building and structural work of various kinds.

Portland Vase, an ancient cinerary urn of dark blue glass ornamented with Greek mythological figures carved in a layer of white enamel, found near Rome about 1640, and in the possession of the Portland family in 1787; it is now in the British Museum. In 1845 the vase was broken by a lunatic, but it was skillfully restored. In 1929 it was put up for sale by auction, but not finding a high enough bidder it was returned to the Museum. It is 10 in. high and 7 in. round.

Port Louis, capital of Mauritius, on the NW. coast; is the chief port of the colony, with an excellent harbour and a naval coaling station. Pop. 56,000.

Portmadoc, a seaport and market-town of Caernarvonshire, Wales, 16 m. S.E. of Caernarvon. Slate is exported. Pop. 3,970.

Port Mahon, capital of Minorca, Balearic Is., a Spanish naval station with an excellent harbour; exports cattle, cheese and leather goods. Pop. 18,000.

Port Moresby, capital and port of Papua (New Guinea), on the S. coast. It has a wireless station and regular steamer service with Sydney. Copper is found near by. Pop. 3,000.

Porto Alegre, a city of Brazil, in the state of Rio Grande do Sul, about 200 m. N. of the city of that name. It is a rapidly growing town, and the principal commercial centre of the southern part of the republic. It has a large German community. Pop. 322,000.

Port of London Authority, the body charged with the care and administration of the Port of London, including the Thames below Teddington Lock and all the docks of the Port. It is composed partly of members appointed by government departments, the City Corporation, L.C.C., and Trinity House, partly of others elected by those concerned with the trade of the port. It is in charge of over 4,200 acres of docks, and 70 m. of the riverway.

Port of Spain, or Spanish Town, seaport and capital of Trinidad, British W. Indies, on the E. coast. Oil and cocoa are exported. Pop. 76,400.

Porto Rico. See Puerto Rico.

Portpatrick, a port and seaside resort of Wigtownshire, Scotland, 7 m. S.W. of Stranraer. The nearest port (21 m.) to Northern Ireland, it was formerly (until 1849) a terminal of the Irish mail packets. Pop. 1,600.

Portree, seaport and holiday resort of which it is the capital and main business centre. Pop. 2,200.

Port Royal, a convent, 8 m. SW. of Versailles, France, which in the 17th Century became the headquarters of Jansenism. Afterwards inhabited by nuns, the convent was demolished in 1710.

Portrush, port and seaside resort of Co. Antrim, Northern Ireland, on the N. coast, 7 m. NE. of Coleraine. It is connected by steamer with Liverpool and Glasgow. Pop. 2,000.

Port Said, town and coaling station of Egypt, at the N. entrance of the Suez Canal. It has a large trade, especially in cotton. Pop. 127,000.

Portsmouth, city and seaport in Hampshire, England, on Portsea I., 15 m. SE. of Southampton; the most important British naval station. The harbour can receive the largest war-vessels, and in Spithead roadstead 1,000 ships can anchor at once. It was the scene of Buckingham's assassination and the loss of the *Royal George*. Three novelists were born here — Dickens, Meredith, and Besant. Southsea, now a part of the city, is a popular holiday resort. The old church of St. Thomas is being enlarged as a cathedral. Pop. 251,000.

Portsmouth, (1) largest city of New Hampshire, U.S.A., and only seaport in the State, on the Piscataqua R., 3 m. from the ocean; 57 m. NE. of Boston, a handsome old town and favourite watering-place; near it is a U.S. navy-yard. Here was signed the treaty that ended the Russo-Japanese War in 1905. Pop. 14,500.

Port Sudan, seaport of the Sudan, on the Red Sea, 40 m. N. of Suakin. Ivory and cotton are exported, and salt is largely worked in the neighbourhood. Pop. 23,000.

Port Sunlight, model village of Cheshire, England, 3 m. SE. of Birkenhead. It is entirely engaged in soap manufacture.

Port Talbot, port and town of Glamorganshire, Wales, 1½ m. SE. of Aberavon. It has a good harbour, and copper smelting is carried on. Pop. 40,500.

Portugal, European republic in the SE. of the Iberian peninsula, between Spain and the Atlantic; watered by the rivers Minho, Douro, Tagus, Guadiana and Mondego. It is generally mountainous, except on the coast; the S. contains large areas of pasture. Wheat, maize, oats, barley, rice and potatoes are grown; olives and the vine are cultivated. The chief exports are wine, sardines, cork and resin. The principal imports are iron and textiles. The capital is Lisbon, on the Tagus; other towns are Oporto, Coimbra and Evora.

The people are Roman Catholics of mixed race, showing traces of Arab, Berber and negro blood with a predominance of northern strains. The language is akin to Spanish. The 14th and 15th Centuries saw the zenith of Portugal's fortunes. She was then the foremost maritime and commercial power of Europe. Her navigators founded Brazil and colonised India; but in the 16th Century extensive emigration, the expulsion of the Jews, and other causes led to a speedy downfall. For a time she was annexed to Spain. Regaining her independence she threw herself under the protection of England, during the Napoleonic struggle. Since 1910 the country has been considerably developed, education has spread, and Portugal is rapidly taking her place as an up-to-date European state. Since the 15th Century she has been "England's ally." Area 35,500 sq. m. Pop. 6,826,000.

Portuguese Africa. See Mozambique; Angola.

Portuguese Guinea, a colony of Portugal on the W. African coast, including the neighbouring Bijagoz Is.; rice, wax and oil are produced. The capital is Bolama, on the island of that name. Area 14,000 sq. m. Pop. 390,000.

Portuguese India, collective name for the Portuguese settlements on the Indian coast, including Goa, Damão, and Diu, with some adjoining inland territory and small islands off the Malabar coast. Salt and manganese are mined, and fish, spices and coconuts exported. The capital is Nova-Goa, or Pangim. Area 1,540 sq. m. Pop. 580,000.

Portuguese Man-of-War,

a tropical jellyfish of the group Siphonophora, beautifully coloured, consisting of a freely-swimming float below which hang the motor, sexual and nutritive appendages. It is occasionally found off the western British coasts. It has a powerful sting.



Port Wine, a red wine

in Portugal, in the mountainous district called Cima do Douro, and shipped from Oporto, whence its name. It is often adulterated with Spanish Tarragon wine. Catechu is sometimes added to impart an astringent flavour. It is now largely imitated by Australian and South African wines.

Poseidon, in Greek mythology, the god and Rhea, and brother of Pluto, Hera, Hestia, and Demeter, equivalent to the Roman Neptune; had his home in the sea depths, on the surface of which he appeared with a long beard, seated in a chariot drawn by brazen-hoofed horses with golden manes, and wielding a trident.

Positive Rays, or Canal Rays, rays consisting of positively charged particles, first observed by Goldstein in 1886 while experimenting with rarefied gases. They are produced by the ionization of gases in a strong electric field, and their analysis by Sir J. J. Thomson and others has led among other things to the discovery of numerous elemental isotopes (q.v.).

Positivism, the philosophy of Auguste Comte (q.v.), an attempt at the classification of knowledge on the basis of its relation to man. It sought to substitute abstract Humanity for supernatural objects of devotion or metaphysical abstractions as the goal of human effort, and to correlate all human activities in the service of the race as a whole. It was popularised in England by Herbert Spencer and Frederick Harrison.

Positron, covered by Anderson (1933) and Blackett and Occhialini (1933). Positrons are formed by the action of cosmic rays upon matter, by bombarding light elements by neutrons (q.v.), and in other ways. A positron has an existence of only a fraction of a second, since when it collides with a negative electron the two are annihilated as such, and converted into radiation.

Possession, in law, the actual holding of a thing as distinct from ownership, which presupposes legality; possession creates a presumption (q.v.) of ownership, and possession over a long period may frequently give a title against a previous owner.

Poste Restante, department of a post-office where letters lie till they are called for by the addressees.

Post-Impressionism. See Futurism.

Postmaster-General, the Cabinet Minister in charge of the Post Office. The office was established in 1657, when the Government monopoly of letter-carrying was first established by statute.

Post Mortem, the examination of a body to ascertain the cause of death. Such an examination may be ordered by a coroner when he considers it necessary.

Post Office, the authority entrusted with the conveyance of mails, and one of three great revenue-collecting departments, came into existence in Great Britain in the 16th Century, the first Postmaster General, or "Master of the Posts," being appointed in 1657. Penny post in London was established in 1681, and throughout the country in 1840, through the exertions of Rowland Hill. The present London General Post Office was opened in Newgate in 1910.

The Post Office's receipts are now £72 millions per annum. In addition to operating postal, telephone and telegraph services, it receives considerable sums for duties and licences on behalf of the Inland Revenue Department, the Customs and Excise Department, and the County Councils, and for National Insurance on behalf of the National Health Insurance Commissioners and the Board of Trade. It issues wireless licences, motor drivers' licences and entertainment stamps, and sells unemployment insurance stamps. It also pays Widows' and Orphans' and Old Age pensions and Naval, Military and Air Force pensions and allowances. The Post Office Savings Bank was inaugurated in 1861; and the Money Order Office in 1792; the telegraphs were transferred to the department in 1870; the Parcel Post was started in 1883; the telephone service has been exclusively owned and operated by the government since 1912. Air Mails were inaugurated in November 1919, when a regular London-Paris service was established, and have been extended since to include services as far afield as Australia and South Africa.

Potassium, a metallic chemical element belonging to the alkali-metal group; Symbol K (from the Latin *kali*); atomic number 19; atomic weight 39.1. First isolated by Sir Humphry Davy in 1807, it is a soft, silvery-white, and very reactive metal, rapidly corroding in the air and liberating hydrogen from water so energetically that the gas inflames. The metal itself has few uses, but its compounds, e.g., the nitrate (nitre, or saltpetre), chloride, cyanide, and bromide, are of considerable importance.

Potassium Bromide, a white crystalline solid made by the action of bromine upon potassium hydroxide solution. It is used in medicine as a sedative, and as a retarder in photographic development.

Potassium Chlorate, a white crystalline solid discovered by the French chemist Berthollet in 1786. In the laboratory it is used as a convenient source of oxygen. It is a good germicide and is used in certain throat lozenges; it is also a powerful oxidising agent and is used in this character in the dye and other industries.

Potassium Cyanide, or Cyanide of Potash, a white crystalline solid made by fusing potassium ferro-cyanide with potash, and also synthetically. Although intensely poisonous, it has many applications.

Potassium Nitrate. See Nitre.

Potato, a universally cultivated plant (*Solanum tuberosum*), of S. American origin, the tubers of which are an important foodstuff, the tubers being swollen underground branches, the "eyes" being buds in aborted leaf-axils. By ridging and covering more of the leaf-axils of the plant, an increase in the number of horizontal underground branches is achieved and an increase in the yield. It is commonly believed that Sir Walter Raleigh introduced it into England (1586). Many varieties are grown, differing in size, form and colour and in the season of yield. The potato is cultivated also for making ethyl alcohol, starch, etc. The chief disease of potatoes is a decay caused by the fungus *Peronospora infestans*, probably due to excess of moisture.

Potemkin, Grigori Aleksandrovich, Russian statesman and general, of Polish birth. As an army officer he met the Empress Catherine II. and, becoming her favourite, was soon practically co-ruler of the Empire, being largely responsible for the partition of Poland. He achieved great military successes in the Turkish war, but died at last by poison. (1739-1791).

Potential, in electricity, a term implying the same relation to electricity that level does to gravity. The Earth's potential is taken at zero. A positively-charged body tends to move from a point of higher to a point of lower electric potential. A potential transformer is an instrument for connecting electrical measuring instruments to a high-voltage circuit.

Potentilla, a genus of perennial herbs of the order Rosaceae, mostly yellow- or white-flowered, among the British species of which are the silverweed, goosegrass or wild tansy (*P. Anserina*), whose roots are eaten in the Scottish Is., Cinquefoil (*P. reptans*), and *P. Tormentilla*, found in the Orkneys and Lapland, used for tanning and dyeing, and medicinally as a gargle.



POTENTILLA

Pot-holes, cylindrical cavities, varying in depth and diameter, produced by eddying streams which cause a mass of detritus to revolve and so wear away the rock with which it is in contact. They are often found in caves and are sometimes known as "Giant's Kettles."

Potomac River, river in the U.S.A., rising in the Alleghany Mts., flows 400 m. eastward between Maryland and the Virginias into Chesapeake Bay; the Shenandoah is its chief tributary. The river is navigable as far up as Cumberland, and is tidal up to Washington, which is on its banks.

Potosi, town of Bolivia, capital of a dept. 13,000 ft. above sea-level on the slopes of the Cerro de Potosi; is one of the loftiest inhabited towns on the globe. There is a cathedral, next to that of Lima the finest in South America. Silver mining was formerly carried on, but tin and bismuth are now the principal products of the neighbourhood. Pop. 36,000.

Potsdam, German town, formerly the residence of the Emperors, 18 m. SW. of Berlin, stands on an island at the confluence of the Nuthe and Havel, and is the capital of the Prussian province of Brandenburg; a handsome town, with broad streets, many parks and squares, numerous statues and fine public buildings; has furniture, sugar and chemical works, and a large violet-growing industry. Pop. 74,000.

Potteries, The, or "Five Towns," a district in North Staffordshire, England, 9 m. long by 3 m. broad, the centre of the English earthenware manufacture. It is mostly included in the city of Stoke-on-Trent. Its life has been depicted in the novels of Arnold Bennett.

Pottery, a general name for objects made by moulding into shape and baking clay: the clay may be either glazed or unglazed. Unglazed pottery is porous, the clay being simply baked till it is hard. Most early pottery was of this kind, although some Greek and Etruscan ware was painted with a lustre, which made it non-porous. Glazed pottery is generally manufactured from clay marl, to which fine sand is added in the proportion of about 1 to 3 in order to counteract the shrinking of the clay. The marl is first purified, washed and allowed to remain in a damp atmosphere for some months. The sand is then kneaded into the clay, which is afterwards moulded to the required shape on the potter's wheel. The earthenware is then dried and placed in the oven for a first firing, which gives it the appearance known as "biscuit." The glaze may then be painted on; after which it receives a second firing at a temperature of from 900° to 1,000° Centigrade. The base of most glazes is white lead, but leadless glazes have now been invented.

Pouched Mouse, an American rodent (genus *Dipodomys*) with long tail and hind-legs adapted for leaping, and large cheek-pouches. It is found mainly in California, and its diet is principally nuts and seeds. An Australian marsupial, the insect-eating genus *Phascogale*, of which there are several species, bears the same name; it is also called the Kangaroo-rat.

Poughkeepsie, a city and manufacturing centre of New York State, U.S.A., on the Hudson R. Here are Vassar College for women, and other educational establishments. Pop. 40,300.

Poulsen, Valdemar, Danish inventor, made many discoveries in connection with telephony, and invented a system of wireless telegraphy; invented the Poulsen arc for the production of electromagnetic oscillations of high frequency. (1869-).

Poultice, a preparation of bread-crumbs, linseed-meal, oatmeal, or other soft farinaceous materials soaked in hot water and applied externally to the body as a means of applying local heat to reduce pain or relieve inflammation. It is generally enclosed in a muslin or linen bag; the heat so applied should be as great as can be borne.

Poultry, domestic and wild fowl of the single original species, *Gallus Ferrugineus* or *Bankiva*, can, according to Darwin and others, be regarded as the parent of all the various domestic breeds, though this theory is now disputed by many, as breeds from China show structural variations. In any event wild fowl have been domesticated since the earliest times, although not among nomadic peoples. The ancient Egyptians were noted for their success in keeping poultry, and even to-day the Mediterranean breeds are renowned layers. Domestic breeds have been reared principally for egg-laying, and pullets of a good strain are capable of laying from 150 to 300 eggs per year. A good flock average of 180 should, however, be aimed at. Egg-production and the rearing of table poultry has now become a large industry. For rearing in a confined space the "battery" system has been devised, but semi-intensive housing is, perhaps, better. Poultry should also be provided with covered grass runs. There are roughly two systems of feeding: the wet mash system, alternating with grain feeds, and the dry-mash system, with several

variations, the latter being perhaps more labour-saving, and, on large farms, conducive to better results.

Pound, an English measure of weight, containing sixteen avoirdupois ounces or 7,000 grains: the former Troy pound, no longer recognized, contained 5,760 grains, being thus roughly four-fifths of the avoirdupois pound.

Pound, or **Pound Sterling**, the basis of the British monetary system, a gold coin eleven-twelfths fine (i.e., 22 carat), weighing 123.274 grains. It contains 240 pence, and the name is derived from the fact that formerly 240 pennies were equal to a Troy pound weight of silver. Since 1925, it has been replaced in ordinary circulation by the paper Treasury Note.

Pound, a place in which cattle or other straying or trespassing. Any constable finding an unattended animal at large in the street may remove it to a pound, to be detained until it is claimed and the expenses of its detention are paid. Most rural towns and villages set apart some site for use as a pound.

Poussin, Nicholas, French painter, studied first in Paris and then at Rome; in 1640, Louis XIII appointed him painter-in-ordinary, with a studio in the Tuileries, but he returned three years after to Rome, where he died. He is known by numerous great works, among which may be mentioned the "Shepherds of Arcadia," "The Deluge," "Moses drawn out of the Water," "The Flight into Egypt," etc. Many of his works are in the Louvre. (1594-1665).

Power of Attorney, an instrument by which one person authorises another to do on his behalf some act or acts, such as to collect his debts, to execute a deed or to transfer stock.

Poynings, Sir Edward, English statesman, born in Kent; after taking part in the Kentish rising of 1483, he fled to Europe, taking part in the Flanders wars; he became Governor of Calais in 1493, and in the following year Lord Deputy of Ireland, in which capacity he called together the Parliament that passed Poyning's Law (q.v.). He defeated the Irish who rose in support of the Pretender Perkin Warbeck. (1459-1521).

Poyning's Law, an Act of the Irish Parliament held at Drogheda in 1494, in the reign of Henry VII, subjecting the Irish Parliament to the authority of the English Privy Council; so called from Sir Edward Poyning, the Lieutenant of Ireland at the time.

Poynter, Sir Edward John, English artist, born in Paris; from 1876, held appointments at University College and at Kensington, but resigned them in 1881, to prosecute his art; Director of the National Gallery from 1894, and President of the Royal Academy in 1896; is the author of *Lectures on Art*, and the designer of some mosaics in the Houses of Parliament. His paintings, such as "Atalanta's Race" and "Nausicaa and her Maidens" are mostly of classical subjects. (1836-1919).

Poznan (Posen), a province of W. Poland, on the German frontier, is traversed by the R. Warta. The prevailing industry is agriculture; the crops are grain, potatoes and hops; there are manufactures of machinery and cloth. Area, 10,260 sq. m. Pop. 2,106,500. The capital is Poznan (Posen), on the Warta, 185 m. E. of Berlin. It manufactures machinery and was once the capital of Poland.

Prado, Museo del, the national Spanish museum and art gallery at Madrid, remarkable for its collection of

paintings by Goya, Velazquez, and the later Italian painters.

Præfectus, a name given to various magistrates, particularly the "Præfectus urbi" or urban prefect, who under the Empire was in charge of the city police responsible for public order. The head of the Emperor's bodyguard was called the prætorian prefect, and other "præfecti" supervised the aqueducts, the provisioning of the troops and the urban population, and so on.

Præmunire, originally the name of a writ, from its opening word; later applied to those offences for which such a writ lay and the penalties provided for them. Such offences mostly concerned ecclesiastical affairs; in the reign of Edward I. a statute of Præmunire sought to repress Papal encroachments on royal authority. The penalties of præmunire include forfeiture of all property and imprisonment at the King's pleasure; they are still in theory applicable to episcopal electors who refuse to accept a candidate for a vacant see nominated by the King. No Præmunire prosecution has been undertaken since Stuart times.

Prætor, a Roman magistrate at first, virtually a third consul, with administrative functions, chiefly judiciary, originally in the city, and ultimately in the provinces as well, so that the number of them increased at one time to as many as 16.

Prætorian Guard, in the Roman Empire, a select body of soldiers chosen to guard the person and maintain the power of the emperors. They at length acquired such influence in the state as to elect and depose at will the emperors themselves, disposing at times of the imperial purple to the highest bidder, till they were in the end outnumbered and dispersed by Constantine, in 312.

Pragmatic Sanction, a term particularly applied to the decree promulgated by Charles VI, emperor of Germany, whereby he vested the right of succession to the throne of Austria in his daughter, Maria Theresa, a succession which was guaranteed by France and most of the European Powers.

Pragmatism, a philosophical system at the end of the 19th Century, connected especially with the name of William James (q.v.). It maintained that truth was a function of expediency, and that the validity of an idea depended on its value in practice.

Prague (*Praha*), capital of Czechoslovakia, on the R. Vltava, 217 m. NW. of Vienna, a picturesque city, with a great palace, a cathedral, an old town hall, a picture-gallery, observatory, botanical garden, museums, and three universities (Czech, German and Ukrainian). The chief commercial city of Czechoslovakia, it has manufactures of machinery, chemicals, leather and textile goods. Founded in the 12th Century, it was captured by the Hussites in 1424, fell frequently during the Thirty Years' War, capitulated to Frederick the Great, 1757, and in 1848, was bombarded for two days by the Austrian Government. Pop. 849,000.

Prairie, an extensive tract of flat or waving grass, mostly destitute of trees, and forming the great central plain of North America, which extends as far N. as Canada.

Prairie Chicken, a bird (*Tympanuchus* of the family Phasianidae, related to the grouse; it is found in the U.S.A., where it is commonly used for the table. The male has a neck-tuft of ten to eighteen feathers. Other birds of the U.S.A. and Canada, including *Pedicularis phasianellus* and the *Tympanuchus pallidicinctus* of Texas, also bear the name.

Prairie-Dog, or **Prairie Marmot**, a rodent mammal of the marmot family found on the prairies of Canada and western America; reddish brown in colour and about 12 in. in length, with a note resembling a bark, it is a gregarious and burrowing creature.



PRAIRIE DOG

Praseodymium, a metallic chemical element belonging to the group of rare-earth metals. Symbol Pr; atomic number 59; atomic weight 140.9.

Prato, city of Tuscany, Italy, 10 m. NW. of Florence, with a 12th Century cathedral, several interesting old churches, and wool and straw-plaiting manufactures. Pop. c. 50,000.

Prawn, a crustacean (*Palæmon serratus*), with darker grey, and usually about 4 in. in length, resembling a large shrimp and found in plenty off the British coasts. It is a favourite article of food. It belongs to the family Palæmonidae, which includes both the common prawn of salt water and the river prawns found in the tropics, and in which the first two pairs of legs are chelate. Species of river prawns found in the East Indies and in the West Indies reach a considerable size. In America the name is applied to several other varieties of shell-fish, especially *Penæus esculentus*.

Praxiteles, Greek sculptor of the 4th Century B.C., born in Athens; executed statues in both bronze and marble, and was unrivalled in the exhibition of the softer beauties of the human form, his most celebrated works being his marble statue of "Aphrodite" at Knidos, and his "Hermes," an attempt to communicate with human power.

Prayer, or to seek benefits from a superhuman power. Prayer, both private and public, is an essential feature of all religions which admit the existence of a deity interested in human affairs; in most it is imposed as a duty on the worshipper. Jews, Mohammedans and Christians are all required by their respective faiths to pray regularly and daily. Among Christians meetings for public prayer took place in the earliest days of the church; the Koran requires Moslems to pray five times daily at fixed intervals. Prayer for the dead has since the Reformation been a controversial subject in the Christian churches, Protestants generally maintaining, as against Catholics and Eastern Orthodox, that it is unscriptural, though this view has relaxed somewhat, especially since the World War.

Prayer Book, a book of worship for the Church of England, the first version of which appeared in 1549, several subsequent versions being issued till 1662, when it took its present form. In 1907 its revision was suggested, but the proposed alterations were rejected by Parliament in 1927 and 1928; the use of the Revised Book has, however, been sanctioned by many bishops. The Anglican Church in Scotland, Ireland, Canada, the U.S.A., and elsewhere, has produced its own revisions of the Prayer Book.

Prayer Beads. See Rosary.

Praying-Wheels, cylinders with on them, revolved by hand, or mechanical power, used by the Lamaists of Tibet.

Prebend, the stipend or maintenance granted to a canon of a cathedral or collegiate church out of its revenues. Originally the prebend was a portion of food, clothing or money allowed to a monk or

cleric. In the Church of England a prebendary is the holder of a disendowed prebendal stall in a cathedral church.

Precedence, in Great Britain, is regulated by the Earl Marshal in England and by Lyon King of Arms in Scotland. The precedence of all great officers of state is regulated by an Act of 1540. Immediately after the members of the Royal Family come the Archbishop of Canterbury, Lord Chancellor, Archbishop of York, Prime Minister, Lord President of the Council, the Speaker, Lord Privy Seal and various members of the Royal Household; then follow Dukes, foreign Envoys, Marquesses, Earls, Viscounts, Bishops, and Barons in that order. After the peerage come the Privy Councillors, the Chancellor of the Exchequer, the Lord Chief Justice and other High Court judges. After these, come Baronets and Knights. The orders of knighthood rank in the following order: Garter, Thistle, St. Patrick, Bath, Star of India, St. Michael and St. George, G.C.I. (India), Royal Victorian Order, Order of the British Empire.

Precedent, in law, a judicial decision which is binding on judges called on to decide similar issues in the future. A precedent is of force only so far as the cause to be decided duplicates the earlier case, though it may afford guidance to the judge in forming his view of the law on a closely allied matter ("competing analogies"); and only an actual decision, not an opinion expressed by a judge on a matter not in immediate issue, can be held as a binding precedent.

Precentor, the leader of the choir or musical services in a cathedral or collegiate church. In the Church of England he ranks next to the dean. His place is on the left side of the choir (Cantor's), the dean's being on the right (Decan!).

Preceptors, College of, a body forward the interests of education in Great Britain by holding examinations for both pupils and teachers, especially in pedagogy in the case of the latter.

Precession of the Equinoxes, name given to the gradual shifting of the equinoctial points along the ecliptic from E. to W., due to a change in the inclination of the earth's axis. See *Equinoxes*.

Precipitation, in chemistry, process by which a substance is made to separate from another or others in solution, or fall to the bottom. A precipitate is a solid produced from a solution by adding a gas, a liquid, a solid, or another solution.

Predestination, the dogma in theology which teaches that salvation or damnation of individuals is fore-ordained by God, and that their acceptance of salvation is not their own voluntary act. It was first taught by St. Augustine and later by, among others, Calvin.

Predicables, in logic, the attributes on which, or the classes of predicates which may be applied to a subject. Traditionally they are 5: genus, a wider, and species, a narrower class into which the subject falls; difference, or what distinguishes the subject from others of its genus; property, or a quality derived from, but not sufficiently expressed by, its species and difference; and accident, roughly that which makes the subject an individual of its class.

Pre-emption, a right in law to the first offer of a thing which is to be sold, as in the case of shares which are held on condition that if the holder wishes to sell them his fellow-shareholders must have the first offer.

Pre-existence, the corollary of the theory of Transmigration of Souls or Metempsychosis, that the human soul has existed before birth. It is not generally supposed to be consistent with Christian teaching, but is held by the followers of many Eastern religions, and by the ancient Pythagoreans.

Pregnancy, the state of a woman between the conception and birth of a child. It is marked by a cessation of the menstrual flow, and frequently also by the condition known as "morning sickness." The movement of the child is usually felt at about 17 weeks, and its heartbeat is traceable shortly afterwards. Ante-natal clinics, at which pregnant women may obtain advice suitable to their condition, are now established everywhere, and ante-natal care has done a lot to reduce the dangers of childbirth.

Prelate, a name applied, especially in the high dignitary in the Church, especially an abbot, bishop, the general of a religious order, or the Pope himself. By the Presbyterians of the English Reformation era it was applied to bishops as a derogatory term, "Popery and Prelacy" being condemned as equally inconsistent with Primitive Christianity.

Prelude, name used in music for the introduction to a sonata or other composition; since the time of Chopin it has often been applied to short compositions especially for the piano, complete in themselves. Wagner and some later composers have used the name for short operatic overtures.

Premium, in currency, the difference of value between gold and silver coins and paper notes of the same nominal amount; in stock or share dealing, the excess of the actual over the nominal price of a security; in insurance, a sum payable periodically by the insured in order to secure to him or his representatives the advantages of the insurance.

Prempeh, a chief of Ashanti, W. Africa, who was expelled from his territory by the British in 1894, after he had failed to grant permission for the establishment of a British residency at Coomassie (Kumasi). He was permitted to return in 1924, and settled in his former territory as a private citizen. He died in 1931.

Pre-Raphaelitism, a movement especially painting, headed by Rossetti, Holman Hunt, and Millais, which sought to abandon the tradition of painting since Raphael and to return to the study of nature itself; Morris and Burne-Jones later joined the movement.

Prerogative, any exclusive privilege of the Crown. Common law prerogatives comprise (a) those regarding the royal character: e.g., the King can do no wrong; the King cannot be sued in his own courts; (b) those regarding the royal authority, e.g., the right to receive and appoint ambassadors; (c) those regarding the royal revenue. The prerogative is no longer the personal prerogative of the King. All public Acts are done by the Crown on the advice of Ministers. The privileges arising out of the prerogative are therefore the privileges of the executive and, as Ministers are dependent on the House of Commons, that House has obtained control over what was formerly the peculiar province of the Crown.

Presburg. See *Bratislava*.

Presbyopia, diminution of sight due to age, occurring usually about 45, when near objects are less distinctly seen than distant, an affliction due to the flattening of the lens.

Presbyterianism, that form of Church government which regards all ministers in conclave as on the same level in rank and function and does not recognise the office of a bishop. In Scotland, where it is the prevailing form of Church government, the Church is administered by a gradation of courts, called "Kirk-Sessions," of office-bearers in connection with a particular congregation; "Presbyteries," in connection with a small district; "Synods," in connection with a larger; and finally a General Assembly or a Synod of the whole Church. There are large and influential Presbyterian Churches in England, Northern Ireland, and the United States.

Presbytery, in the Presbyterian Church, an assembly of the ministers and certain deputed elders of a district, which acts as a spiritual court and sends representatives to the general synod. The name is also given to the chancel or sanctuary of a Church, in which the Altar stands, and by Roman Catholics to the priest's private residence.

Prescott, William Hickling, American historian, born at Salem, Massachusetts; becoming blind as the result of an accident, he employed assistants, and in 1826 began to study Spanish history. *Ferdinand and Isabella*, appearing in 1838, established his reputation. *The Conquest of Mexico* was published in 1843, and *The Conquest of Peru* in 1847. He died at Boston before completing the *History of Philip II.* (1796-1859).

Prescription, in law, a right established by mere lapse of time; it generally applies only to easements (q.v.) such as a right to "ancient lights." The period normally required to establish a *prima facie* prescriptive right to an easement is twenty years.

Presentation, the nomination by the patron of a vacant ecclesiastical benefice of a candidate to the bishop for institution.

Preserved Foods, are prepared in various ways; by pickling, or soaking in vinegar or brine, as with fish, onions, etc.; canning, used for meat, fish, fruits, and many other foodstuffs, sterilization being a part of the preparatory process; and freezing, used for meat transported over long distances by sea and in other cases. Milk ("condensed milk") is preserved by evaporation and subsequent tinning. The principle of all food preservation is so to protect the food as to render the presence and activity of bacteria impossible. See also *Refrigeration*.

President of the United States, is elected for four years by delegates from each State of the Union who are appointed especially to elect him, so that the election of the delegates is in fact, though not in law, equivalent to choice of the President himself. He serves for four years, and may be re-elected, but in practice has never been re-elected for a third time after serving two terms; if he dies in office, he is succeeded automatically by the Vice-President. He is commander-in-chief of the army and navy; sees to the administration of the laws, signs bills before they pass into law, makes treaties, grants reprieves and pardons, and in conjunction with the Senate makes war and peace, and regulates foreign relations. See also *United States, Constitution of*, and *N.R.A.*

Press, Freedom of the, was soon after the introduction of printing restricted by the requirement in England of the submission of printed matter to a censor of books; this ceased after 1693, and in theory the only restrictions on the liberty of the press are the necessity of avoiding blasphemy, sedition, libel, offences against morality, or breach of

copyright. In recent years it has been held in some quarters that the operation of the Official Secrets Acts (q.v.), which enables journalists to be punished for the use of information obtained under certain circumstances from public servants, constitutes a limitation of the proper freedom of the press. In war time censorship regulations necessarily make considerable inroads on the principle. Although freedom of the press is established in all democratic countries, the totalitarian states of modern Europe, such as Germany and Italy, have introduced systems of strict press censorship of both periodicals and books.

Press Association, a British news agency founded in 1868, and representing various newspaper proprietors, for the collection and distribution of home, parliamentary, sporting, financial and general news to their journals.

Press Bureau, an official institution set up during the World War for the censorship of news. Its operation continued until six months after the War, and met at times with considerable criticism in view of allegations that it attempted at times to suppress expression of political opinion as well as of news whose circulation might be harmful to national morale or useful to the enemy.

Press-Gang, a party armed with into the naval service in times of emergency. Until the 19th Century impressment was the ordinary method of recruiting the British navy; it can still be in theory, though it never is in practice, resorted to for that purpose.

Pressure Gauge, an instrument for pressure of steam in a boiler or the pressure inside any closed vessel. The Bourdon Gauge can be used for pressures above and below atmospheric. It consists of a tube, elliptical in section, which, if the pressure of the supply is increased, tends to become more circular in section. The instrument is graduated by comparing its indications with a standard gauge. The aneroid barometer is a modification of this instrument. The McLeod Vacuum gauge is used for measuring very low pressures, e.g., that of the residual gas in an electric incandescent lamp.



PRESSURE GAUGE

Prestatyn, town and urban district of Flintshire, Wales, 4 m. N.E. of Rhyl. It has remains of an ancient castle, and near by are lead mines. Pop. 5,500.

Prester John, a legendary figure of the Middle Ages, supposed to be a Christian monarch who ruled a vast realm in Central Asia or Africa, and who was a Priest as well as a King.

Preston, town in Lancashire, England, on the Ribble, 31 m. N.W. of Manchester; St. Walburge's Roman Catholic church has the highest (306 ft.) post-Reformation steeple in England. The chief industry is cotton, but there are also engineering shops, and foundries. It was the birthplace of Richard Arkwright, and the scene of the beginning of the English total abstinence movement in 1832. Pop. 115,000.

Prestonpans, holiday resort of East Lothian, Scotland, on the Firth of Forth, 9 m. E. of Edinburgh. Near are coal mines. Here, in the rebellion of 'Forty-five, Prince Charlie won a victory over the Hanoverian forces. Pop. 6,000.

Prestwich, urban district of Lancashire, England, 4 m. N.W. of Manchester, and a suburb of that city; cotton is manufactured. Pop. 24,000.

Presumption, the assumption in law that a fact is true. Certain general presumptions which hold until the contrary is proved, as that the person in possession of an article is its owner, are important maxims of all legal practice, the most familiar being that the person charged with an offence is innocent until he is proved guilty.

Pretenders, The, the names given to the grandson (James III) and the grandson (Prince Charles) of James II as claiming a right to the throne of England, and called respectively the Elder and the Younger Pretender; the elder, who made one or two attempts to secure his claim, surrendered it to his son, who in 1745 was finally defeated at Culloden.

Pretoria, city in the Transvaal and the province and of the Union of South Africa, 1,000 m. from Cape Town and 45 from Johannesburg, on the Aaples R. Besides the imposing government buildings erected in 1912, it has a governor-general's house, law courts, library, museum, an Anglican cathedral, Transvaal University College, and several parks and gardens. During the Boer War it was captured by Roberts in June, 1900. Pop. (white) 77,000.

Prévost, Antoine François, called Abbé born in Heslin, Artois. His fame rests on a romantic love story entitled *Mamon Lecaut*, a work of genius, charming at once in matter and style. (1697-1763).

Priam, king of Troy during the Trojan War; had a large family by his wife Hecuba, Hector, Paris, and Cassandra the most noted of them; was too old to take part in the war; is said to have fallen by the hand of Pyrrhus on the capture of Troy.

Priapus, in Greek and Roman mythology, the personification of the generating or fructifying power; worshipped as the protector of flocks of sheep and goats, of bees, of the vine and other garden produce.

Price, in modern economic practice, the amount of money that has to be paid to secure the ownership of an article. The fixing of prices by law has frequently been attempted by state authority, but insufficient knowledge of economic processes has made nearly all such attempts failures. The observation of prices, however, has, especially since the World War, become an important part of the business of governments, and practically all states now publish periodical "price-indexes" indicating the rise or fall in the average cost of living based on a comparison of the prices of certain selected articles of general use with that prevailing at some chosen standard time. In Great Britain such an index figure, generally called the "Cost of Living Index," is published monthly by the Board of Trade.

Prickly Heat, or *Miliaria*, an acute skin eruption, common among white residents in the tropics, with strong itching. It sometimes follows on extreme physical exertion or even bathing.

Pride's Purge, the violent exclusion, in 1648, at the hands of a body of troops commanded by Colonel Pride, of about a hundred members of the House of Commons disposed to deal leniently with Charles I, after which some eighty, known as the Rump, were left, who secured the condemnation of the King.

Priest, in most organised religious systems, the officer who offers prayer and sacrifice to God or the gods on behalf of the people generally. Islam, Buddhism, and modern Judaism have no priests. In those Christian bodies which possess a priesthood the priest is set apart by a special rite known as ordination.

Priestley, John Boynton, English novelist, 1st and playwright, born at Bradford; his novels, especially *The Good Companions*, 1929, *Angel Pavement*, 1930, and *They Walk in the City*, 1936, enjoyed extraordinary popularity. His plays include *Eden End*, 1934; *Cornelius*, 1936 and *Music at Night*, produced at the Malvern Festival in 1938. (1894-).

Priestley, Joseph, British scientist and cleric, born near Leeds; wrote in defence of Unitarianism; an advanced Radical in politics, his house was once burnt by an unfriendly mob. Elected F.R.S. in 1766 for his electrical researches, he turned a few years later to chemistry, and in 1774 was the first to isolate oxygen, which he called "dephlogisticated air" (see *Phlogiston*), being a firm upholder of the phlogiston theory. He was the discoverer of several other compounds of first importance, including hydrochloric acid and nitrous oxide. His later life was spent in the United States. His works included a *History of Electricity and Letters to a Philosophical Unbeliever*. (1733-1804).



JOSEPH PRIESTLEY

Primate, a title given in the Anglican and Roman Catholic churches to certain archbishops of special importance. In the Church of England the Archbishop of Canterbury is Primate of All England, the Archbishop of York, Primate of England; in Ireland, the Archbishop of Armagh is Primate of All Ireland, the Archbishop of Dublin, Primate of Ireland. The senior bishop of the Episcopal Church in Scotland is known as the Primate.

Primates, the highest order of mammals, including man, the apes, monkeys, and lemurs. Among their distinctive characteristics are the high convoluted brain surface; the first digit of the foot (hallux) always provided with a flat nail and not a claw; and the successive twofold dentition, the early "milk teeth" making way in adolescence for a second and permanent set.

Prime Minister, an office originating in England in the time of George I., who, knowing no English, entrusted the reins of government largely to Sir Robert Walpole. The office was not recognised by law, and the Prime Minister had no precedence as such, until 1905. He is usually also First Lord of the Treasury; he enjoys a salary of £10,000 per annum, and the use of official residences at 10, Downing Street, London, and at "Chequers" in Buckinghamshire. He presides over meetings of the Cabinet, is responsible for its composition and for the general policy of the Government, and goes out of office when his policy meets with a serious defeat in the Commons.

Primitive Methodists, an English body which, in 1810, seceded from the Wesleyan Methodists, under Hugh Bourne and William Clowes, over a question of church government. They were reunited with the parent body in 1832 as part of the Methodist Church.

Primo de Rivera. See *Rivera*.

Primogeniture, the rule under which, on an intestacy, the eldest son succeeds to the real estate of his father to the exclusion of the younger sons and daughters. It was abolished in English law by the Administration of Estates Act, 1925, which did away with the legal distinction between real and personal property in matters of inheritance.

Primrose, the popular name for a common British spring flower with a yellow corolla, found in woods, hedgerows and by river banks. It is a species of *Primula*, being the *Primula vulgaris* of the Primulaceae order.

Primrose League, a political Organisation founded in 1883 in memory of Lord Beaconsfield, so called because the primrose was popularly reported to be his favourite flower. It includes both sexes, is divided into district habitations; confers honours and badges and has extensive political influence under a grand-master.

Primula, the typical genus of Primulaceae, of which British species are the common primrose (q.v.) (*P. vulgaris*); oxlip (*P. elatior*); cowslip (*P. veris*); and the auriculas (*P. auricula*).

Primulaceae, a natural order of herbs, found in the temperate regions, in which are included such well-known flowers as the primula (q.v.), cyclamen, and lysimachia. They have generally 5 divisions of the calyx, 5 stamens, simple radical leaves and capsular fruits.

Prince Albert, city of Saskatchewan, Canada, on the Saskatchewan R. It has sawmills and flourmills and is a centre of the fur and lumber trades. Pop. 10,000.

Prince Edward I., a small island province of Canada, in the S. of the Gulf of St. Lawrence, occupies a great bay formed by New Brunswick, Nova Scotia, and Cape Breton. The coast-line is exceedingly broken, the surface low and undulating, and very fertile. The chief industry is agriculture; oats and potatoes are the best crops; there are oyster and other fisheries, and fur farming, especially of the silver fox, is important. Coal exists, but is not mined. Manufactures are inconsiderable. Discovered by the Cabots, it was settled by the French in 1715, and ceded to Great Britain in 1763. Constituted a province in 1768, the name was changed from St. John to Prince Edward in 1799. The capital is Charlottetown (pop. 12,400); the only other town of any size is Summerside. Area, 2,180 sq. m. Pop. 88,000.

Princeton, city of New Jersey, U.S.A., 50 m. SW. of New York; was the meeting-place of the Continental Congress of 1783; it is the seat of one of the principal American universities, and of several other educational institutions. Pop. c. 6,000.

Princetown, village of Devon, England, land, on W. Dartmoor, 7 m. E. of Tavistock. It is the site of Dartmoor convict prison, originally built for prisoners of war in the Napoleonic Wars.

Prinsep, Val (Valentine Cameron), British artist who studied under Burne-Jones and Watts, and in Paris. One of his best-known works is the painting of Lord Lytton's Durbar, at Buckingham Palace. He also wrote plays. (1838-1904).

Printing, the making of impressed copies of an engraved block or metal plate, of a lithograph, or of movable type, or stereotype. Early printing from wood blocks has been practised in China since before the Christian era, and the craft reached Europe, probably through Arab traders, in the 15th Century. Printing from movable type was probably invented by Gutenberg in Mainz. The Gutenberg Bible was printed in 1450, some 10 years after the first invention. Caxton introduced printing into England from Cologne, and inaugurated a press in Westminster in 1477.

No important technical improvement followed until Earl Stanhope (1753-1816) invented the iron press. The first printing

machine, a cylinder machine, was invented in 1790 by William Nichols, and an improved model by Koenig was used for printing *The Times* in 1814. Movable type is set either by hand or by machinery. (See *Linotype*; *Monotype*.) The type is then made up into pages and "imposed," that is, arranged in such an order that the sheet when printed can be folded with its pages in sequence. The pages of type are "locked up" in a "forme," each surrounded by wood blocks or "furniture," which leave a space for margins.

Modern printing presses are of the cylinder pattern, the forme of type being laid on a flat bed, or as in the rotary machine, a stereotype plate is made and bent to the form of the cylinder. Both the flat-bed and rotary machines receive the impression of the type upon a cylinder. The flat-bed machine may have either one or two impression cylinders, the latter being known as perfectors. In the perfecter each sheet passes round one revolving cylinder, receives an impression from the sliding bed which carries the forme of type, and is then taken by the other cylinder and receives a reverse impression from a second forme of type.

Prinzip, G., Serbian political assassin, who on June 28, 1914, by killing the Austrian Archduke Franz Ferdinand and his wife, fired the spark which led to the World War. After the commission of the crime he escaped into Serbian territory.

Prior, Matthew, English poet and diplomatist, born near Wimborne, Dorset; was for a time Under-Secretary of State, and English Ambassador in Paris. He is remembered most as a poet; wrote in 1687 a parody of Dryden's *Hind and Panther*, entitled *The Story of the Country Mouse and the City Mouse*, and afterwards a number of tales, lyrics, and epigrams. (1664-1721).



MATTHEW PRIOR

Priory, a religious house governed by a prior—it may be either a smaller Benedictine house which has not attained the dignity of an abbey, or a house of one of those religious orders, such as the Dominicans, Franciscans, or Carthusians, where the prior is the local superior. Its general domestic and architectural arrangements resemble those of an abbey.

Pripet, river rising in Poland and emptying into the Dnieper after a course of 486 m. through Poland and White Russia. The Pripet Marshes were the scene of many encounters between Germans and Russians, 1915-1916.

Prism, in geometry, a solid with two faces (the bases) which are equal polygons, and whose lateral faces are parallelograms. The bases may be polygons of any shape; thus in a hexagonal prism they are hexagons. Optically a prism is any transparent medium comprised between plane faces, usually inclined to each other. It is used to refract and disperse light, resolving it into the prismatic colours.

Prison, or *Gael*, a place of confinement, or detention for criminals, or others committed by legal authority, whether for safe custody pending trial or as a punishment after sentence. The reforming zeal of John Howard (q.v.) and Elizabeth Fry (q.v.) moved Parliament in the 19th Century to turn its attention to the removal of the worst abuses of prison life. One great evil was the herding of prisoners together irrespective of age or sex or degree of criminality. Solitary, or more properly separate, confinement was first adopted in Pentonville Prison, built a century ago.

Prison discipline today is governed by the

Prisons Acts, 1865-1898. The Board of Prison Commissioners, set up in 1898, now controls all prisons, under the Home Office. Much attention has been paid in recent years to the possibility of increasing the "reformatory" elements of prison life, and to modifying prison conditions so as to prepare the prisoner for resuming a useful life in the community after his release.

Prisoner of War, a member of a hostile force who falls during the course of armed hostilities into the hands of the opposite side. The rules regarding their treatment are laid down by a Hague Convention of 1907. They must be humanely treated, their property (other than horses or arms) may not be confiscated, and if set to work they must not be given military tasks. Arrangements for exchange of prisoners are generally made through the good offices of neutral governments.

Privateer, a private vessel authorized by Government under a letter of marque to seize and plunder the ships of an enemy, to do which without such authorization is an act of piracy.

Privet (*Ligustrum vulgare*), an evergreen hedge plant of the family Oleaceae. It grows in moist soils and thrives in towns where the air is full of smoke. Other members of the same genus are also known as Privet, *L. ovalifolium* being the most useful of all for hedge-making; *L. ovalifolium aureum* the Golden Privet and *L. Delavayanum* an evergreen bearing panicles of white flowers.

Privilege, in law, a condition under which a defamatory statement may be made without liability to action. It may be absolute or qualified. Absolute privilege exists in the case of statements made in the course of judicial proceedings, in Parliament or in Parliamentary papers, or by one officer of state to another in the course of his duty; qualified privilege in the case of statements made in reports of public proceedings, in fair comment on matters of public interest, in protection of an interest or in pursuance of a duty. All communications made by one spouse to another are privileged.

Privy Council, in theory the council of the Sovereign on matters of government. It includes members of the royal family, the Cabinet, bishops, judges, and such other persons as the Sovereign may appoint, membership being nowadays largely an honorary distinction. No members attend except those actually summoned on any given occasion. Its functions may be grouped as: (1) executive, in which its duties are discharged by the Cabinet, technically a committee of the Privy Council; (2) administrative, in which capacity it supervises medical, pharmaceutical and veterinary practice, the granting of municipal charters, etc.; (3) judicial, for which see **Judicial Committee of the Privy Council**.

Privy Purse, the income set apart for use. By the Civil List adopted in 1937, it amounts to £110,000 per annum. The Keeper of the Privy Purse is an officer of the Royal Household with a special department under his care.

Privy Seal, the royal seal appended to state documents of minor importance which do not require to pass the Great Seal. See **Lord Privy Seal**.

Prize Court, a court established to adjudicate on prizes captured in warfare at sea. Before the Declaration of London (q.v.) such tribunals were specially created on the outbreak of a war; but by that instrument it was agreed to set up an International Court for the purpose. This decision, however, has never been implemented.

Prize Fight. Under English law a fight, whether with bare fists or gloves, for a money prize or other reward, in which the combatants intend to proceed till one or other is exhausted, has been held since about 1855 to be illegal. After that date, however, such fights continued to take place in secluded spots, often for large wagers. With the recognition in 1866 of the "Marquess of Queensberry's Rules" and the development of boxing as a scientific sport they gradually disappeared, the last World Championship fight without gloves being held in Belgium in 1886, Jem Smith winning the title. Though modern boxing contests have never been directly legalised, they are not in practice interfered with when gloves are used and recognized rules followed, even though money wagers are made on the result.

Prize Money, the amount received from the sale of a vessel captured in war, with her cargo; the Crown may by proclamation declare that any such sum or a portion thereof shall be distributed among the officers and men concerned in the capture, and if so the determination of the proportions in which it shall be distributed is made by the Prize Court (q.v.).

Probability, in mathematics, the calculation of the chances that a given event or one of a number of events will occur. The problem was first investigated in the 17th Century by Blaise Pascal (q.v.) and others, and on the basis of their work a highly elaborate branch of algebra has been built up.

Probate, the process by which a last will and testament is legally authenticated after the testator's death. The Will is filed in the Probate Division of the High Court of Justice, and a certified copy given to the executors. The Probate Court, founded in 1857 to replace the old Ecclesiastical courts which dealt with the matter, was merged in the Probate, Divorce and Admiralty Division of the High Court of Justice in 1873.

Probation, the system, introduced by the Probation of First Offenders Act, 1887, under which persons, especially young persons, convicted for the first time of criminal offences, may be released by the Court and placed under the supervision of a Probation Officer, who supervises their behaviour and occupations with a view to their reformation.

Proboscis Monkey, a large Bornean species of leaf-eating monkey (*Nasalis larvatus*) in the male of which the nose is prolonged to hang below the upper lip. It is red in colour.

Probus, Marcus Aurelius, from 276 to 282, born in Pannonia; was elected by the army and citizens to succeed Tacitus; reformed the civil administration and was responsible for many public buildings, but was put to death in a military revolt. (232-282).

Process, the writs or orders issued in legal proceedings, as distinct from the proceedings outside the court.

Process Work, tech.

nical term for the mechanical reproduction of diagrams, drawings or other representations of objects on printing blocks or plates. All the methods in use are based upon photography, the object being to produce from a photograph an image in relief, from which impressions on paper can be printed off. The method most commonly used is the half-tone process.



PROBOSCIS
MONKEY

Proclamation, an announcement by the head of a state, either declaring policy, setting forth law or regulating some public activity. Proclamations under the Great Seal are issued to announce the accession of a new monarch, on other ceremonial occasions, and to declare war or peace. Their directions are binding on the subject only so far as they are consistent with the law.

Procne, the sister of Philomela and wife of Tereus, changed into a swallow by the gods. See **Philomela**.

Proconsul, name given in the Roman republic and Empire to an officer in charge of the administration of a province; his office lasted generally for a year, and his powers approximated to those of a consul.

Procrustes, a Greek legendary brigand, who when any one fell into his hands placed him on a bed, stretching him out if he was too short for it and amputating him if he was too long; overpowered by Theseus, he was placed on his own bed.

Procter, **Bryan Waller**, English poet, known by his pseudonym of **Barry Cornwall**, born in London; was for 30 years a Commissioner of Lunacy, and is chiefly memorable as the friend of Wordsworth, Lamb, Scott, Carlyle, Thackeray, and Tennyson; he was a facile and successful song writer. (1787-1874). His daughter, **Adelaide Anne Procter**, achieved success as a poetess, her *Legends and Lyrics* appearing in 1858. (1825-1864).

Proctor, an official of a University, chosen to enforce its statutes, and to preserve discipline among undergraduates. Clergymen chosen by their fellows to represent them in Convocation are likewise so called. See also **King's Proctor**.

Proctor, (**Mrs.**) **Dod**, English artist; widow of **Ernest Proctor**, A.R.A. (d. 1935). Her picture "Morning" was purchased for the nation in 1927. Among her other works are "The Model" and "The Blonde Girl," and many studies of Cornish life in St. Ives and Newlyn. A.R.A. 1934.

Procurator-Fiscal, a Scottish law officer appointed by the sheriff, whose duties are to initiate the prosecution of crimes and inquire into deaths under suspicious circumstances.

Producer Gas, an inflammable mixture of carbon monoxide and nitrogen, obtained by passing air over red-hot coke; used as a fuel for certain industrial purposes.

Profits, in economics, the return gained by a capitalist from the employment of his capital in industry. It may be divided, according to Mill, into interest on the capital utilized; insurance, or indemnity for the risks undertaken; and the wages of superintendence.

Profit-sharing, a form of remuneration of industrial workers by way of securing to them a pecuniary interest in the business on an agreed basis of sharing profits but not losses. It differs from co-partnership in that the worker makes no contribution to capital. Often the industrial workers' share of profits is paid into a superannuation fund or actually invested in the business itself. The system has been tried with some success, especially in gas-manufacturing concerns, but involves the danger that workers may be tempted to accept lower wages to offset the bonus distribution of profits.

Progression, a mathematical series or decrease according to a fixed law. In arithmetical progression there is a constant difference between the terms, as, 2, 6, 10, 14, . . . In geometrical progression the ratio

between the terms is constant, as 2, 4, 8, 16, 32, . . . Another variety is Harmonic Progression (q.v.).

Prohibition, the system by which the sale or consumption of intoxicants is completely forbidden in a given area. The movement began in Maine, U.S.A., where it was established in 1851. In 1898 the Anti-Saloon League was formed in the United States, and this body gradually secured amendments in state constitutions which prevented the state courts from declaring prohibition laws to be *ultra vires*. By the time of the World War the whole country was fiercely divided into "Wets" and "Drys," and in 1919 the 18th Amendment to the Constitution extended prohibition over the whole United States, the Volstead Act making it effective by banning any liquor containing over 0.5 per cent. of alcohol. The consequences were less beneficial than had been hoped, the law was widely broken by bootlegging, racketeering, and the establishment of "speakeasies," and by 1930 most big cities were warmly in favour of abolishing prohibition, though many country districts still favoured it. Nation-wide prohibition disappeared in 1933 under the 21st Amendment to the Constitution. In Alabama, Georgia, and a few other states it is still locally enforced. See also **Local Option**.

Projectile, any object thrown so as to describe an unimpeded path, known as its trajectory, through the air. The motion of a projectile is, in fact, always affected by air resistance; the actual path taken by any projectile can be calculated mathematically if its initial speed and the direction in which it is cast are known. The curve described by a projectile not impeded by air resistance would be a parabola.

Projection. See **Map**.

Proletariat, originally that section of the people whose main function in the state was that of producing children; used in modern economics to mean the propertyless classes who live by the sale of their labour. The phrase "dictatorship of the proletariat" was coined by the early Socialists to express that condition of society which, in their view, would mark the transition from capitalism to communism when the will of the proletariat would be the supreme directing force of economic and political policy.

Prologue, a spoken or written introduction to a play, or a written introduction to a literary work. The function of the dramatic prologue is to give the audience such information not imparted in the course of the play itself as may be necessary to enable them to follow the plot.

Prometheus (i.e., Forethought), in Greek mythology, a Titan; is supposed to have stolen fire from heaven and bestowed it upon mankind, whereupon Zeus chained him to a rock on Mt. Caucasus, where an eagle gnawed all day at his liver which grew again by night.

Promissory Note, a written and signed promise to pay unconditionally to a named person or body, or to bearer, a fixed sum of money either on demand or at some definite future time. A bank note is thus included in the definition. It is negotiable by endorsement, and must be stamped.

Proof Spirit, is alcoholic spirit containing 49.28 per cent. by weight, or 57.10 per cent. by volume, of alcohol at 51°F.; its specific gravity is 0.81976. The terms "10° under proof," "20° over proof," etc., mean, in the first case, that the spirit contains 10 volumes of water to 90 volumes of Proof Spirit, and, in the second case, that 100 volumes of the spirit mixed

with 20 volumes of water would give 120 volumes of Proof Spirit. The taxation of spirituous liquors varies with the amount of proof spirit they contain.

Propaganda, name of a congregation of Cardinals of the Roman Church who supervise the preaching of the faith in non-Christian countries, and the organization of missionary work. In recent times it has been applied to cover all literary and oral persuasive activities intended to influence general opinion in favour of any system of thought, idea, or creed. During the World War Ministries of Propaganda were set up in several countries, including Great Britain, to explain the war aims of the respective governments and endeavour to overthrow enemy morale; Fascist states, such as Germany and Italy, generally have Ministers of Propaganda; in Germany this office is held by Dr. Joseph Goebbels (*q.v.*), who adds to his official title the more attractive words "and Enlightenment."

Propertius, **Sextus**, Latin elegiac poet, born at Assisi; a protégé of Mæcenas; his elegies addressed to Cynthia follow Greek models. (c. 51-14 B.C.)

Property, that which is the subject of mere possession (*q.v.*), ownership as opposed to mere possession (*q.v.*). Legally it is divided into real (*q.v.*) and personal property, or personality (*q.v.*); but this distinction has, since the Law of Property Act of 1925, little importance.

Prophet, in the sense in which the word is used in the Bible, one who declares to the world the divine will or denounces God's judgments, but in ordinary usage a foreteller of the future. The Hebrew prophets are of great importance in the development of mankind as being the first to make known a fully spiritual and ethical conception of religion. The prophetic writings of the Bible are generally divided into the writings of the 4 Major Prophets, Isaiah, Jeremiah, Ezekiel and Daniel; and the Minor Prophets, whose writings occupy the last 12 books of the Old Testament. Mention is made in the Scriptures of various prophets no trace of whose preaching has been preserved.

Proportional Representation, a system of voting in elections whereby the elector votes by numbering the candidates in his order of preference, and any votes received by a candidate in excess of those needed to elect him are transferred to others. It is intended to secure due representation of minority opinion. It is now used at elections in Eire (Ireland), Tasmania, and Scandinavia, but has been abolished after a short trial in France. It is advocated in England by the Liberal Party. Its supporters claim that assemblies so elected would roughly reflect in their membership the proportions of opinion held in the community as a whole; its opponents object that it is impracticably complicated, and leads to the rise of numerous small parties or groups, possibly preventing any party from securing a working majority.

Propylæum, the entrance to a building, particularly a classical temple. The name is mostly used only of particularly impressive examples, such as the famous propylæum of the Athenian Acropolis, constructed in the Periclean age by Mnesicles.



PROPYLÆUM

Prorogation, the dismissal of Parliament at the end of a session to a day named, without dissolution, as distinct from a mere adjournment. It is effected by royal command through the Lord

Chancellor in the presence of the Sovereign or by Commission, but if Parliament be already prorogued to a fixed date, a Proclamation is necessary to effect a further prorogation.

Prose, the ordinary form of literary composition, as opposed to poetry; though no definite line can be drawn between the two, and, especially in modern times, much writing may be considered either as rhythmic prose or free verse, according to taste. Rhythm is generally possible only in narrative as opposed to philosophic or scientific prose. Prose to-day tends to discard the meretricious ornaments of sonorous Victorian periods and the ornateness of "Asiatic prose"; and to base itself on the ordinary spoken idiom of the educated—or at times even the uneducated—classes.

Proselytes, converts from heathenism to Judaism, of which there were two classes; Proselytes of the Temple, those who accepted the ceremonial law and were admitted into the inner court of the Temple; and Proselytes of the Gate, who accepted only the moral law, and were admitted only into the outer court. In the early Roman Empire many Roman citizens of high rank, especially women, became Jewish Proselytes; and in the early Middle Ages a whole people, the Khazars of the area north of the Black Sea, appear to have been converted to Judaism *en bloc*.

Proserpina, in Greek mythology, the daughter of Zeus and Demeter, who was carried off by Pluto (*q.v.*) while gathering flowers and became Queen of Hades. Pluto allowed her to revisit the upper world for two-thirds of the year, her arrival being coincident with the beginning of spring and her return to Hades coincident with the beginning of winter. See *Persephone*.

Prosody, the study of the laws of versification, depending in classical poetry on the quantity of syllables and the vowels they contain; in modern European poetry generally on the number of syllables with or without stress accent.

Prostitute, one who seeks her livelihood by giving herself up to promiscuous sexual intercourse for hire. The practice of prostitution has probably existed from the beginning of history, and in earlier times, as still in the East, often had a religious significance. In England it is not a crime, but soliciting to the annoyance of passers-by is an offence under the Vagrancy laws. In some States there exist systems of State regulation of vice, but public supervision of prostitutes in Great Britain, tried for a time in the last century with a particular view to the suppression of disease in the services, was soon abandoned.

Protection, the attempt to encourage home industries by imposing duties on foreign goods. Until 1832 Great Britain, alone of the world's great states, held with few minor exceptions to her traditional policy of the unrestricted admission of imports, or "Free Trade"; but the Imports Duties Act of that year, following the earlier imposition on a few special imports of the "McKenna" and "Safeguarding" duties, marked the adoption of a general protective policy. Before that date the distinction between revenue and protective duties had been strictly preserved. England's adoption of protection was to some extent an attempt to foster reciprocity of trade with her Dominions and Colonies, to their mutual advantage. Protection, which is generally followed by higher prices and higher wages, tends to make relations with foreign countries more difficult by restricting international trade; but it averts the evil of unemployment in the protecting country consequent on dumping.

Protection of Ancient Monuments, is in Great Britain undertaken by the State, which is empowered by law to purchase, or accept from the owners the charge of, any ancient monument, building of antiquarian interest, or other such erection. Such monuments as Stonehenge, Kit's Coty House in Kent, and many ruined abbeys and castles, have thus become State property; others are in the care of the National Trust (q.v.). Allied work is undertaken by the Society for the Protection of Ancient Buildings, a voluntary association formed in 1877 by William Morris, Ruskin and others to advise on and assist in the repair and intelligent restoration of buildings of historical or archaeological interest.

Protector, a title given on several occasions in English history to the regent, or person responsible for the guardianship of the kingdom during the minority of the monarch, as with the Protector Somerset during the childhood of Edward VI.

Protectorate, the relationship of a territory not recognized as sovereign whose external relations it controls; also that protected territory itself. Instances of British Protectorates are the Malay States, Uganda, and part of Kenya. British Protectorates differ from Colonies in that they have not been formally declared to be British territory, and their peoples are not British subjects but only "British protected persons"; while they are governed, not directly, but through the native chiefs. Like Colonies, however, they are under the control of the Crown exercised through the Colonial Office. Mandated territories (q.v.) are assimilated to Protectorates.

Proteins, complex nitrogenous compounds, essential components of all animal and vegetable organisms, e.g., gluten of flour and albumin, or white of egg. Plants are able to build up proteins from nitrogen compounds in the soil, but animals must obtain their proteins directly or indirectly from vegetable food.

Protestant Episcopal Church, the religious body in the United States which corresponds to the Anglican Church in England, whence it was brought to America in 1607. It has approximately 1,300,000 communicants, organized under a body of bishops and a triennial General Convention in which the laity are represented.

Protestantism, the name given to the movement headed by Luther in the 16th Century, which protested against the assumption of supremacy in spiritual matters by the Roman Church. The name Protestant is now used to cover broadly all Christian bodies in the west other than the Roman Catholic Church, though some sections of the Anglican church object to being classed as Protestants. The main Protestant bodies are the Methodists, Baptists, Congregationalists, Presbyterians, Lutherans, and Reformed Church or Calvinists.

Proteus, in the Greek mythology, a divinity of the sea endowed with the gift of prophecy, but from whom it was difficult to extort the secrets of fate, as he immediately changed his shape when any one attempted to force him, for it was only in his proper form he could enunciate these secrets.

Prothallus, a stage in the development of cryptogamous plants, such as ferns, when the germinated spore produces a green scale-like growth fixed by the root-hairs to the soil. From these male organs, the Antheridia, develop on the under side, producing freely moving Antherozoids which enter the Archegonia, small female bodies also formed on the prothallus, the resultant fertilized seed producing the adult plant.

Protoactinium, a metallic chemical element of highly radio-active character; little is yet known about it. Symbol Pa, atomic number 91, atomic weight about 235.

Protocol, the first draft or sketch of a document, used especially of treaties before their definitive signature. The name is specially connected with the so-called Geneva Protocol, adopted by the League of Nations in 1924 as a draft arrangement for settling international disputes, but dropped when Britain refused her ratification.

Proton, the unit of positive electricity, a hydrogen atom which has lost its single planetary electron. It is one of the ultimate constituents of matter.

Protoplasm, the matter of which the plants are constituted; the physical basis of all life.

Protozoa, the lowest division of the microscopic organisms consisting of one cell or a group of fixed cells, found in the sea and in stagnant water. One of the typical forms is the mud-dwelling Amoeba. Many of the members of the group are parasitic.

Proust, Marcel, French author, partly Jewish, born and died in Paris; his great work, a minute analysis of "salon" society entitled *A la Recherche du Temps Perdu*, appeared in 15 volumes, three being published posthumously. Aloofness from the world, and extraordinary slowness of tempo, characterize his work, which has had enormous influence beyond the boundaries of France. (1871-1922).

Provençal, a language spoken in Provence, in the South of France, which had a large literature in the Middle Ages, but almost died out as a literary language until revived by Mistral at the end of the 19th Century. It has close affinities with the Catalan of N.E. Spain, and is free from the Teutonic elements that have influenced French.

Provence, a maritime province in the South of France; originally called Provincia by the Romans. It is included in the modern depts. of Bouches-du-Rhône, Basses-Alpes, Alpes Maritimes, Var, and part of Vaucluse.

Proverbs, Book of, a Book of the Old Testament, consisting of short aphorisms on the practical concerns of life, attributed by tradition to Solomon, but undoubtedly far later than his time, though some of the sayings it contains may well have originated with him.

Providence, seaport and capital of Rhode Island, U.S.A., on a river of the name, 44 m. S.W. of Boston. It is a centre of a large manufacturing district, and has a large trade in woollens, jewellery and hardware. It is the seat of Brown University. Pop. 253,000.

Provisional Order, an Order by a government department authorizing a local authority or public utility company to perform some act or execute some work subject to Parliamentary confirmation.

Provost, in Scottish burghs, the chief of the English mayor. The provosts of Edinburgh, Glasgow, Aberdeen, Dundee and Perth, are styled Lord Provost. The name is also used as the title for the heads of Oriel, Queen's and Worcester Colleges at Oxford, King's College, Cambridge, and University College, London, and for the president of the Chapter of certain cathedrals, such as Southwark, which have no Dean.

Provost-Marshal, a commissioned officer in charge of a body of military police, whose duty it is

to arrest offenders against military discipline and supervise the execution of sentences against them.

Proxy, one who acts as a substitute for another, or votes on behalf of another, as at a meeting of company shareholders, or the written authorisation so to act or vote for another. Such a document, to be legal, must bear a 1d. stamp. Since 1918 soldiers, sailors, or airmen, have been enabled to vote by proxy at parliamentary elections.

Prud'hon, Pierre, French painter, born at Dijon and Rome settled in Paris in 1789 and painted there till his death. Many of his works are in the Louvre; among the best known are his "Truth and Wisdom," painted for the palace of Versailles, and "The Carrying-off of Psyche." (1758-1823).

Pruning, in horticulture, the cutting off of parts of a tree or plant which are of little or no value to its general welfare, so as to enable more sap and light to reach the rest. The best seasons for the operation are autumn and winter, when the natural flow of sap will be least interfered with.

Prunus, a genus of shrubs and trees of the family Rosaceae, including the plum, apricot, cherry, peach, and almond. The bullace (*P. insitita*), cherry-plum (*P. cerasifera*) and Sloe (*P. spinosa*) are also members of the genus.



PRUNUS
DOMESTICA

Prussia, the leading many, of which it occupies about two-thirds of the total territory, and contributes three-fifths of the population. It stretches from Holland and Belgium in the W. to Poland in the E., has Jutland and the sea on the N., and Lorraine, Bavaria, Hesse-Darmstadt, Saxony, Czechoslovakia and Austria on the S. It includes the Rhineland, Hesse-Nassau, Westphalia, Hanover, much of Saxony, Brandenburg, Silesia, and Pomerania, with the province of E. Prussia, detached from the rest by the Polish Corridor (q.v.).

In various parts of the country agriculture and grazing are carried on. There are coal-fields in Silesia, Westphalia and the Rhineland; zinc, lead, iron, copper, antimony, etc., are wrought; the Harz Mts. are noted for their mines; salt, amber and precious stones are found on the Baltic shores. Textiles, metal wares, and beer are the main industries; Berlin and Wuppertal are the two chief manufacturing centres. The great navigable rivers are the Niemen, Vistula, Oder, Elbe, Weser, Rhine, and their tributaries. The prevailing religion is Protestant; there are several universities, and many other educational institutions.

The basis of the Prussian people was laid by German colonists placed amid the pagan Slavs whom they had conquered by the Teutonic knights of the 13th century. In 1511 their descendants chose a Hohenzollern prince; a century later the Hohenzollerns of Brandenburg succeeded. Despite the Thirty Years' War Prussia became a European State, and was recognised as a kingdom in 1703; Frederick the Great (1740-1786) enlarged its bounds and developed its resources; the successive partitions of Poland added to its territory. Humiliated by the peace of Tilsit, 1807, and ruined by the French occupation, it recovered after Waterloo; William I. and Bismarck still further increased its territory and prestige; by the Austrian War of 1866 and the French War of 1870-1871 its position as premier State in the Confederation was assured. Since the Nazi revolution of 1933 it

has, like the other German States, been governed by a *Stadtholder* as a personal representative of Adolf Hitler. Area, 113,700 sq. m. Pop. 40,700,000.

Prussia, East, part of the Province of Prussia, Germany, separated from the rest of Germany since the Treaty of Versailles, 1918, by the Polish Corridor (q.v.). The northern part is mainly agricultural, the southern mostly marsh and forest. The largest town is Königsberg. Area, 15,061 sq. m. Pop. 2,258,000.

Prussian Blue, a pigment obtained by ferrocyanide to a solution of ferrous sulphate; this yields a white precipitate which is oxidized by the addition of nitric acid. It may also be obtained by adding potassium ferrocyanide to a solution of a ferric salt. The pigment is a fine blue, and, being very stable, is most useful commercially.

Prussiates, salts of prussic or hydrocyanic acid. Yellow prussiate of potash, or potassium ferrocyanide, is a lemon-yellow crystalline solid made by fusing together potassium carbonate, scrap iron, and nitrogenous organic waste (horns, hoofs, hides, etc.). It gives a deep blue precipitate (Prussian Blue, q.v.) with a solution of a ferric salt.

Red prussiate of potash, or potassium ferri-cyanide, an orange-red crystalline solid made by passing chlorine through a solution of potassium ferrocyanide, is used in the making of blue-prints; when mixed in the dark with a solution of ferric ammonium citrate it gives a brownish solution which is brushed over paper and allowed to dry. On exposure to light, the brown substance is converted into a blue one, which, unlike the former, is insoluble in water. Hence such paper may be used in the same sort of way as photographic paper, and the image is fixed by merely washing in water; the non-illuminated parts appear white against a blue background.

Prussic Acid. See Hydrocyanic Acid.

Pruth, a Rumanian river rising in the Carpathians and flowing mainly E. to form the boundary between Moldavia and Bessarabia. It enters the Danube near Galatz; its length is about 520 m.

Histrio-Mastix, or the Player's Scourge, against the stage, and a reflection in it against the virtue of the queen, he was brought before the Star Chamber in 1634, sentenced to the pillory, and had his ears cut off; for an offence against Land was in 1637 sentenced anew, and "lost his ears a second and final time"; was as a recalcitrant imprisoned by Cromwell, after whose death he espoused the Royalist cause, and was appointed Keeper of the Records of the Tower. (1600-1669).

Przemysl, a Polish town, on the San, 60 m. from Lwow; before the World War an Austrian fortress. Its surrender in 1915 marked the crowning success of the Russian Galician campaign in the World War, but it was recaptured in the following May. It trades in wood, corn and leather. Pop. 51,000.

Psalms, The Book of, the collection of the sacred songs in the Old Testament, all of a lyrical character, which appear to have been at first collected for liturgical purposes. Their range is co-extensive with nearly all divine truth, and there are tones in them in accord with the experience and feelings of devout men in all ages. The collection bears the name of David, but it is clear the great body of them are of later date as well as of various authorship, although it is often difficult to determine by whom some of them were written and when.

Psaltéry, an ancient stringed musical instrument resembling the dulcimer, consisting of a rhombus-shaped frame mounted on side-pieces, the strings being struck with a stick or plectrum.

Psittacosis, a disease of parrots, due to a virus and communicable to man. A few cases have occurred in Britain, but restriction on the import of parrots has stamped it out.

Psoriasis, a skin disease, which shows patches covered with silvery scales. It affects principally the scalp, ears, elbows and knees, but may spread further. The cause is unknown. It may become chronic and always has a tendency to recur.

Psyche (i.e., the soul), in Greek mythology, a girl whose beauty awoke the jealousy of Aphrodite, the goddess of beauty, who in consequence sent Cupid, her son, to inspire her with love for a hideous monster, and so compass her ruin. Cupid, fascinated with her herself, spirited her away to a palace of delight, visited her at night as her husband, and left her before daybreak in the morning, because she must on no account know who he was. One night she lit a lamp to discover, when a drop of oil from it fell on his shoulder as he lay asleep beside her, upon which he started up and vanished out of sight. She thereupon set off in search of her lost love, till she came to the palace of Aphrodite, who made her her slave, subjecting her to a series of services, all of which she accomplished, so that Aphrodite was obliged to consent that Cupid and she should be united in wedlock.

Psychiatry, the branch of medicine concerned with the treatment and attempted cure of mental disorders. It has made great strides in recent years, partly as a result of the new methods introduced by Freud, Jung, Adler (q.v.) and other analytical psychologists, partly as a result of experience gained with shell-shock and other cases in the World War.

Psychical Research, the study of relations between man and the spirit world, if any. It received its first impetus in modern times from the founding in 1882 of the Society for Psychical Research, which since then has examined such phenomena as thought-transference, hypnotism, clairvoyance, "haunted houses," hallucinations, and so on. While its investigations have unmasked many impostures, they have also shown that there is a large residuum of psychical phenomena that so far no purely materialist theory has been able fully to explain.

Psycho-analysis, a method of treating nervous cases by investigating the past history of the patient and bringing to light "complexes" and "repressions," which have been affecting the mind unconsciously; the method was introduced by Sigmund Freud (q.v.). It has been found valuable for the removal of such abnormalities as irrational fears and of various sexual disturbances.

Psychology, the science of mind, investigates mental phenomena and operations and the relations of organism and environment, or of thought to things. Until recent years, when knowledge of the physical working of the brain and nervous system has made tremendous strides, it was hardly pursued seriously as a separate study, being rather a part of general philosophy, and even now there are very few psychological data on the significance of which most psychologists would agree.

An important school since the War has been the Behaviourists, of whom the best known are J. B. Watson and Professor Pavlov, who maintain that all apparent mental activity is a mere set of physical responses to

external stimuli. The psychoanalytical school of Freud, and the kindred but different schools of Jung and Adler, emphasise the great importance of the unconscious, and see the origins of much of man's mental activity in terms of the desire for satisfaction of the sexual urge, the urge to self-preservation, or the love of power.

In spite of the theoretical disagreements of psychologists, the practical side of psychology, or psychotherapy, has since the World War made great strides in overcoming the psychic maladjustments of individuals by various kinds of suggestive treatment.

Psychotherapy, the treatment of disorders by psychological methods. Psychoanalysis, the special technique of Freud (q.v.), is one form; hypnotism and auto-suggestion are others. (See also *Coué*.)

Ptarmigan (*Lagopus mutus*),

a bird of the grouse family found in mountainous regions in Europe, and common in Scotland, remarkable for its seasonal changes of plumage; in spring and summer it is brownish-grey or black, moulting in August to assume a new plumage of grey and white, and in the winter being pure white.



PTARMIGAN

Pterodactyl, one of a large family of extinct flying reptiles, in

some ways resembling birds, whose fossilised remains are found in Jurassic and Cretaceous strata. Their wings consisted of a membranous expansion between the outer digit of the forelimb and the sides of the body, including the hind limbs and tail.



PTERODACTYL

Ptolemaic System, the highly complex system of astronomy ascribed to Claudius Ptolemy which assumed that the earth was the centre of a sphere which carried the

heavenly bodies along in its daily revolution, accounted for the revolutions of the sun and moon by supposing they moved in eccentric circles round the earth, and regarded the planets as moving in epicycles round a point which itself revolved in an eccentric circle round the earth like the sun and moon. It was superseded by the Copernican system. (See *Copernicus*.)

Ptolemies, a dynasty of Egyptian Kings, which lasted from 323 to 30 B.C.; the most important of the 16 so named were:—**Ptolemy I.**, Soter, a favourite general of Alexander the Great, and the ruler of Egypt from 323 to 283 B.C.; **Ptolemy II.**, Philadelphus, who ruled from 285 to 247 B.C., a patron of letters and an able administrator; **Ptolemy IV.**, Philopator, who ruled from 222 to 205 B.C., and defeated Antiochus in the Battle of Raphia; **Ptolemy X.**, Soter, who ruled from 117 to 106 B.C., was driven from Alexandria to Cyprus, returning in 88 B.C., and ruling till 81 B.C.; **Ptolemy XIV.**, who ruled with his sister Cleopatra from 51 to 47 B.C.; **Ptolemy XV.**, also husband of Cleopatra, who ruled from 47 to 45 B.C.; **Ptolemy XVI.**, Caesarion, the son of Julius Caesar and Cleopatra, who ruled, with his mother, from 45 to 30 B.C.

Ptolemy (Claudius Ptolemaeus), ancient astronomer and geographer, perhaps the greatest of the ancient world.

born in Egypt, lived in Alexandria in the 2nd Century; was the author of the system of astronomy called after him. His principal writings were the *Almagest*, on astronomy, and the *Geography*.

Ptomaines, generally poisonous substances, formed by animal matter in process of putrefaction. The phrase "ptomaine poisoning" is, however, commonly misapplied, being used for what is generally in reality an infection by specific bacteria, e.g., *bacillus botulinus*. Among the chief ptomaines are putrescine and cadaverine, both found in putrefying albumen, neurine and methylamine.

Puberty, the period at which the reproductive system reaches full development—in temperate climates usually occurring in males at the age of 13 to 16, in females at 12 to 14. The indications of puberty in girls are, chiefly, the onset of menstruation, the development of the breasts and a general "filling-out" of the body; in boys, the growth of facial hair and the deepening or "breaking" of the voice.

Publicans, or **Publicani**, a name given by the Romans to persons who farmed the public revenues; their representatives in Palestine are mentioned with obloquy in the New Testament on several occasions.

Public Health. The duty of the State to concern itself with the healthy conditions of living of its citizens was not generally recognized before the middle of the 19th Century, but since then the field of its activities has continually and rapidly widened. In England and Wales the public health services, administered by local authorities under the supervision of the Ministry of Health, include refuse collection, housing, the provision of baths and wash-houses, drainage, the control of offensive trades, food inspection, the regulation of dairies and places where food is made, stored or sold, maternity and child welfare services, tuberculosis clinics, the compulsory notification of infectious diseases, the prevention of water pollution, and many other activities. Every district, borough, or county council employs a Medical Officer of Health to superintend these services within its area.

Public Meeting, an assembly of persons to discuss a grievance or exercise their right of free speech. The right of public meeting has always been recognised in theory in Great Britain, subject to the possibility in case of riot of prosecution for unlawful assembly; the present law on the subject is based on the Public Order Act (q.v.) of 1936. Any meeting to which public access is unimpeded, even if held on private premises, is a public meeting.

Public Order Act, an Act passed in 1936 which forbids the wearing of political uniforms and the carrying of weapons at public meetings, regulates the procedure to be followed by the police in the case of interruption of such meetings, and gives the police power to regulate, or in case of necessity forbid, processions in public places.

Public Prosecutor, or **Director of Public Prosecutions**, the officer entrusted with the duty of undertaking the prosecution of criminals in serious cases on behalf of the Crown. He acts generally on the instructions of the Attorney-General.

Public Trustee, a public official appointed in 1900 to perform any functions which may be exercised by any other trustee, save the management of a business or of a trust for religious or charitable purposes. His fees are regulated by statute to cover only the expenses of his department without profit, and as he is a

public servant, the efficiency and honesty of his officers are guaranteed by the State's backing. In 1937, the Public Trustee was administering funds whose capital value approached £220-millions.

Public Utilities, general name for those services, such as the supply of gas, water, electricity, local passenger transport, etc., which it is considered undesirable to leave to unrestricted competitive private enterprise. The tendency of modern legislation is to arrange for their supply by specially constituted authorities, partly or wholly elected or appointed by local authorities and with a statutory limitation to their profits.

Publishing, the process by which an author's works are presented to the public. Until the end of the 18th Century there was generally no distinction between publisher and bookseller; but since then it has been the publisher's function to deal directly with the author, remunerate him for his work by outright purchase or by payment to him of a royalty or commission on sales, to arrange for the printing of his work, and for its distribution to retail booksellers.

Puccini, Giacomo, Italian operatic composer. His masterpieces are *La Bohème*, *La Tosca*, and *Madame Butterfly*, followed later by *The Girl of the Golden West*, and *Turandot*. (1858-1924).

Pudsey, borough of Yorks, England, in West Riding, 4 m. E. of Bradford. Woollens and worsteds are made and there are dyeworks, fulling mills, and iron and brass foundries. Pop. 24,600.

Puebla, state and town of Mexico, the latter on an elevated plateau 7,000 ft. above the sea, 68 m. due S.E. of Mexico, the fourth city of the republic, with Doric cathedral, theological, medical and other schools, a museum and two libraries; cotton and woollen goods, iron, paper, and glass are manufactured. Pop. (town), 123,000; (State), 1,150,500.

Pueblo, city and industrial centre of Colorado, U.S.A., on Arkansas R. Oil and coal are found near by, and metal-smelting is the main industry. Pop. 50,100.

Pueblos, tribes of N. American Indians living in New Mexico and Arizona, U.S.A., so called because they are gathered together in *pueblos*, or villages, in communal huts of stone or mud. The several clans are remarkable for their peculiarly decorative pottery and fabrics, which show some resemblance to early Aztec designs.

Puerperal Fever, a disease which after childbirth, due to septic infection or the retention of a small fragment of the placenta. It is often accompanied by peritonitis. The symptoms—rigors and chills—begin two or three days after childbirth, and are followed by a high temperature. Its incidence has been much reduced of recent years by improved methods of care at childbirth.

Puerto Rico, a West Indian island, 75 m. E. of Haiti, since 1898 a possession of the United States. Sugar, coffee, tobacco and tropical fruits are the principal crops; salt and manganese are mined. The principal exports are sugar and pineapples. The capital is San Juan. Mayaguez and Ponce are other towns. The island was discovered by Columbus, who called it Hispaniola, in 1493. Colonised by Spain in 1510, it attempted unsuccessfully to gain independence in 1820-1823, was seized by the United States in the war of 1898, and since 1917 has enjoyed a large measure of home rule. Area, 3,440 sq. m. Pop. 1,735,500.

Puff-Adder (*Bitis arietans*), a venomous African viper which frequents sandy places; it derives its name from its habit of inflating its body when disturbed.

It is about 4½ ft. in length, and in colour a mottled brown.

Puffin, a large-billed sea-bird (*Fraterrula arctica*) of the auk family (Alcidae), common on the British coast, whence Puffin I., Anglesey, gets its name. The plumage is glossy black above, under surface pure white, feet orange-red, the bill flattened laterally and parti-coloured, being brilliant in summer, but smaller and duller in winter when part is shed. The bird is also called Bottle-nose, Pope or Sea-Parrot.



PUFFIN

Pug, a dwarf, snub-nosed breed of domestic dog, resembling a diminutive bull-dog or mastiff, fawn, or occasionally black, in colour. There are two breeds, Dutch and French, the latter being somewhat smaller.

Puget Sound, an inlet on the coast of Washington, U.S.A., with Seattle on its shores. It is the site of a United States naval station.

Pugin, Augustus Welby, English architect, born in London, of French parentage; assisted in decorating the Houses of Parliament, and designed many Roman Catholic churches, including several of the English cathedrals of that body; wrote several works on architecture. He was afflicted in the prime of life with insanity, and died at Ramsgate. (1812-1852).

Puisne Judge, term applied to all of a trailing plant (*Cucurbita pepo*) of the family Cucurbitaceae, grown in warm climates. Its bulk to the extent of 90 per cent. consists of water. Its seeds yield a commercial oil, and its fruit is used for pies.

Pulitzer, Joseph, American newspaper proprietor, born in Hungary; beginning in St. Louis in 1872, he acquired the ownership of several important American newspapers, ending his career as proprietor of the *New York World*. By his will he established the Pulitzer prizes, awarded annually for original work in music, the drama, and literature. (1847-1911).

Pulley, a grooved wheel on a shaft, driving, or driven by, a belt; also a general term for a small wheel over which a rope, chain or sash-cord runs. This simple mechanical power consists, essentially, of a small circular plate or wheel which turns round an axis passing through the centre of its faces, and having its ends supported by a framework called the block. The groove cut in the edge of the plate or wheel prevents the belt or rope from slipping off when it is put round the pulley. A pulley transmits power or changes the direction of motion or of a force, according as it is movable or fixed.

Pulpit, a raised place or desk in a church, the preacher delivers his sermon. It is usually of wood, often, especially in Jacobean times, richly carved, but sometimes is of stone or marble. It is frequently surmounted by a sounding-board.

Pulque, beverage in use in Mexico and Central America, made from the fermented juice of the agave (*q.v.*).

Pulse, a general term for leguminous plants, and the seeds they produce, including beans, peas, lentils, etc.

Pulse, the beat felt in an artery when slight pressure is applied to it, caused by the systole of the heart, or the throb of the arteries as blood is propelled through them. At birth the number of beats is about 130 to

140 a minute; at the end of the first year 120 to 108; two years 108 to 90; three years 90 to 80; seven years 85; puberty 85 to 80; adult age 75 to 70; old age 65 to 60. It is slower in man than in woman, and is affected to some extent by the position of the body.

Puma, Cougar, or Mountain Lion, a large, tawny, carnivorous beast, the largest feline of the New World, running to nearly 3½ ft. in length; has a small head, a long tail and no mane. It is destructive to cattle, but rarely attacks man. It is mainly found in South, but to a lesser extent also in North, America.

Pumice, a very porous, acid, volcanic, igneous rock of the rhyolite class, of extreme lightness, floating in water. It is mainly exported from the Lipari Is., and is used for polishing metals.

Pump, a contrivance for raising or pelling liquids, compressing or rarefying gases, and similar operations. The simple water-pump makes use of the pressure of the atmosphere, the rising piston driving out air before it and so creating a partial vacuum in the cylinder below it. The atmospheric pressure on the water into which the cylinder dips causes the latter to fill with water, and when the piston descends some of this water passes through a valve in it to the upper side. Hence at the next stroke the piston carries up water with it, and delivery is effected through a spout in the side of the cylinder. Since the atmospheric pressure is only able to raise water some 30 ft., other forms of pump must be used if the water has to be obtained from, or delivered to, a greater vertical distance than this. See also Air-pumps.

Pumpkin, or Gourd, the fruit of a trailing plant (*Cucurbita pepo*) of the family Cucurbitaceae, grown in warm climates. Its bulk to the extent of 90 per cent. consists of water. Its seeds yield a commercial oil, and its fruit is used for pies.



Punch, the name (originally PUNCHINELLO) of the chief character in a well-known puppet show of Italian origin appropriated as the title of the leading English comic journal, started in 1841, under the editorship of Henry Mayhew and Mark Lemon. The wittiest literary men of the time, as well as the cleverest artists, have contributed to its pages, among the former being Thackeray, Douglas Jerrold, Tom Hood, A. P. Herbert and E. V. Knox, and among the latter Doyle, Harry Furniss, Phil May, Leech, Tenniel, Du Maurier and Sir Bernard Partridge.

PUMPKIN
PLANT

Punch, a beverage popular in Victorian times, said to be of Indian origin, compounded of some alcoholic spirit with water (or milk), lemon-juice, spice and sugar.

Punchinello. See **Punch**.

Pundit, title of honour given to a Hindu scholar remarkable for his attainments in literary and religious lore and in Sanskrit studies.

Punic Wars, three wars between Rome and Carthage, the first from 264 to 241, leading to the Roman occupation of Sicily; the second from 218 to 201, during which occurred Hannibal's famous expedition across the Alps to Italy and his defeat of the Romans at Cannae, but which ended in a Roman victory, the conquest of Spain, and a practical protectorate of Rome over Carthage; and the third from 149 to 146 B.C., at the conclusion of which Carthage was besieged and totally destroyed.

Punjab ("five rivers."), a province in the extreme NW. of British India, watered by the Indus and its four tributaries, Jhelum, Chenab, Ravi, and Sutlej. Its frontiers touch Afghanistan and Kashmir. Its Mountain ranges traverse the N., W. and S.; little rain falls; the plains are dry and hot in summer. There is little timber; the soil is barren, but under irrigation there are fertile stretches. Wheat, indigo, sugar, cotton, tobacco, opium, and tea are largely grown; cotton, silk, lace, iron, and leather are manufactured; indigo, grain, cotton, and manufactured products are exported in exchange for raw material, dyes, horses, and timber. The population is mixed. Sikhs, Jats, and Rajputs predominate; more than a half are Mohammedan, and more than a quarter Hindu. The Sikhs have a religion of their own. Lahore is the capital, other towns are Amritsar, Lahore and Rawalpindi. Area, 97,800 sq. m. Pop. 23,580,000.

Punkah, a large fan used in houses in the East for ventilating purposes, consisting generally of a sheet of textile material stretched over a frame and suspended from the ceiling of a room, the whole being kept in motion by a cord worked by a servant.

Pupa, an insect intermediate between the larval and adult stages, in which the insect is completely inactive, usually living in a silken outer case called the cocoon.

Pupil, in the eye, the circular opening of the iris, its direction being somewhat to the nasal side of the iris; its contractions are caused by the muscular layer of the iris, its dilations by radiating fibres of the muscular layer.

Purānas, a body of late Hindu, religious works which form the basis of the popular belief of the Hindus. There are 18 principal Purānas of various dates, but mainly of the period from A.D. 800 to 1000.

Purbeck, Isle of, the peninsula in South Dorsetshire, England, lying between the B. Frome, Poole Harbour, and the English Channel; formerly a royal deer-forest; has a precipitous coast, and inland consists of chalk downs; nearly 100 quarries of "Purbeck marble" are wrought. The chief town is Swanage.

Purcell, Henry, English musician, born at Westminster, was successively organist at Westminster Abbey and to the Chapel Royal; excelled in all forms of musical composition; was the author of anthems, cantatas, glees, etc., and of an opera, *Dido and Aeneas*. He set the songs of Shakespeare's *Tempest* to music, wrote the songs for Dryden's *King Arthur* and the music for Howard and Dryden's *Indian Queen*. (1658-1695).

Purgatory, in the creed of the Roman Catholic Church, a place in which the souls of the dead who have repented of, but not fully atoned for, their sins, are purified by suffering until they are fit for heaven. They may be assisted by the prayers of those on earth, and especially by the sacrifices of the Mass, and indulgences (q.v.) may be applied to them. The "Romish doctrine of purgatory" is condemned by the 39 Articles, but the existence of a Purgatory is now accepted by many Anglicans.

Purification, a Christian feast, commemorating the Presentation of Jesus in the Temple at Jerusalem on the 40th day after His birth, when His mother, Mary, was ceremonially purified according to the prescriptions of the Mosaic law.

Purim, ("Lots"), an annual Jewish feast, still celebrated, in commemoration of the preservation of the race from the threatened massacre of Haman, recorded in the Biblical book of Esther. It is an occasion of presenting plays and exchanging gifts, not unlike the Christian Christmas.

Puritans, name given to a body of England who refused to assent to the Act of Uniformity passed in the reign of Queen Elizabeth, considering that it required them to conform to Roman Catholic doctrine and ritual; and afterwards applied to the whole body of Nonconformists in England in the 16th and 17th Centuries, who insisted on rigid adherence to the simplicity which they supposed to be required by the Holy Scriptures. The name fell out of use with the unpopularity of the party after the restoration of Charles II.

Purslane, a small annual plant (*Portulaca oleracea*) of the family, Portulacaceae, native to India, and occasionally found wild as a weed in Britain; it has small yellow flowers and prostrate stems. Some other species of the genus are grown in gardens as rock-plants.

Pursuivant, one of the junior officers in the Herald's College, four in England, named respectively Rouge Croix, Blue Mantle, Rouge Dragon, and Portcullis; and three in Scotland, named respectively Bute, Carrick, and Unicorn.

Pus, the product of supuration, a viscid, yellow fluid secreted or discharged in festering or inflammation. It consists of white blood corpuscles (leucocytes) and the bacteria which have given rise to its formation, with other diseased body-cells, suspended in a liquid medium.

Pusey, Edward Bouverie, English theologian, born in Berkshire; at Oxford was brought into relationship with Newman and Keble; was in 1828 appointed Regius Professor of Hebrew at Oxford; in 1833 joined the Tractarian Movement, to which he contributed by his learning and which was at length called by his name. He was the author of several learned works, among them the *Minor Prophets*, a *Commentary* and *Daniel the Prophet*, and edited the famous Oxford Library of the Fathers. (1800-1882).

Pushkin, Alexander Sergeievich, Russian poet and dramatist, born in Moscow. His chief works are *Ruslan and Liudmila* (a heroic poem), *Eugene Onegin* (a romance), *Boris Godunov* (a drama), and the prose tale *The Captain's Daughter*; was mortally wounded in a duel. (1799-1837).

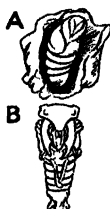
Pushtu, the language of the Afghans, derived mainly from the Persian, with Arabic and other admixtures.

Putty, a paste made of linseed-oil mixed with whiting or powdered chalk, used to fix sheets of glass into their frames and for stopping up holes in woodwork.

Putumayo, Commissary District of Colombia, S. America, separated from Peru by the Putumayo R. A British government enquiry in 1912 reported gross cruelty to natives in the rubber-growing districts of Putumayo, which was in consequence brought to an end. Pop. c. 17,000.

Puy, La, capital of dept. Haute-Loire, France, 90 m. SW. of Lyons, a bishop's seat, with a 12th Century cathedral; is the centre of a great lace manufacture. Pop. 15,000.

Puy-de-Dôme, a dept. of Central France, in the upper valley of the Allier, on the slopes of the Auvergne Mts. Agriculture and cattle-breeding are the chief industries; in the mountains coal and lead are found, and there are many mineral springs. The principal town is



PUPA: (A) OF BUTTERFLY, (B) OF BEETLE

Clement-Ferrand, where Peter the Hermit preached the first crusade. Area, 3,100 sq. m. Pop. 486,000. The name is taken from that of a mountain in the dept., 4,800 ft. high, with a meteorological observatory.

Pwllheli, borough, seaside resort and port of Caernarvonshire, Wales, on Cardigan Bay. It has lobster and oyster fisheries, and near are lead and copper mines. Pop. 3,600.

Pyæmia, a form of blood poisoning caused by micro-organisms which form pus, leading to the setting up of abscesses. It is marked by high fever, sweating, vomiting, and often severe local pain, with possibly delirium.

Pygmalion, legendary king of Cyprus, said to have fallen in love with an ivory statue of a maiden, Galatea, he had himself made, and to have prayed Aphrodite to breathe life into it.

Pygmies, a fabulous people, their height 13½ in. mentioned by Homer as dwelling on the shores of the ocean and attacked by cranes in spring time, the theme of numerous stories. Some tribes of negroes of unusually short stature in Africa have also given the name.

Pyliades. See *Orestes*.

Pylon, the gateway of an ancient Egyptian temple, usually a monolithic intel flanked by pyramid-like towers. The name has been revived in recent years to describe the large metal towers erected to support power-transmission cables, and for ornamental towers at the entrances of bridges, sports arenas, etc.



EGYPTIAN PYLON

Pylorus, the opening of the stomach into the intestine, through which the softened and partly digested food passes into the small intestine.

Pym, John, English Puritan statesman, born in Somersetshire; entered Parliament in 1621, opposed the arbitrary measures of the king, took a prominent part in the impeachment of Buckingham; at the opening of the Long Parliament procured the impeachment of Strafford, and conducted the proceedings against him. He was one of the five members illegally arrested by Charles I., and was brought back again in triumph to Westminster. (1584-1643).

Pyorrhæa, any copious discharge of pus (q.v.) especially applied to *pyorrhoea alveolaris*, or Rigg's disease, a condition of suppuration in the sockets of the teeth, causing the latter to loosen; quantities of pus are produced around the teeth and swallowed with the food, thereby causing a low state of health, digestive troubles, joint diseases, and many other evil consequences. It is generally a complaint of middle age.

Pyramids, ancient structures of stone on square bases and tapering upwards with triangular sides, found in different parts of the world, but chiefly in Egypt, where the most celebrated are those of Gizeh, 10 m. W. of Cairo, three in number, viz. the Great Pyramid of Cheops, 449 ft. high, and the sides at base 746 ft. long, that of Khephren, nearly the same size, and that of Mykerinos, not half the height of the other two, but excelling them in beauty of execution. They are sepulchral monuments of early Egyptian kings. From certain marks in the King's Chamber of the Great Pyramid, and from measurements of the structure, a school of Bible students claims to be able to read the history of the world, alleging that the World War and many events still to come are foretold therein.

Pyramids, a game played by two persons with sixteen billiard balls, one white and fifteen red. The latter are arranged in the form of a solid triangle, with its apex on the "Pyramid spot," and its base towards the top cushion and lying parallel thereto. When the reds have all been pocketed but one, the player making the last score continues playing with the white ball and his opponent uses the other. If a striker now misses or pockets the ball he is playing with, his opponent adds one to his score and the game is over. When the game is played by more than two, it is known as "Shell-out."

Pyramus and Thisbe, legendary lovers who lived in adjoining houses in Babylon, and who used to converse with each other through a hole in the wall. The maiden, keeping an appointment one evening to meet her lover, and being confronted by a lioness took to flight and left her garment behind her, which the lioness had soiled with blood. Pyramus, arriving after this, saw the bloody garment and immediately killed himself, concluding that she had been murdered, while she on return, finding he had died, did the same.

Pyrenees, a broad chain of lofty mountains running from the Bay of Biscay, 276 m. eastwards, to the Mediterranean, forming the boundary between France and Spain. They are highest in the centre, Aneto (Pic de Méthón) reaching 11,168 ft. The snow-line is about 9,000 ft., and there are glaciers on the French side. Valleys run up either side, ending in precipitous "pot-holes," with great regularity. The passes are very dangerous from wind and snow storms. The streams to the N. feed the Adour and Garonne; those to the S., the Ebro and Douro. Vegetation in the W. is European, in the E. sub-tropical. Minerals are few, though iron is worked.

Pyrenées - Orientales, dept. of France, on the Spanish border and Mediterranean coast; it is mountainous, and has a number of lakes. Wine is produced on a large scale, and copper and iron are worked. Capital, Perpignan. Area, 1,600 sq. m. Pop. 233,000.

Pyrethrum, genus of herbaceous perennial plants, of the order Compositæ, with a wide range of colours, including the feverfew. The genus is closely related to the *Chrysanthemum*, and by some botanists is included under it. The various varieties, including *P. roseum*, can be grown out of doors all the year round, and have been termed "the poor man's chrysanthemum."



PYRETHRUM

Pyridine, a colourless, evil-smelling liquid found in small quantities in coal-tar and in the oil obtained by the distillation of bones. It boils at 115° C., and is weakly alkaline; it is of theoretical importance as the parent substance of a large number of useful compounds.

Pyrites, name for many combinations of metals with sulphur or arsenic, applied especially to disulphide of iron (from pyrites) and copper pyrites. The latter is commonly mined for its sulphur content, but sometimes also for its copper, as at the famous Rio Tinto mines of Huelva, Spain.

Pyrogallie Acid, more properly gallic (since it is not an acid), is familiar as the photographic developer "pyro." It is a white crystalline solid made by heating gallic acid (which is itself obtained from gall-nuts). It is a powerful reducing agent, and its use in photography depends upon this property.

Pyrolusite, the naturally occurring mineral form of the chemical substance manganese dioxide, as a source of which it is used. It is also employed in glass manufacture, since addition of a little to the glass neutralizes the green tinge often caused in glass by the presence of iron.

Pyrometer, an instrument for the measurement of high temperatures. A common form is the platinum resistance thermometer, whose action depends upon the fact that the electrical resistance of a platinum wire increases with rise of temperature. Thermo-electric pyrometers consist essentially of strips of two dissimilar metals joined at one end and connected at the other to an electric circuit containing a sensitive galvanometer. When the junction is heated, a small current flows through the circuit, and the temperature can be calculated from the galvanometer-reading of the varying potential difference. The principle of the optical pyrometer is that the colour of the light emitted by a red-hot to white-hot body is directly related to its temperature; hence by matching this light through screens of colours corresponding to known temperatures, the temperature of the body can be estimated.

Pyrotechny, the science of manufacturing fireworks (q.v.).

Pyroxene, a group of mineral silicates found in igneous rocks, including jadeite, largely used by primitive man for ornaments and domestic utensils, augite, and pectolite.

Pyrrhic Dance, the chief war dance of the Greeks, of the music of flutes; was of Cretan or Spartan origin.

Pyrrhus, king of Epirus, and kinsman of Alexander the Great; in 280 B.C. invaded Italy with a huge army, directed to assist the Italian Greeks against Rome. In the decisive battles of that year and the next, he won "Pyrrhic victories" over the Romans, losing so many men that he could not pursue his advantage; 278 to 276 B.C. he spent helping the Greek colonies in Sicily against Carthage; his success was not uniform, and a Carthaginian fleet inflicted a serious defeat on his fleet returning to Italy.

In 274 he was thoroughly vanquished by the Romans, and retired to Epirus; subsequent wars against Sparta and Argos were marked by disaster; in the latter he was killed. (c. 318-272 B.C.)

Pyrrrole, a colourless liquid occurring in small quantities in coal-tar and bone-oil. It boils at 131° C. and somewhat resembles chloroform in odour. It is of interest as a parent substance of haematin, the red colouring matter of blood, and of chlorophyll, the green pigment of plants.

Pytchley, a village in Northamptonshire, shire, England, 3 m. SW. of Kettering; famous as a hunting centre since the 18th Century, though the kennels have been removed to Brixworth.

Pythagoras, Greek philosopher and mathematician, founder of the Pythagorean school, born in Samos; apparently flourished between 540 and 500 B.C.; after travels in many lands settled at Crotona in Magna Græcia, where he founded a fraternity, the members of which bound themselves to purity of life and the attempt to establish a model social organisation. They appear to have upheld the doctrine of transmigration of souls. He is credited with the discovery of the theorem named after him, that the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides.

Python, a large serpent, averaging some 30 ft. in length, with several species found in Indo-China, Malaya and Africa. They feed on small mammals and birds, which they constrict to death in their coils. They are not venomous.

Pyx, a vessel of precious metal, resembling a chalice, in which the consecrated Host is kept; also a small locker-like receptacle, worn round the neck of a priest, in which the Host is conveyed from the Church to the bedside of the sick for purposes of Holy Communion.

Pyx, Trial of the, a test made from time to time at the Royal Mint, by a jury of goldsmiths, to ensure the accuracy of the fineness of the gold and silver coins, so-called from the fact that the coins to be tried are presented in a box or "Pyx."

Q

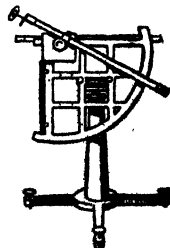
Q-boats, special ships used by the British navy during the World War to cope with submarines. Disguised as cargo vessels with crews in appropriate disguise, they carried concealed guns which came into action after a submarine rose to the surface to capture them. Rear-Admiral Gordon Campbell, V.C., was one of the chief pioneers of the system.

Quadragesima, (i.e., 40th), a name given to Lent because it lasted 40 days; the Sundays in Lent are sometimes referred to as the 1st, 2nd, etc., Sundays of Quadragesima.

Quadrangle, in geometry, a plane figure having four straight sides and therefore, as its name implies, four angles. Particular types of quadrangle are those having four equal sides and four equal (right) angles; the rectangle, all the angles of which are right-angles but the pairs of opposite sides of which are unequal; and the parallelogram (q.v.). Hence the term is applied to large rectangular courtyards surrounded by buildings.

U.E.

Quadrant, an instrument formerly used in navigation, for taking altitudes. It consisted of the graduated arc of a circle of 90 degrees. It was superseded by the sextant.



QUADRANT

Quadratic Equation, in Algebra, an equation involving the square of the unknown quantity.

Quadrature, the construction of a square equal in area to another given geometrical figure. The squaring of the circle is an age-old problem which has probably been the subject of more research than any other in mathematics. Since the area of a circle is equal to the product of an in

2 E

measurable number representing the relationship between the radius and the circumference of a circle (referred to as π and approximately though not exactly equal to 3.1719) and the square of the radius, the problem cannot be solved by purely geometrical means. In practice a square is equal to a circle if its side is 0.88623 times the diameter of the circle.

Quadriga, a 2-wheeled chariot drawn in the ancient chariot races.

Quadrilateral, a name formerly in N.E. Italy, held before 1866, by the Austrians, namely, Peschiera, Mantua, Verona and Legnago; on the holding of these towns the maintenance of the Imperial power in Italy was held to depend.

Quadrille, a dance consisting of 5 figures and movements, executed by 4 sets of couples, each set forming 1 side of a square, or the music for such a dance. The name is also used for an old card game red by 4 players with 40 cards, the 8's, 9's, 10's being discarded.

Quadrirème, an ancient war galley arranged in 4 banks, a development from the trireme (q.v.).

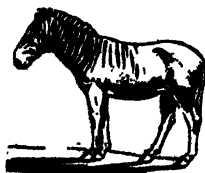
Quadroon, the name given to the offspring of a mulatto and a white person who thus contains one-quarter negro blood.

Quadrumania, a name applied by Cuvier, but now obsolete, to the highest order of mammals, including apes, monkeys and lemurs; see *Primates*.

Quadruple Alliance, an alliance formed in 1719 between England, France, Austria and the Netherlands, to secure the settlement of European affairs brought about by the Treaty of Utrecht.

Questors, the name given in ancient Rome to the officers entrusted with the care of the public treasury, originally 2 in number, but eventually increased, till in Caesar's time they amounted to 40. Under the republic they were the public prosecutors in cases of murder; in time their judicial functions passed, until they became in effect financial officers of the emperors and consuls.

Quagga, a wild ass, resembling the zebra, but having striped markings on the head, neck and forepart of the body only. At one time abundant in South Africa, it is now believed to be extinct. It was chestnut red in colour and had small ears. It was confined to the Orange R. district. Other varieties had a more extended range and some, e.g., Burchell's Bonte-Quagga, had the stripes well marked on the hinder parts of the body.



QUAGGA

Quaglio, the name of a family of Italian famous were Domenico (1723-1760), called the Elder, who specialized in historical paintings; and his two grandsons, Domenico (1787-1837) called the Younger, and Angelo (1784-1815), who also attained fame as an architect. Two other grandsons, Lorenzo (1793-1869) and Simon (1795-1878) also practised painting and allied arts.

Quai D'Orsay, the name of a quay in Paris. Here are situated the build-

ings which house the French Department of Foreign Affairs.

Quaigh, a name formerly given to a wooden drinking-cup in Scotland.

Quail, a genus (*Coturnix*) of game birds, of the family *Perdix*, resembling a very small partridge, with light streaks on the upper parts, the Common Quail (*Coturnix coturnix*) being the most important and the most widely distributed over the Old World. Vast numbers are or have been netted along the northern African coast for consumption in Egypt. In England it is mostly a summer visitor, though small numbers stay all the year round.



COMMON QUAIL

Quain, Jones, anatomist, born at Mallow, Ireland; was professor of Anatomy and Physiology in London University; was author of *Elements of Anatomy*, of which the first edition was published in 1828 (1796-1865).

Quain, Sir Richard, English physician, born at Mallow, cousin of preceding; edited *Dictionary of Medicine*, and was President of the British Medical Council in 1891 (1816-1898).

Quain, Richard, anatomist, born at preceding, and professor in London University; author of a number of medical works; bequeathed a large legacy to the university for "education in modern languages." (1800-1887).

Quair, or *Quhair*, an old Scottish name for a book, derived from the French *cahier* (a little book) and allied to "quire"; hence *The King's Quair*, written by James I.

Quake Grass, or *Quaking Grass*, a genus (*Brisa*) of grasses having panicles of delicately suspended spikelets which droop on one side. There are 15 different species, 2 native to Britain. *Brisa media* or Common Quaking Grass is cultivated as a border annual.

Quakers, the Society of Friends (q.v.), so called first by Justice Bennet of Derby, because Fox bade him quake before the Lord.

Quamash (*Camassia esculenta*), a bulbous plant of the hyacinth section of the lily family (Liliaceae) with blue and white flowers. It is indigenous to N. America where its roots were roasted and eaten by N. American Indians.

Quantity Surveyor, a surveyor or architect's plans draws up a list of the materials required in the construction of an edifice, and assists in the preliminary costing before work starts.

Quantock Hills, range of hills in Somerset, England, stretching about 8 m. from the Bristol Channel near Watchet towards Taunton. The highest point is Willneck, 1,260 ft.

Quantum Theory. Until the beginning of the 20th Century it was thought that when an atom emits energy as radiation of a particular frequency, any small quantity of energy might be emitted. In 1900, however, Max Planck (q.v.) discovered that, to account for the distribution in the colour of the radiation emitted by a hot body, it was necessary to assume that this was not so. Energy is radiated in bundles or quanta, and the amount of energy in a quantum depends upon the frequency of the radiation. The theory led to remarkable successes in other branches of physics. In 1905 Einstein used it to explain some of the

facts of photo-electricity, and in 1913 Bohr began to apply it to the theory of spectra and the constitution of atoms. At the present day a modified form of it is of fundamental importance for all theories concerning sub-atomic phenomena and the constitution of atoms, the explanation of specific heats, electrical conductivity, radiation, and photo-electricity.

Quarantine, the prescribed time, (the name), of non-intercourse with the shore for a ship suspected of harbouring cases of infectious disease; now applied as a general name for any measures that port sanitary authorities may see fit to take in relation to such a ship.

Quare Impedit, a writ which may be applied for by the patron of a church living against a bishop who refuses to institute a candidate presented, and calling upon him to give his reasons for the refusal.

Quaritch, Bernard, English bookseller, born in Saxony, who opened a business for dealing in rare books in London in 1847, gradually developing it into the largest institution of its kind in the world; his catalogues are of great bibliographical value. The business was after his death carried on by his son. (1819-1899).

Quarles, Francis, English poet, born in the Court, in the City, and the Church; was a strong Royalist and churchman, and a voluminous author, both in prose and verse, now remembered for his *Divine Emblems*, and *Enchiridion*. (1592-1644).

Quarry, in mining, an open or surface working for stone or slate, the term "mine" being usually restricted to pits or places from which coal or metals are extracted, "quarry" to those from which squared stones for building, etc., such as marble, granite or slate, are taken. In a quarry, the overlying soil is simply removed and the blocks of stone cut and lifted out by cranes. Quarrying methods depend on the position and composition of the rock.

Quart, an English measure of capacity for both liquids and solids, the fourth part of a gallon.

Quartation, a process used for the separation of gold from silver in an alloy of the two metals, by boiling them with concentrated nitric acid. It is only successful if the alloy does not contain more than 25 per cent. by weight of gold.

Quarter, an English measure of weight, representing the fourth part of a cwt., or 25 lb.; and of capacity, when it equals 8 bushels or 64 gallons. A quarter of wheat is reckoned as 480 lb. (8 bushels).

Quarter Days, in England and Ireland, Lady Day, March 25; Midsummer Day, June 24; Michaelmas Day, Sept. 29; and Christmas Day, Dec. 25; while in Scotland the legal terms are Candlemas, Feb. 2; Whitunday, May 15; Lammas, Aug. 1; and Martinmas, Nov. 11.

Quarter-deck, the part of a ship abait the mainmast, or between the main and mizzen, where there is a poop.

Quartering, in heraldry, the arrangement of several coats-of-arms on one shield to form one bearing, as in the royal arms of the United Kingdom, where those of the constituent countries are conjoined; also the division of a coat-of-arms into four or more quarters by perpendicular or horizontal lines. A quartered shield sometimes has one or more of its divisions again quartered, and is then described as counter-quartered, the large divisions being known as the Grand Quarters.

Quarterly Review, a review started by John Murray, the London publisher, in Feb., 1809; among its earliest contributors were Southey, Scott, Hazlitt, and Gladstone.

Quartermaster, officer whose duty it is to look after the quarters, clothing, rations, stores and ammunition, etc., of a company or other division of troops, and in the navy a petty officer who is concerned with stowage, steering, soundings, etc., of the ship.

Quarter Sessions, courts held 4 times a year in counties or boroughs, to hear appeals from summary convictions (see *Justice of the Peace*; *Petty Sessions*), and to dispose of such crimes as statute law permits. These Courts cannot try treason, murder or any capital felony, or any felony which involves a sentence of penal servitude for life, perjury, forgery, bigamy, libel, abduction, etc. At the County Quarter Sessions the justices sit as judges presided over by a chairman who is generally a trained lawyer; whilst at the Borough Sessions, the judge is a recorder, who must be a barrister of 5 years' standing.

Quarter-staff, strong wooden staff, 6½ ft. long and tipped with iron, grasped in the middle; used formerly as a defensive and duelling weapon by English peasants.

Quartette, a musical composition for 4 voices or instruments, in the latter case usually 2 violins, violoncello and viola. The form was much favoured by Mozart and Beethoven.

Quarto, a sheet of paper so folded as to make 4 leaves, or a book printed on paper so folded; usually abbreviated to 4to. The usual varieties are Crown Quarto (10 by 7½ in.), Royal Quarto (12½ by 10 in.) and Foolscap Quarto (8½ by 6½ in.).

Quartz, a very hard siliceous crystalline mineral, abundant in igneous rocks, especially those classed as "acid," e.g., granites. It is used in the manufacture of chemical apparatus as, owing to its small expansion, it can resist great heat and can be cooled suddenly without damage, and, when crushed, as an abrasive.

Quartzite, or **Quartz Rock**, a variety of sandstone in which silica is deposited as quartz to form a solid mass. It is usually pink or grey in colour, but sometimes pure white.

Quassia, a small tree of the order Simarubaceae, named by Linnaeus after Quassi, a negro of Surinam, who successfully used its bark as a remedy for endemic fevers. The entire plant is bitter and has strong antiseptic properties. The Surinam plant is *Quassia amara*; Jamaica quassia, or *Picroaena excelsa*, produces the quassia chips used in medicine.

Quaternary, in geology, the post-logical formation, or the time elapsed between the end of the Pliocene period and the present day. It is divided into the Pleistocene and post-Glacial epochs, in the latter of which we are still living.

Quaternions, a mathematical technique for dealing with quantities having direction as well as magnitude; it was invented by Sir William Rowan Hamilton, an Irish mathematician of the 19th Century. It is of importance as a method in mathematical physics; it has now become part of the branch of mathematics known as vector analysis.

Quatre-Bras (i.e., four arms), a village 10 m. S.E. of Waterloo; the scene of an obstinate conflict between the English under Wellington and the French under Ney, two days before the battle of Waterloo.

Quatrefoil, in architecture, a panel four leaves, or the leaf-shaped space formed by the cusps, and supposed to represent the leaves of a cruciform plant. Gothic pillars are often quatrefoil in plan.



QUATREFOIL

Quattrocento,

(i.e., four hundred), a term employed by the Italians to signify one thousand four hundred, that is the 15th Century, and applied by them to the literature and art of the period.

Quaver, a musical note and measure of time, equal to half a crochet or the eighth of a semibreve.

Quay, a solid, stationary artificial landing-place, lying along or projecting into a stream, harbour or basin, for unloading or loading ships. Quays are generally constructed of stone, but may be also of iron or wood.

Quebec, formerly called **Lower Canada**, province of the Dominion of Canada, occupying that part of the Valley of the St. Lawrence, and on a narrow stretch of fertile, well-cultivated land on the S. of the river, which is bounded on the S. by the states of New York and Maine, and on the E. by New Brunswick, with that part of the Labrador Peninsula not included in Newfoundland. It contains extensive tracts of cultivated land and forests interspersed with lakes and rivers, effluents of the St. Lawrence. The soil, which is fertile, yields good crops of cereals and potatoes; there is good pasturage, valuable fisheries, and much timber, largely used for wood pulp. Copper, gold, asbestos and other minerals are mined. The largest cities are Montreal, Quebec and Verdun. It was colonized by the French in 1608, was taken by the English in 1759-1760, and the great majority of the population is of French extraction. Area 584,500 sq. m. Pop. 3,150,000.

Quebec, the capital of the Canadian province of that name, and once of all Canada, situated on the steep promontory, 333 ft. in height, of the NW. bank of the St. Lawrence, at the mouth of the St. Charles R., 300 m. from the sea, and 180 m. below Montreal. There are two cathedrals and a university. It has a large trade in timber, besides grain and cattle, and manufactures of hardware, machinery and textiles. The aspect of the town is Norman-French. To the SW. are the Plains of Abraham, with a monument to Wolfe. Pop. 142,000.

Queen, the head of a monarchical state, if a female, or the wife of the head, if a male. The queen regnant has the same powers and status as a king. The life and chastity of a Queen Consort in Great Britain are protected by the Statute of Treasons; she has her own Attorney and Solicitor-General; though married she has always been in law in the position of a single woman, and thus could sue and be sued, convey and purchase property, etc., apart from her husband. As the King's subject she is amenable to criminal process. It rests with the King whether he will have her crowned or not. On the King's death a Queen Consort becomes a Queen Dowager, and the Statute of Treasons no longer applies to her.

Queen Anne's Bounty a fund established in 1704 for the augmentation of the incomes of the poorer clergy; now makes grants to poor benefices for the repair and improvement of clergy residences and towards the annual payments for dilapidations.

Queen Anne Style, the architectural Queen Anne's

or decorative style of reign, based largely on Italian late Renaissance models, but characterized by greater simplicity and austerity. Its great architectural exponent was Wren. In interior decoration and furniture there was a similar departure from the rococo, with more reliance on artistic design. These principles are exemplified in the wood carvings, bronzes, and sculpture of Grinling Gibbons.



QUEEN ANNE PERIOD CHAIR

Queen Charlotte

Islands, a small group of islands on the W. coast of North America, 80 m. off the coast of British Columbia, a half-submerged mountain range. Their fisheries are rich and timber is exported. Pop. c. 2,000.

Queen Charlotte Sound,

the northern part of the strait which separates Vancouver I. from the mainland of British Columbia.

Queensberry, John Sholto Douglas, 8th Marquess of, a famous patron of boxing, who drew up the "Queensberry rules," under which the sport is still carried on. (1844-1900).

Queen's County. See Leix.

Queensferry, borough and seaport of West Lothian, Scotland, on the Firth of Forth, at the S. end of the Forth Bridge. It has a good harbour and large oil works. Pop. 1,800. The village in Fifeshire, at the northern end of the Forth Bridge, is known as North Queensferry.

Queensland, NE. state of Australia, 1,300 m. from N. to S. and 800 m. from E. to W., two-thirds of it within the tropics. Mountains stretch away N. parallel to the coast; much of it is covered with forests, and it is fairly well watered, the rivers being numerous; the chief are the Fitzroy and the Burdekin. The principal towns are Brisbane, the capital, Rockhampton, Townsville and Toowoomba. The pastoral industry is very large and there is considerable mining for gold and coal. Maize, wheat and fruit are the principal products of the soil, and frozen meat, hides, wool and dairy produce are the principal exports. Until 1859, the territory was administered by New South Wales, but in that year it became an independent colony, with a government of its own under a Governor appointed by the Crown. The state legislature is a single-chamber body. Area 670,000 sq. m. Pop. 982,000.

Queen's Metal, an alloy of tin with usually antimony, lead, and bismuth, similar to Britannia metal (q.v.) and used like it for making drinking mugs and similar articles.

Queenstown. See Cobh.

Quercitron, a species of oak, also called Dyer's oak (*Quercus tinctoria*) found in N. America, from which a yellow dye-stuff is obtained.

Quercus, a genus of deciduous and evergreen trees of the natural order Fagaceae, comprising 300 species, many of great commercial value for their wood, bark, etc.; popularly known as Oaks (q.v.). The British representative is *Quercus Robur*.

Quern, a primitive handmill of stone for grinding corn, still used in remote parts of Ireland and Scotland.

Quetta, chief town in the N. of Baluchistan, commanding the Bolan Pass, and occupied by a British garrison; site of the Indian Staff College, and strongly fortified. In 1935, it suffered from a severe earthquake, in which some 30,000 persons were killed. Pop. 60,300.

Quetzal (*Pharomacrus mocino*), a bird of the trogon family, of strikingly beautiful plumage, whose feathers were chosen for the adornment of native chiefs in Guatemala and Peru; the bird is the badge of the former country.



QUETZAL

Quetzalcoatl

one of the chief gods of the Aztecs of Mexico, said to have taught the people the arts of metalwork and agriculture, and to have disappeared promising that he would return to them later. On the landing of Cortez in the country in 1519 many of the Aztecs assumed that the prophecy had been fulfilled.

Quia Emptores, a statute of Edward I., intended to prevent subinfeudation, laying down that in future cases of transfers of land held in fee, the new occupiers should hold it directly of the chief feudal lord and not of the intermediate grantor. It was passed in 1290.

Quiberon, a small fishing village on a peninsula of the same name, stretching southward from Morbihan, France, near which Hawke defeated a French fleet in 1759, and where a body of French emigrants attempted to land in 1795, in order to raise an insurrection, but were defeated by General Hoche. Pop. c. 3,500.

Quichuas, an American Indian people, who flourished, before the conquest, in Peru and its neighbourhood. Many ballads and songs in their language, *Quichua*, still exist, marking a high degree of poetic ability.

Quicklime, or unslaked lime, calcium oxide deprived by heat of its carbon dioxide and water. Lime thus slaked and mixed with sand forms mortar.

Quicksand, a sandbank so saturated with water that it gives way under pressure. It usually consists of a thin substratum of mud under a thin sandy coating, near the mouth of a river.

Quicksilver, an alternative name for mercury (*q.v.*).

Quietism, the religious theory that man should seek perfection by remaining purely passive under the working of Divine Grace, without seeking the active display of the practical virtues. It was first put forward by the Spanish priest Molinos, whose chief disciple in France was Madame Guyon. It was condemned by the Roman Church in 1687; the famous French Archbishop Fénelon is mainly remembered for his defence of the system against Bossuet. A similar line of thought is found in certain Eastern religious systems, notably among the Mohammedan Sufis.

Quiller-Couch, Sir Arthur, British man of letters, a Cornishman, born at Bodmin and resident for many years at Fowey, which town he has described in his books. As a novelist he has written several works under the pen-name "Q," such as *Dead Man's Rock*, *Splendid Spur*, and *Troy Town*. From 1913 he was professor of English Literature at Cambridge. He edited the *Oxford Books of English Verse and Prose*, and is author of many literary essays and three series of *Studies in Literature*. (1863-).

Quin, James, a celebrated actor, born in London; was famous for his representation of Falstaff, and was the first actor of the day till the appearance of Garrick in 1741. (1693-1768).

Quince, the fruit of *Cydonia vulgaris*, a small tree with white or pale-red flowers, of the apple family; indigenous in S. Europe and N. Africa. Although used for making marmalade and also with cooking-apples, the quince tree is more largely employed as a stock for pears or apples.



QUINCE

Quincunx, an arrangement of five things in a square, one at each corner, and one in the middle; an arrangement frequently adopted in the planting of trees. In medieval astrology the word was used to describe an arrangement of planets when at a distance from each other of five signs, or 150°.

Quincy, Josiah, American statesman, distinguished as an opponent of slave-holding. (1772-1864).

Quinine, the most important of the Cinchona alkaloids, first obtained, though in an impure state, by Gomez of Portugal, early in the 19th Century; very bitter, almost insoluble in water, but soluble in alcohol, ether and chloroform. It is a powerful base (*q.v.*), neutralizing acids completely. Its salts are used in the treatment of malaria and other fevers, and as tonics.

Quinoa (*Chenopodium Quinoa*), an annual plant of the spinach family, indigenous to S. and Central America. Its seeds, ground into meal and boiled like rice, are used as food. *Chenopodium anthelminticum* (worm-seed or Mexican tea), an allied N. American species, yields a vegetable oil of value as a vermifuge.

Quinquagesima Sunday, the Sunday before the beginning of Lent; so called because it is roughly fifty days before Easter.

Quinquennial Valuation, a valuation of landed property and buildings made every five years throughout England and Wales by local assessment committees, on the basis of which local rates are levied.

Quinsy, an inflammation of the tonsils, sometimes extending to the uvula and soft palate; swallowing is rendered difficult, and there is often considerable pain in the throat.

Quintain, an old English sport of tilting at a mark from horseback with lances or poles, which was popular to the close of the 18th Century.

Quintette, a musical composition in obligato parts for five voices or five string instruments.

Quintilian, Marcus Fabius, Latin rhetorician, born in Spain. His fame rests on his *Institutes*, a great work, being a complete system of rhetoric in 12 books, commenced in the reign of Domitian after his retirement from his duties as a public instructor, and occupying its author for two years. (c. 35-100).

Quintuple Treaty, a treaty between Austria, Prussia, Russia, France and Great Britain, signed in 1839, by which those powers guaranteed a previous treaty, signed by them in the same year with the Netherlands, recognising the independence and perpetual neutrality of Belgium. This treaty was the famous "scrap of paper" whose breach by Germany was put forward by Great Britain as the cause of her entry into the World War.

Quipu, knotted cords of different colours used by the ancient Peruvians for conveying orders or recording events.

Quirinal, one of the seven hills on the Palatine, and one of the oldest quarters of the city. On it stands the Roman palace of the Kings of Italy, known by the same name.

Quirites, the name the citizens of Rome assumed in their civic capacity; it is connected with Quirinus, an ancient Roman god possibly associated with Mars.

Quito, capital of Ecuador, situated at an elevation of nearly 9,300 ft. above sea-level, and out up with ravines. It is in the heart of a volcanic region, and is subject to frequent earthquakes; serious disasters occurred in 1797 and 1854. Textiles, beer and religious images are manufactured. There is a cathedral and a university. The city was the ancient capital of the Incas. Pop. c. 120,000.

Quit-Rent, a rent the payment of which from other services such as were obligatory under feudal tenure.

Quoin, an angle or corner of a building, a corner-stone. Also a wedge used to tighten or "lock-up" formes of type in printing.

Quoits, a game which originated in the Roman sport of discus-throwing; in the modern game the quoit is an iron ring, several pounds in weight, and flat in shape, which is pitched over a green at a mark. "Deck quoits" is a popular game on liners and tourist vessels.

Quorn, one of the most famous hunts and hunting packs in England,

named from Quorndon, a village near Loughborough, Leicestershire, though its actual centre is at Melton Mowbray.

Quorum, the minimum number of the governing body, or any assembly which may be present to enable it to do business. In the House of Commons the number of the quorum is forty.

Quota, a term in political economy, denoting what percentage of the output of a particular commodity may, by international agreement, be exported; or what amount of a given commodity or goods may be exported under licence to a particular country. Thus trade in tin and rubber is regulated by agreement between the producing countries; and frozen meat imports from the Dominions and the Argentine into Britain are regulated by quotas, which are in this sense an alternative to tariffs. In Britain, under the Wheat Act, 1932, provision is made out of a Quota Fund, controlled by the Flour Millers' Corporation, for securing to growers of home-grown, millable wheat a standard price and market. The term is also used of the proportion of British-made films which must be included in every cinema programme and of the number of immigrants of any given race or nation allowed by law to enter another country.

Quo Warranto, a writ, now obsolete, by which any person usurping or misusing a Crown prerogative or office was called upon to show by what authority he did so. It has been superseded in modern times by the issue of an information issued by fiat of the Attorney-General.

R

Ra, the sun-god of Egyptian mythology, supreme among the gods. He is represented as voyaging in his boat across the celestial waters by day and along the Tuat (realm of the dead) by night, or in human form with the head of a hawk crowned with the disc of the sun.

Raasay, one of the Inner Hebrides, belonging to Inverness-shire, Scotland, lies between Skye and Ross-shire; has interesting ruins of Brochel Castle. Iron ore is found. Pop. c. 400.

Rabat, port in Morocco, in the French zone, on elevated ground overlooking the mouth of the Bu-Ragrag R., 115 m. SE. of Fes; is surrounded by walls, and has a commanding citadel; manufactures carpets, mats, and pottery. Pop. 83,000.

Rabaul, chief town and port of New Britain, of which it is the capital. It stands on Simpson Harbour and has a fine jetty and good anchorage. Pop. (non-native) 1,900.

Rabbi, title applied to a teacher of the Law or scholar honoured for his Talmudic knowledge among the Jews.

Rabbit, common rodent mammal (*Lepus cuniculus*) of the family Leporidae. It closely resembles the hare, but is smaller, and has shorter ears and shorter legs and is social in habit, in the wild state living in burrows and in colonies whilst the hare sleeps in "forms" and is more or less solitary. Introduced into Australia in the middle of the last century, its prolificness has made it a pest of the first order, and rabbit-proof fences have been built across the Continent to protect the crops from its ravages. It is

used as a food, and its skin, under the name "coney," is dressed in imitation of more valuable furs. Many different varieties have been bred by selective methods in domestication. The Angora is notable for the length and quality of its fur which is "combed" and clipped for commercial purposes, the Flemish Giant for its size and the latter and crosses with the Belgium Hare, another true rabbit, are bred for table purposes. Wild rabbits are marketed extensively and imported in great quantities from Ireland and Australia but the flesh of "Ostend" rabbits is superior.

Rabelais, François, French humorist, born at Chinon; became a Franciscan friar, but later returned to lay life, studied medicine at Montpellier, and practised it at Lyons. There he began the series of writings that have immortalized his name, his *Gargantua* and *Pantagruel*, which he finished as curé of Meudon, forming a succession of satires in a vein of riotous mirth on monks, priests and pedants. (c. 1495-1553).

Rabies, or *Hydrophobia*, a disease of dogs and other canine animals, communicable to man. The second name ("fear of water") refers to one of its symptoms, the spasm consequent on an attempt to drink. It is usually due in human beings to a bite from an infected dog. The disease, probably due to a filterable virus, has been the subject of much research at the Pasteur Institute, as a result of which its terrors in man have been greatly lessened. The enforced 6-months' quarantine for dogs entering the country and the permitted muzzling have resulted in the disease being practically unknown in Britain.

Raccoon, a genus (*Procyon*) of carnivorous animals of N. America, (*P. Lotor*) is about the size of a large cat, with brown furry hair, tail bushy and ringed, unwieldy body and short legs. It has a characteristic habit of dipping its food in water before eating it. Its fur is used for clothing.



RACCOON

Raceme, an inflorescence in which the pedicels or subsidiary branches borne on the main stem.

Races of Mankind. Modern anthropological opinion usually divides mankind into five main races, the Negro, Mongolian, Alpine, Mediterranean and Nordic, who, in course of time have very largely interbred, especially the last three. The division is based on various features, especially the shape of the skull, nature of the hair, and skin coloration. Broadly the Negroes inhabit the centre and S. of Africa, parts of Malaysia, Oceania and Australia; the Mongolians, E. Asia and America; the Alpine peoples, a band stretching from Central Asia to the Alps; the Mediterranean, the area around the sea of that name, and the Nordics, N. and Central Europe. These classifications are subject to so many exceptions as to be of little practical value in deciding on the present race composition of the population of any country. All the races interbred, and probably had a single origin.

Rachel, wife of the Biblical patriarch Leah; mother of Joseph and Benjamin, at the birth of the latter of whom she died.

Rachmaninoff, *Sergei Vasilievich*, Russian pianist and composer. Born in Novgorod, he was educated at Moscow and St. Petersburg, and later appeared throughout Europe and America both as pianist and conductor. His most popular composition is his *Prelude in C Sharp Minor*; he has also written two operas and a number of symphonies, concertos, and chamber music. (1873-).

Racine, a flourishing city of Wisconsin, U.S.A., at the entrance of Root R. into Lake Michigan, 62 m. N. of Chicago; has an Episcopal university; trades in lumber, flax, leather goods, machinery and hardware. Pop. 67,500.

Racine, *Jean*, French tragic poet, born in La Ferté-Milon in the dept. of Aisne; was educated at Beauvais and Port Royal; in 1663 settled in Paris. He raised the French language to the highest pitch of perfection in his tragedies, of which the chief are *L'Andromaque* (1667), *Britannicus* (1669), *Mithridate* (1673), *Iphigénie* (1674), *Phèdre* (1677), *Esther* (1689), and *Athalie* (1691), as well as an exquisite comedy entitled *Les Plaideurs* (1669). (1639-1699).

Rack, an instrument of torture; consisted of an oblong wooden frame, fitted with cords and levers, by means of which the victim's limbs were racked to the point of dislocation. It was much resorted to by the Spanish Inquisition, and also at times by the Tudor monarchs of England, especially to extort confessions.

Rackham, *Arthur*, English water-illustrator, famous for his illustrations of fairy tales, folk legends, and such books as *Alice in Wonderland*, *Goldilocks Legends*, *Midsummer Night's Dream*, etc. (1867-).

Racquets, or **Rackets**, a ball game for two or more players, played with catgut circular-headed rackets weighing about 9 oz. and 30 in. long, and a small hard ball of about 1½ oz. weight, in a plain asphalted four-walled court, generally measuring about 63 ft. by 31½ ft. A painted line 9½ ft. from the ground denotes the service line; a white line across the ground 36 ft. from the front wall is the "short line" and a strip of board carried 25 to 27 in. above the bottom of the front wall forms the playing line. The whole is divided into right and left courts and squares called "service boxes." Game consists of fifteen "aces."

Radcliffe, town of Lancashire, England, on the Irwell; 7 m. NW. of Manchester; manufactures cotton, calico, and paper; has bleaching and dye works, and coal mines. Pop. 26,990.

Radcliffe, *John*, physician, born at Wakefield, studied at Oxford; commenced practice in London; attended several members of the Royal Family and Court; left his property to the University of Oxford, where the Radcliffe Camera, the reading-room of the Bodleian Library, bears his name. (1650-1714).

Radek, real name *Karl Berngardovich Sobelsohn*, Russian politician, born at Lvov. In 1917 he accompanied Lenin to Sweden and later to Russia; worked in Germany in 1918-1919 and 1922; was rector of the Chinese University at Moscow, 1925; joined the Trotskyist opposition in Russia, and was expelled from the Communist Party in 1927; was reinstated in 1930, but in 1937 was tried with others for conspiracy and sentenced to 10 years' imprisonment. (1885-).

Radetzký, *Johann*, Count von, Austrian field-marshal, born in Bohemia; entered the Austrian army in 1784; fought in the wars with Turkey and France; checked the revolution in Lombardy in 1848; defeated and almost annihilated the Piedmontese army under Charles Albert in 1848, and compelled Venice to capitulate, being then appointed Governor of Lombardy. (1766-1858).

Radial Artery, an artery passing in front of the radius (*q.v.*), and crossing the wrist to the back of the hand, joining the ulnar artery.

Radiation, the name given to energy transmission as electro-magnetic waves. According to the wave-length, different names are assigned to the radiation; thus the cosmic rays discovered by Millikan are the shortest waves, being followed in increasing order of wave-length by the gamma rays of radioactive bodies, X-rays, ultra-violet rays, visible light (violet, indigo, blue, green, yellow, orange, red), infra-red and other heat rays, and electric waves such as are used in wireless. The cosmic rays have a wave-length of less than 10⁻¹⁰ cm., while wireless waves vary from about 10⁻² cm. to 10⁻⁶ cm.

Radiation occurs along straight lines only: its velocity in a vacuum is that of light, viz., 186,000 miles (300,000 kilometres) per second. Radiant heat is a form of radiation with which we are often concerned in daily life. The best heat radiator is a blackened surface, and the worst is a highly polished surface; hence a dark-painted enamel teapot needs a cosy, while a polished silver one does not. A few solids, such as rock-salt, resemble air in offering no obstacle to heat radiation, but most are opaque to it; glass, for example, is transparent to light, but is largely opaque to heat radiation, so that it may be used as a fire-screen.

Radical, in chemistry, a group of atoms of more than one element in a chemical compound that is not disintegrated

when the compound is broken up. Such radicals, however, are often incapable of existing except when compounded with other elements. An example is ammonium, NH_4 .

Radicals, a class of English politicians who, at the end of the 18th Century and the beginning of the 19th, aimed at the political emancipation of the mass of the people by giving them a share in the election of Parliamentary representatives. The name was first popularized by such men as Cobbett; later it was transferred from the school of "philosophic radicals" to the left wing of the ordinary Liberal party, and then became synonymous with Liberal. The French Radical party is mainly distinguished by its strong support of republican institutions.

Radio. See Broadcasting and Wireless.

Radio-activity. In 1896, the French chemist Becquerel observed that certain uranium salts continuously emitted radiations which electrically charged the air in their neighbourhood, and also affected a photographic plate wrapped in opaque paper. The phenomenon was investigated by M. and Mme. Curie, who showed that the radio-activity was a property of the uranium atom itself; they later discovered the still more radio-active elements, polonium and radium.

Lord Rutherford showed that the radiation from radium consisted of three types of rays, called alpha, beta and gamma. The alpha-rays are positively charged particles, and are now known to be the positive nuclei of helium atoms; they have small penetrating power, and leave the radium atom with a velocity of some 20,000 kilometres (12,000 miles) per second. The beta-rays are swiftly-moving negative electrons, their velocity sometimes approaching that of light, while the gamma-rays resemble X-rays but are of considerably shorter wave-length, travel with the velocity of light (300,000 kilometres or 186,000 miles per second), and have very great penetrative powers.

Further research showed that the radiation was caused by the actual disintegration of radium atoms, and thus the way was paved for modern work on the structure of atoms in general. Radium seems to be a disintegration product of uranium; it is itself the ultimate parent of a variety of lead, but the complete change of radium into lead occupies very many millions of years. Within the last decade it has been discovered that many elements, when bombarded with neutrons (q.v.) moving at high speed, become radio-active for a short time, and this discovery may have important results, e.g., in medicine, since radio-activity has proved valuable in the treatment of malignant disease and radium itself is extremely expensive. The gamma rays are chiefly used, but their effect is chiefly through beta rays produced.

Radiolarians, primitive minute class Protozoa, which form shells or skeletons of acanthin or silica, which after the death of the animal petrify into beds of marine rock.

Radiology, the application of X-rays in medicine and surgery. It is important in the diagnosis of diseases and deformities of bone and tissue, a radiograph or X-ray photograph of the organ concerned often displaying affections which could otherwise be certainly identified only by actual inspection of the organs by surgical operation. Other applications are in the breaking down of malignant tumours; cancers, etc., are attacked by gamma-rays (see Radiation) from radium salts inserted near the growths concerned. Ultra-violet and other types of radiation are also applied to the human body for their tanno and other effects.

Radiometer, an instrument invented by Sir W. Crookes

(q.v.) for measuring the mechanical effect of radiant energy and made to revolve by the action of light. It consists essentially of four thin discs fixed on aluminium arms at right angles to each other in an airtight glass globe, one side of the disc being white and the other coated with lampblack so that on rotating the white and black alternate—the black absorbing heat in greater quantity than the white.



Radish (*Raphanus sativus*), an annual herb of the cabbage family (Cruciferae), common in Britain and in Southern Europe, probably a cultivated form of the wild radish. Seed is usually sown from February onwards, often between other crops. The roots of the horse-radish (*Cochlearia Armoracia*), another cruciferous plant, is used as a condiment.

Radium, a metallic chemical element belonging to the same group as calcium, strontium, and barium. Symbol Ra; atomic number 88; atomic weight 226.05. It is a very scarce element, since it is continually disintegrating into other elements. It occurs in uranium minerals, e.g., in the Joachimsthal, Bohemia, one or two localities in the U.S.A., the Belgian Congo, and near the Great Bear Lake (Canada). Its principal property is radio-activity (q.v.); in its chemical properties it resembles barium, and is a white metal (melting-point 980° C.), which decomposes water in the cold, yielding hydrogen. Radium salts are white crystalline solids which shine in the dark with a characteristic greenish phosphorescence.

Radius, in geometry, the distance from the centre of a circle to any point on the diameter; in anatomy, the smaller bone of the forearm, articulated to wrist and elbow.

Radley, village of Berkshire, England, 2½ m. N.E. of Abingdon, the seat of a public school, the College of St. Peter, or Radley College. Pop. 1,000.

Radnorshire, the least populous of the Welsh counties; lies on the English border between Montgomery (N.) and Brecknock (S.); has a wild and dreary surface, mountainous and woody. Radnor Forest covers an elevated, heathy tract in the E.; is watered by the Wye and the Teme. The soil does not favour agriculture, and stock-raising is the chief industry; contains some excellent spas, that at Llandrindod, the county town, among them. Area, 470 sq. m. Pop. 21,300.

Radon, or Radium Emanation, formerly known as niton, is a non-metallic chemical element belonging to the group of noble or inert gases. Symbol Rn; atomic number 86; atomic weight 222. It is spontaneously and continuously evolved from radium by the disintegration of radium atoms into radon and helium. It is itself unstable, and soon splits up into helium and a radio-active solid known as radium A. Weight for weight, radon is about 100,000 times as radio-active as radium, and like the latter is used in the non-surgical therapy of cancerous growths.

Raeburn, Sir Henry, Scottish portrait-painter, born at Stockbridge, Edinburgh; after a two-years' visit to Italy settled in Edinburgh, and became famous as one of the greatest painters of the day. The portraits he painted included likenesses of all the distinguished Scotsmen of the period, at the head of them Sir Walter Scott, Joseph Hume, James Boswell and Christopher North; was knighted by George IV. a short time before his death. (1756-1833).

Raemaekers, Louis, Dutch cartoonist, 1st, born at Roermond. Learned painting at Amsterdam. His political cartoons during the World War were world-famous. His work later appeared daily in the Amsterdam *Telegraaf*, and weekly in Brussels *Sotr*. (1869-

Raffia, or *Raphia*, a genus of Palms (Palmæ), including 8 species found in tropical Africa and S. America (the Amazon valley). The most important species are the *R. vinifera*, the Wine or Bamboo Palm of the Amazon, yielding wine, as its name indicates, and the *R. pedunculata* or *Raffia* Palm, yielding the familiar raffia used for tying plants and for weaving light baskets, mats, etc.

Raffles, Sir Thomas Stamford, English colonial administrator, born in Jamaica; entered the East India Company's service; became Governor of Java, and wrote a history of it; held afterwards an important post in Sumatra, and founded the settlement at Singapore; returned to England with a rich collection of natural objects and documents, but lost most of them by the ship taking fire. (1781-1826).

Ragged Schools, institutions first begun by John Pounds, a Portsmouth shoemaker, in 1820, which supplied free education and sometimes bodily necessities for destitute children. A Ragged School Union was formed in 1844 to carry on the work, which was enthusiastically supported by the seventh Earl of Shaftesbury (q.v.). With the introduction of free compulsory elementary education in 1870 their work lost much of its importance.

Raglan, village of Monmouthshire, England, 7 m. SW. of Monmouth. Here stand the picturesque ruins of Raglan Castle, a fine feudal stronghold which was dismantled after its surrender to the Parliamentarians during the Civil War.

Raglan, Fitzroy Somerset, first Baron, youngest son of the Duke of Beaufort; entered the army at sixteen; became aide-de-camp to the Duke of Wellington and his military secretary; lost his right arm at Waterloo; was appointed commander-in-chief of the British forces in the Crimea, and was present at all the engagements, till he died in camp before Sebastopol. (1788-1855).

Ragtime, dance music of Afro-American origin, marked by strong syncopation (q.v.); introduced into Europe from America shortly before the World War, and popular ever since.

Ragusa. See Dubrovnik.

Ragwort (*Senecio Jacobaea*), a tall cotton-like plant with rayed bright yellow flowers, common on pasture lands and on the hedges of Britain. It is placed by botanists in the order Compositæ.

Raikes, Robert, the founder of Sunday Schools, born in Gloucester, where his first school was begun in 1780; by profession a printer. (1735-1811).

Rail, the common name of a number of birds of the Rallidæ family most of which belong to the genus *Rallus* and are characterised by the absence of a horny

plate on the lower part of the forehead and by having lobate webbed feet. The species found in Britain include the Water-Rail (*Rallus aquaticus*), frequenting reed beds or dense vegetation in damp districts, and having wings short and rounded, and too small to support the bird in the air and legs long and often stout; and the Land-Rail or Corn-Crake (*Crex Crex*).



VIRGINIA RAIL

Railways. Railways of wood were used in collieries as early as 1660, the motive power being supplied by horses. Towards the end of the 18th Century cast-iron plates were substituted for the wooden rails, and in 1801 the first horse-drawn public railway, for goods transport only, was opened from Wandsworth to Croydon. Experimental locomotives were being built at this time by Hedley, Blenkinsop, Stephenson and others, and in 1804 Richard Trevithick ran the first locomotive on a colliery line near Merthyr Tydfil.

In 1825 the Stockton and Darlington Railway was opened. This was originally intended for animal power, but at the instance of Stephenson a locomotive was put in use in May. Four years later steam-traction was tried between Manchester and Liverpool. The year 1830 saw the opening of the Canterbury and Whitstable line, the first to convey passengers in steam-hauled trains. Other lines followed, and by 1836 some 490 miles had been opened in England and Wales. In 1846 Parliament passed an Act establishing 4 ft. 8½ in. as the standard gauge.

In Great Britain to-day there are some 20,120 miles of line. Many lines are now being electrified, especially in the S.; the first long-distance electric train ran from London to Brighton in 1933. In the majority of foreign countries railways are either state-owned or state-controlled. This applies to Australia and the Union of South Africa.

In Great Britain the railways are owned and operated by four great private companies, formed in 1921 by amalgamation of many smaller undertakings. These are: (1) the Southern; (2) the Great Western; (3) the London Midland and Scottish; (4) the London and North Eastern. Since 1919 the Ministry of Transport has supervised railway operation from the point of view of the state. The rapid growth of motor transport has adversely affected the railways, but in 1928 the four groups obtained power under certain conditions to operate road vehicles in conjunction with trains. This links up road and rail transport and in some cases provides for inter-availability of tickets.

The principal Trade Union for railway workers is the National Union of Railwaymen (N.U.R.), developed in 1913 from the old A.S.R.S. (Amalgamated Society of Railway Servants). Others are the Amalgamated Society of Locomotive Engineers and Firemen (A.S.L.E.F.), and the Railway Clerks' Association (R.C.A.).

Rain is produced by the condensation of the water vapour of the air, so that the minute particles that form clouds unite to form drops, which fall to the earth by gravity. Notwithstanding the extreme variability of the rainfall, the earth may be divided into three rain-provinces; one some of periodical rain, included within the tropics; and two zones of variable rain, one lying to the N. the other to the S., of the tropical zone. In the zone of periodical rain there is a narrow belt lying between 4° and 9° N. latitude, upon which rain falls nearly every day. The greatest extent of rainless country is the immense desert which stretches almost without interruption from NW. Africa into the centre of Asia. In some parts of the world rain only falls during certain parts of the year, and these are spoken of as the "rainy seasons."

Rainbow, a heavenly phenomenon in the apparent shape of a bow, caused by the decomposition of light by drops of water. The colours, counting from inside the bow, are, in order, violet, indigo, blue, green, yellow, orange, red. If the light be intense, a second bow is formed outside the first, with the colours reversed and fainter. Rainbows always occur opposite to the sun,

and when observed from mountains are perfect circles.

Rain Gauge, an instrument for measuring rainfall; it consists of a copper funnel, whose top has a fixed area, and whose neck fits into a bottle or cylindrical can. The funnel and bottle are then enclosed in a metal cylinder considerably taller than the funnel, so as to retain snow when it falls. The measurement is made by pouring the contents of the bottle into a glass measure marked to represent hundredths of an inch.

Raisin, a grape dried in the sun, or—in the case of inferior qualities—in the oven. Grapes for raisin production are largely grown in California, U.S.A., Asia Minor, Greece, and other Mediterranean countries.

Rajah, a title which originally belonged to princes of the Hindu race who exercised sovereign rights over some tract of territory; now applied loosely to native princes or nobles with or without territorial lordship.

Rajputana, an extensive tract of India, country in the NW. of India, S. of the Punjab, embracing 23 native states, of which Jodhpur is the largest; others are Bikaner and Mewar. The Aravalli Hills traverse the S., while the Thar or Great Indian Desert occupies the N. and W. Many of the inhabitants are Rajputs (q.v.) and most Hindus. The area of the states in the Agency is 131,200 sq. m., and the pop. 11,512,000.

Rajputs, a people of India, found in the N. of the country, said to be descended from the Kshatriya caste. They are mostly Hindus by religion.

Raleigh, Sir Walter, English soldier Hayes Barton, in Devon, of ancient family; at 17 joined a small

volunteer force in aid of the Protestants in France; in 1580 distinguished himself in suppressing a rebellion in Ireland; was in 1582 introduced at Court, fascinated the heart of the Queen by his handsome presence and his gallant bearing, and received favours at her hand; joined his half-brother, Sir Humphrey Gilbert, in an expedition to N. America,

founded a colony, which he called Virginia in honour of the Queen, and brought home with him the potato and the tobacco plants, till then unknown in this country; rendered distinguished services in the destruction of the Armada; visited and explored Guiana, and brought back tidings of its wealth in gold and precious things; fell into disfavour with the Queen, but regained her esteem. Under King James he became suspected of disloyalty and was committed to the Tower, where he remained 12 years, and wrote his *History of the World*. On his release without a pardon, he set out to the Orinoco in quest of gold-mines there, but returned unsuccessful; was sentenced to die, and was beheaded in the Old Palace Yard. His *History of the World* went only as far as the Macedonian War of Rome. (1582-1618).

Raleigh, Sir Walter, English critic, from 1904 Professor of English Literature at Oxford. Much of his work was in the field of Shakespearean study; he published *The English Novel* in 1884, and *Essays on Shakespeare, Milton, and Wordsworth* (1861-1922).



SIR WALTER RALEIGH

Râma, in the Hindu mythology, the 7th in the character of a hero, a destroyer of monsters and a bringer of joy, as the name signifies. The narrative of his exploits is given in the Indian epic, the *Râmâyana*.

Ramadan, the 9th month of the Mohammedan year, being the month in the life of Mohammed in which he received special revelations from Heaven. It is kept by all Moslems as a strict fast, no food or drink being taken during it between sunrise and sunset.

Ramadi, town of Iraq, on the Euphrates, 60 m. NW. of Bagdad. Here in 1917 a battle took place between the British, under General Maude, and the Turks, resulting in the surrender of the Turkish force.

Rambouillet, town of France, in the dept. of Seine-et-Oise, 18 m. SW. of Paris. It has a magnificent château, now the country-house of the French President, where Charles X. signed his abdication. Pop. 6,000.

Rameau, Jean Philippe, French composer, born in Dijon; wrote on harmony, and, settling in Paris, composed operas, his first *Hippolyte et Aricie*, and his best *Castor et Pollux*. He also wrote treatises on the theory of music. (1683-1764).

Rameses, the name of several ancient kings of Egypt, of whom the most famous were Rameses II (1300-1230 B.C.), who erected a number of monuments in token of his greatness, and who may have been the Pharaoh of the Hebrew oppression; and Rameses III (1180-1150 B.C.), the first king of the 20th dynasty, possibly the Pharaoh of the story of the Exodus from Egypt.

Ramie, popular name for the woven fibre of *Boehmeria nivea* a perennial of the nettle family (Urticaceae). The stems contain a fibre which in China is woven into a fine linen-like cloth known as grass-cloth. It is also cultivated in Jamaica and the U.S.A. The fibre produced in Assam and called reed is used for ropes.



RAMSES II

Ramillies, Belgian village in Brabant, 14 m. N. of Namur; scene of Marlborough's victory over the French under Villeroi in 1706.

Rampant, in heraldry, a term denoting the position of the "common charge" or object represented, e.g., a lion, when standing on one foot as if attacking. An animal rampant towards the sinister is said to be counter-rampant; rampant-gardant, when the animal is looking full-faced; rampant-regardant, when looking behind.

Rampion, the popular name in Britain of several plants of the bell-flower (Campanulaceae) order, especially of the two native species of the *Phyteuma* genus, *P. orbiculare* and *P. spicatum*. They bear small massed heads of flowers. The name is also applied to the perennial *Campanula Rapunculus*, common in British gardens, and having succulent roots which are eaten as a salad.

Rampur, city of India, capital of a native state of the same name in the United Provinces; manufactures textiles. Pop. 74,300.

Ramsay, Allan, Scottish poet, born at Crawford, Lanarkshire; from wig-making took to bookbinding, and published his own poems, *The Gentle Shepherd*, a pastoral, among the number, which, with

other of his writings, led to a revival of Scottish vernacular poetry. (1856-1758).

Ramsay, Sir William, British chemist, professor of Chemistry at Bristol and afterwards at University College, London. He discovered helium and, with Rayleigh, argon in the atmosphere, as well as the other inert gases, neon, krypton, and xenon. He carried out many researches in organic and physical chemistry, being awarded a Nobel Prize in 1904. (1852-1918).

Ramsay, Sir William Mitchell, Scottish historian; born at Glasgow; has travelled much in Asia Minor and the Near East; Professor of Classical Art, Oxford, 1886; of Humanity at Aberdeen, 1887-1911. He has written much on archaeology in relation to the history of early Christianity. He was knighted in 1906. (1851-).

Ramsbottom, manufacturing town in Lancashire, England, on the Irwell, 4 m. N. of Bury, engaged in cotton-weaving, calico-printing, rope-making, etc. Pop. 15,600.

Ramsey, (1) port and pleasure resort in the Isle of Man, 14 m. N.E. of Douglas. Pop. 4,200. (2) town in Huntingdonshire, England, 10 m. from Huntingdon, with remains of a former Benedictine Abbey. Pop. 5,100.

Ramsgate, seaside resort in the Isle of Thanet, Kent, England, 72 m. E. by S. of London; has a famous harbour of refuge; to the W. lies Pegwell Bay with Ebbsfleet. Pop. 34,000.

Ranching, a term of Spanish derivation applied to the business of rearing cattle, as carried on in the Western United States, Canada, and Southern S. America. Vast herds of cattle in a half-wild condition are raised on the wide stretches of prairie land, and are tended by "cowboys," whose free, adventurous life attracts men of all sorts and conditions.

Rand, contracted form of Witwatersrand, the district in the Transvaal, South Africa, of which Johannesburg is the centre. It is one of the world's richest gold-mining areas, and occupies the ridge between the Orange and Limpopo rivers.

Ranee (Rani), name given to a Hindu princess or queen; a rajah's wife.

Ranelagh, former pleasure-ground for Chelsea, London, during the last half of the 18th Century, with a promenade where music and dancing were the chief attractions. The gardens were closed in 1804. The name was later given to a polo club at Barnes, Surrey.

Range-finder, an optical instrument for finding the distance of a target from the firing point. All types depend on the principle that, given the base and two angles of a triangle, the remaining elements can be determined by simple trigonometrical formula. Thus the Barr and Stroud instrument, used in the World War, involved measuring the angles which two beams of light from the objective made with the opposite ends of a known base-line. Modern artillery range-finders enable guns to fire accurately up to a distance of 15 to 18 miles or even more. Range-finders are also used for navigational purposes, for land survey and for anti-aircraft work.

Rangoon, capital and chief port of Burma, situated 20 m. inland from the Gulf of Martaban, on the Salween or Rangoon R., the easternmost of the delta streams of the Irrawadi; British since 1852; a well-appointed city of modern appearance; contains the famous Shwe Dagon pagoda erected in the 6th Century; is the seat of a university; has extensive docks, and exports rice, ivory, oil, and teak. Pop. 400,000.

Ranjitsinhji, Kumar Shri, the Maharajah of Nawanagar, India, devoted himself to cricket, and became famous for his batting, playing for Sussex, and in Australia for England; succeeded to the throne in 1906. (1872-1935).

Rankine, William John Macquorn, Scottish engineer, born at Edinburgh; from 1855, Professor of Civil Engineering at Glasgow. He was one of the founders of thermodynamics as a science; his work is mainly recorded in scientific papers, a collection of which was published in 1881. (1820-1872).

Rannoch, Loch, a Scottish lake, 8 sq. m. in extent, in NW. Perthshire, from which the R. Tummel takes its rise.

Ranters, one of the extreme religious sects which arose in England in the Commonwealth period. They were accused by their enemies of serious immoralities. The name was also given to the Primitive Methodists (q.v.) who seceded from the Wesleyan body.

Ranunculaceae, a family of dicotyledonous plants mostly found in temperate regions, containing the typical genus *Ranunculus* (including the common buttercup), the marsh marigold, peony, anemone, clematis, and many other common wild and cultivated flowers.

Ranz des Vaches, a simple melody, played on the horn by the Swiss Alpine herdsmen as they drive their cattle to or from the pasture.

Rapallo, holiday resort and port of Genoa, northern Italy, 15 m. from Genoa. Fishing and lace-making are the local industries. Pop. 700. The disputed boundaries between Italy and Yugoslavia after the World War were fixed by a Treaty signed here in 1920.

Rape, the felony of having carnal knowledge of a female against her will or by personating her husband; punishable by penal servitude for life. Force is not essential, and sexual intercourse with a woman in a drunken stupor is just as much rape as violation by brute force. A man cannot be convicted of a rape on his wife, nor can a boy under 14 be convicted of rape.

Rape (*Brassica napus*), with the Cole (*B. campestris*), annuals of the cabbage family (Cruciferae), widely grown for their seeds which yield vegetable oil, known as Rape- or Colza-oil, the refuse being used to make oil-cake for cattle food.

Raphael, one of the seven archangels, referred to in the Apocryphal Book of Tobit; a special concern with medical matters is attributed to him, his name meaning "God's healer." His emblem is a fish or a pilgrim's staff. Feast, October 24.

Raphael (Raffaello Sanzio), Italian painter, sculptor, and architect, born at Urbino; studied under Perugino for several years, visited Florence in 1504, and lived chiefly there till 1508, when he was called to Rome by Pope Julius II., where he spent the rest of his short life and founded a school, several of the members of which became eminent in art. He was one of the greatest of artists, and his works, which were numerous and varied, included frescoes, cartoons, Madonnas, portraits, easel pictures, drawings, etc., besides sculpture and architectural designs, all within the brief period of 37 years. He had nearly finished "The Transfiguration" when he died of fever caught in the excavations at Rome. His greatest works include the "Julius II." (Pitti Palace,



RAPHAEL

Florence), the cartoons (at the Victoria and Albert Museum, London) for the Sistine Chapel tapestries, the "St. Cecilia" at Bologna, and the frescoes at the Villa Farnese, including the "Galatea." (1483-1520).

Rapier, a light slender pointed sword, at first used for both cutting and thrusting, but later as a fencing sword for thrusting only, and having no edge. The blade has a lozenge-shaped section. The duelling rapier is a highly tempered weapon about 3 ft. long.

Rare Earths, the name applied in chemistry to the metallic elements of atomic number 57 to 71 inclusive; they are lanthanum (La, 57), cerium (Ce, 58), praseodymium (Pr, 59), neodymium (Nd, 60), promethium (Pm, 61), samarium (Sm, 62), europium (Eu, 63), gadolinium (Gd, 64), terbium (Tb, 65), dysprosium (Dy, 66), holmium (Ho, 67), erbium (Er, 68), thulium (Tm, 69), ytterbium (Yb, 70) and lutetium (Lu, 71). The elements yttrium (Y, 39), scandium (Sc, 21), hafnium (Hf, 72), and thorium (Th, 90) are sometimes included on account of their more or less similar properties.

They are uncommon substances, and though traces of them are fairly widely distributed, ores rich in rare earths, are seldom found. Few of them are of any industrial importance, though an alloy ("Mischmetal") consisting mainly of cerium and iron is the material of the so-called "flints" in cigarette-lighters, etc. Traces of cerium oxide are also necessary for maximum efficiency in the familiar incandescent gas-mantles, the chief constituent of which is the oxide of the related metal thorium. At the present day the principal source is the monazite sand occurring in Brazil, S. India (Travancore) and a few other localities.

Rare Gases, name given to the gases helium, neon, argon, krypton, and xenon (q.v.), which were first found in small quantities in the atmosphere by Sir William Ramsay and Lord Rayleigh. All of them are chemically inert.

Rarotonga, the largest island of the Cook group in the Pacific; discovered in 1777 and since 1901 under New Zealand control; inhabited mainly by Polynesians, once cannibals, now largely civilised; chief port Avatiu. Pop. 5,050.

Raspberry, a shrubby cane-stemmed plant (*Rubus idaeus*), of the Rosaceae family, native of Britain and the temperate zones of Europe; cultivated for its fruit which consists of an aggregate of small drupes. Propagation is mainly by suckers which in the wild state give rise to new plants and in cultivation can be dug up and transplanted. There are red, yellow and white varieties.

Rasputin, Gregory, Russian politician whose real name was Novikh. Son of a Siberian fisherman, he had no education and became a "holy man" in Moscow, exercising particular power over women, notably the Czarina. For years he was the real power behind the Russian throne, until he was murdered in Petrograd by influential Russians who had discovered that he was intriguing with Germany. (c. 1871-1916).

Rastatt, or Rastadt, a town in Baden, Germany, on the Murg, 15 m. SW. of Karlsruhe; manufactures hardware, beer, and tobacco. Here was held the Congress which terminated the War of the Spanish Succession in 1714. Pop. c. 14,000.

Rat, name popularly applied to the larger rodents (q.v.), but applied in particular to the two kinds of house-rats found in England, the English Black Rat (*Mus rattus*) and the Brown Norway Rat (*Mus norvegicus* or *decanmanus*). The black rat is a small lightly-made animal with large ears and a long scaly tail; the

brown, which came to England from Central Asia, is much heavier and has shorter ears and tail and a smoother coat. The black is represented in warmer climates by the Alexandrian rat, a reddish-coated animal. Both kinds are destructive and may be the carriers of the organism which is transmitted to human beings as bubonic plague.

Ratchet and Pawl, a mechanical device consisting of a wheel with saw-shaped teeth (the ratchet) and a small arm (the pawl) which engages with the teeth; examples may be seen in the works of a clock or watch. It is used to permit of circular motion in a single direction, or to change reciprocating into rotary movement.

Ratel, or Honey-Badger, a genus (*Mellivora*) of badger-like animals, the two chief species being the Indian and Cape rats. It has a stout body, short strong legs and long fossorial claws. A marked white stripe divides the grey and black coloration of the body.

Rates and Rating. The history of rating commences with the Poor Relief Act of 1601, which introduced a system of local taxation for poor relief. In its main outlines the system of rating and valuation of property was unchanged right down to 1925, when the Rating and Valuation Act vested the power of levying rates exclusively in the borough or district council. Uniformity of valuation was secured by the institution of county valuation committees. In urban districts, one consolidated rate, called the "general rate," is levied instead of a number of different rates; in rural districts the general rate has now been substituted for the old poor rate and the expenses under the Lighting and Watching Act are defrayed out of a special rate. In 1929 agricultural land and buildings were wholly derated; while productive industry was relieved of three-quarters of the burden of rates. The occupier of any land or building is liable to be rated for it, and similarly the right to receive the profits from land carries with it the liability to rates. Exemptions include land occupied by the Crown for central (not local) government purposes; churches and chapels; the premises of scientific societies, etc. The principle of valuation is to estimate the rent at which the property ought to let from year to year assuming the tenant paid the usual tenants' rates and taxes and bore the cost of repairs, etc. This result is the "net annual value" and is much the same as the former "rateable value," ascertained under the provisions of Acts passed in 1862 and 1869.

Rathenau, Walther, German-Jewish politician and industrialist, born in Berlin; assisted in organising Germany's national industrial effort during the World War, after which he became Minister of Reconstruction in 1921; as Foreign Minister in 1922 he negotiated the treaty of Rapallo with Russia. He was assassinated shortly afterwards. (1867-1922).

Rathlin, a picturesque, cliff-girt island (6½ by 1½ m.) off the N. coast of Antrim, Northern Ireland; fishing is the chief industry; has interesting historical associations with Robert the Bruce.

Ratibor, town of Germany, in Prussian Silesia, on the R. Oder; it manufactures metal goods, paper, glass and tobacco. Pop. 51,700.

Rationalism, in philosophy, the doctrine that the mind can obtain knowledge from no other source than the reason, being thus opposed to empiricism, which bases all knowledge on experience. The word is, however, commonly used to describe that state of mind which rejects all beliefs that are not based solely on

the use of the rational faculty, to the exclusion of faith, being thus in practice little different from agnosticism (q.v.).

Rationalization, the process of forming industrial concerns into large groups to reduce overhead charges and so to lower the cost of production. The word came into general use soon after the World War, when trusts were formed in British industry to meet the competition of larger foreign groups, notably in the United States and Germany.

Ratisbon. See **Regensburg**.

Ratitæ, an order of flightless birds, generally marked by their power of rapid running. It includes the ostriches, rheas, emus, cassowaries, the almost extinct kiwi of New Zealand, and a number of forms known only as fossils.

Rattlesnake, the English name for American genus *Crotalus*, the tail of which is furnished with hollow, horny segments, which, when vibrated, give out a rattling noise. The common rattlesnake (*C. divinatorius*) frequents arid regions and is widely distributed on the American continent. Its ground colour is brown, or sometimes yellow or blackish with dark yellow-bordered spots and a longitudinally striped head and neck. It may reach a length of 8 ft.



RATTLESNAKE

Rauch, Christian, German sculptor, born in Waldeck; patronised by royalty; studied at Rome under Thorwaldsen and Canova; resided chiefly in Berlin; executed statues of Blücher, Dürer, Goethe, Schiller, and others, as well as busts. His masterpiece is a colossal monument in Berlin of Frederick the Great. (1777-1857).

Ravel, Maurice Joseph, French composer; born at Ciboure (Basses Pyrénées); studied at Paris Conservatoire. Among his better known works are *Pavane pour une Infante défunte*, 1898; *L'Heure Espagnole* (opera), 1911; *Daphnis et Chloé* (ballet), 1912; etc., and *Boléro*, 1928. (1875-1937).

Raven (*Corvus corax*), a large black bird of the crow kind, found over most of the northern hemisphere, usually in the wilder regions. The plumage is entirely black, glossed with steel-blue; the bill is very stout. Its predatory habits, especially its attacks on lambs, sick animals, and young game, have led to its extermination in many districts. In popular belief it is essentially a bird of ill-omen. It is one of the birds that can imitate a human voice and is regarded as one of the most intelligent birds.

Raven-Hill, Leonard, English artist; Academy member from 1889, but is best known for his drawings in *Punch*, with which he was connected from 1896. (1887-).

Ravenna, ancient city of Italy; once a seaport, now 5 m. inland from the Adriatic, and 43 m. E. of Bologna; was capital of the Western Empire for some 350 years; a republic in the Middle Ages, and a papal possession till 1860; especially rich in monuments and buildings of early Christian art; manufactures silk, lace, paper, and glass. Pop. 81,100.

Rawal Pindi, a trading and military town in the Punjab, 160 m. NW. of Lahore; has an arsenal, fort, etc., and is one of the most important centres for the Afghanistan and Cashmere trades. Pop. 119,300.

Rawlinson, George, historian and classical scholar, born in Oxfordshire; became a canon of Canterbury. His works include *Manual of Ancient History*, *History of Ancient Egypt*, and a standard translation of *Herodotus*. (1812-1902).

Rawlinson, Henry Seymour, first Baron, British general. Joining the army in 1884, he was A.D.C. to Roberts in India, saw service in Burma and in the Sudan, and was on the staff in the Boer War. At the start of the World War he was director of recruiting, commanded the 7th Division at Ypres in October, 1914, and at Neuve Chapelle. He led the 4th Army on the Somme in July, 1916, became British representative at Versailles, and in 1920 was made commander-in-chief in India. He was raised to the peerage in 1919. (1864-1925).

Rawlinson, Sir Henry, British Assyriologist, born in Oxfordshire; entered the Indian Army in 1827; held several diplomatic posts, particularly in Persia; was the first to decipher the cuneiform inscriptions of Persia, and excavated with Layard in Mesopotamia. (1810-1895).

Rawmarsh, urban district of Yorkshire, England, in the West Riding, on the Don, 2 m. N. of Rotherham. Coal is mined, and iron and steel, pottery and bricks are made. Pop. 19,000.

Rawtenstall, borough of Lancashire, shire, England, 4 m. W. of Bacup. Cotton and woollens are the chief manufactures, and stone is quarried nearby. Pop. 27,700.

Ray, a common name for many flat sea-fishes, many belonging to the genus *Raja* (order Hypotremata), which includes the skates. They live on sandy bottoms near the coast. They are commonest in the northern seas and mostly found in temperate waters. The chief species on English shores is the Thornback Ray. Both rays and skates are pale underneath. The skate, however, is much larger than the rays and has a long pointed snout. Other species include the eagle, electric, and sting rays.

Rayleigh, John Strutt, third Baron, British physicist, professor at Cambridge and at the Royal Institution, and afterwards Chancellor of the University of Cambridge. With Ramsay he discovered argon in the atmosphere in 1894. He obtained many important results, both by mathematical analysis and experiment, in all branches of physics, especially sound and heat. He was one of the original members of the Order of Merit. (1842-1919).

Raynaud's Disease, a comparatively rare nervous disease, taking name from the famous French physician who first described it. It is due to a nervous spasm of the arteries and blood vessels of a part of the body resulting in exclusion of blood from the part which goes white, followed by a dilation of the arteries allowing an abnormal entry of blood and consequent pinkness of the part. There are many grades of attack and the parts affected may be the fingers, toes, tip of the nose or ear. In a very severe attack a small part of the affected organ may become dead.

Rayon. See **Artificial Silk**.

Razor, an appliance for removing bodily, especially facial, hairs. Early man's razor was of stone or bronze; after the introduction of steel the hollow-ground "cut throat" razor followed at the beginning of the 19th Century. The safety razor, in almost universal use to-day except by professional barbers, includes a device to prevent more than a small portion of the blade touching the skin. Automatic stropping devices have been produced for use with safety-razor blades.

Razor-bill (*Alca torda*), the only living species of the genus *Alca* of the Auk family, about 18 in. long, with brilliant black plumage, and white underparts. It occurs as far N. as Labrador, and is found in considerable numbers on the steep headlands of the British coast. It is closely related to and probably very similar in appearance to the extinct Great Auk.



RAZOR-BILL

Razor-shell, a mollusc of the genus *Solen*, especially *Solen ensis*, so named from its sword-shaped shell. The *Solen stiliqua* or *Pholas dactylus*, found off British coasts, is used for bait.

Ré, *Isle of*, small island, 18 m. by 3; off the French coast, opposite La Rochelle; salt-manufacturing the chief industry; also oysters and wine are exported. Chief town, St. Martin. Pop. c. 14,000.

Reactance, the resistance which an electrical circuit offers to an alternating current on account of its inductance and capacity, as distinguished from its ohmic resistance to a direct current.

Reade, Charles, English novelist, born at Ipsden, in Oxfordshire; called to the bar in 1842; began his literary life by play-writing; made his mark as novelist in 1852, when he was nearly 40, by the publication of *Peg Woffington*, which was followed in 1856 by *It Is Never Too Late To Mend*, and in 1861 by *The Cloister and the Hearth*, the last his best and the most popular; several of his later novels are written with a purpose, such as *Hard Cash* and *Foul Play*; his most popular plays are *Masks and Faces* and *Drink*. (1814-1884).

Reading, county town of Berkshire, England, on the Kennet, 36 m. W. of London; a town of considerable historic interest; was ravaged by the Danes; has ruins of a 12th Century Benedictine Abbey; was besieged and taken by Essex in the Civil War (1643); birthplace of Archbishop Laud; its manufactures and products include iron-ware, paper, sauce, nursery seeds, and biscuits. Pop. 100,000.

Reading, city of Pennsylvania, U.S.A., on the Schuylkill R., 58 m. NW. of Philadelphia; has flourishing iron and steel works, and manufactures paper and hosiery. Pop. 111,000.

Reading, Rufus Isaac, first Marquess of, British statesman and administrator, of Jewish extraction. After a successful career at the bar he took to politics, and having entered the House of Commons as a Liberal in 1904, became Attorney-General in 1910. From 1918 to 1921 he was Lord Chief Justice, and in 1916 and 1917 undertook special and important missions to the United States. In 1921 he was appointed Viceroy of India, a post he held for five years, and was Foreign Secretary for a time in 1931. He was raised to the peerage in 1914. (1860-1935).

Real, an old Spanish and Portuguese silver coin, formerly current also in Mexico and other South American states; of varying value, but approximating to 3d.

Realgar, a native sulphide of arsenic; it is a red mineral used as a source of arsenic and arsenious oxide, or arsenic.

Realism, as opposed to Nominalism, the philosophical doctrine that general terms denote real things and are not names or answerable to the mere conception of them; or, as opposed to idealism, the belief that we have an immediate cognition of things external to us, and that they are as they seem. In art and literature it is

the tendency to conceive and represent things as they are, without endeavouring to palliate their ugly or unsavoury elements.

Real Presence, in Roman Catholic theology, the substantial presence of the body, blood, soul and divinity of Jesus Christ in the bread and wine of the Eucharist after consecration. According to the Roman Catholic Church, this is effected by Transubstantiation, or the annihilation of the substance of the bread and wine, though their appearances remain.

Real Property, a legal term overhold lands and buildings, and propriety rights in or over lands. Until 1925, under English law, real property on intestacy was inherited by the heir, while personal property went to the next-of-kin; but this distinction was abolished by the Law of Property Act that year.

Reaping, the cutting of ripe stand crops for harvesting, performed with the wooden-handled curved steel sickle until the invention of the reaping machine in mid-19th Century. The machine was at first worked by horse power, the cutting machinery consisting of a pair of crossing blades whose motion was imparted by the locomotive wheels. Modern reaping machines are driven by petrol motors or drawn by tractors, and frequently reaping and threshing are performed by a single machine.

Réaumur, René Antoine de, French scientist, born in La Rochelle; made valuable researches and discoveries in the industrial arts as well as in natural history; is best known as the inventor of the thermometer that bears his name, which is graduated into 80 degrees from the temperature of melting ice to that of boiling water. (1683-1757).

Rebec, an ancient three-stringed musical instrument played with a bow, the forerunner of the viol. It was of Arabian origin and, in its earlier form, had a coconut-shell body over which was stretched parchment to serve as a sounding board.

Rebeccaite, a band of Welsh, dressed as females, went about at night and destroyed the toll-gates, which in their view were scandalously numerous.

Rebekkah, the wife of Isaac, who by craft secured for her younger son, Jacob, the blessing which Isaac intended for the elder, Esau. See Gen. xxvii.

Rebus, an enigmatical representation of a name, word or phrase, by pictures or figures suggesting syllables; thus a harrow and a gate would represent Harrogate. In heraldry, a bearing on a coat-of-arms containing an allusion to the owner's name; thus, a doe passant between three bells argent was the bearing of the Dobell family.

Récamier, Madame de, French social leader, born in Lyons; became at 15 the wife of a rich banker in Paris thence her own age; was celebrated for her wit, her beauty, and her salon; was a friend of Madame de Staël and Chateaubriand, whom she soothed in his declining years. She left behind her *Souvenirs et Correspondance*. (1777-1849).

Receipt, a written document acknowledging that a debt has been paid or that certain goods have been received. It should embody the date of receiving the money or goods; the name of the payer or deliverer and that of the recipient; the purpose for which the money was paid; and, if the sum concerned exceeds £2, a twopenny stamp. A receipt is the best but not the only evidence of payment, nor is it conclusive in favour of the payer; its effect may be rebutted by evidence, or by proof of error.

Receiver, one who is convicted of receiving goods knowing them to have been stolen. A convicted receiver is a felon liable to penal servitude for 14 years.

Receiver, an officer appointed by a court to receive the rents or profits of land or the proceeds from any other property which is in dispute in a suit in that court; or an officer appointed by the Bankruptcy Court to receive the profits or takings of any business or undertaking which is being wound up by that court. A receiver acts on behalf of the creditors, as well as for the person or persons who applied for his appointment. Official Receivers are appointed for the various County Court districts and the central Bankruptcy Court.

Receiving Order, an order by a protection of the estate of a debtor who has committed an "act of bankruptcy." It may be made either on the petition of a creditor or creditors to the amount of £50 and presented within three months of the act of bankruptcy; or on the petition of the debtor himself, alleging that he is unable to pay his debts.

Rechabites, an Arab tribe mentioned in the Bible who attached themselves to the Israelites in the wilderness and embraced the Jewish faith, but retained their nomadic ways. They abstained from all strong drink, whence their name was adopted by a large modern friendly society whose members share that peculiarity.

Reciprocal, in mathematics, that number must be multiplied to give unity as a result; thus $\frac{1}{2}$ and 2 are reciprocals of $\frac{1}{2}$ and $\frac{1}{2}$ respectively.

Reciprocating Motion, the name given to a regular oscillating movement in a straight line, as that of a piston in a steam-engine.

Reciprocity, a term used in commercial treaties entered into by two countries by which it is agreed that, while a strictly protective tariff is maintained as regards other countries, certain articles shall be allowed to pass between the two contracting countries free of duty or subject to considerable reductions in the ordinary duty.

Reclamation, the process of reclaiming land from actual or threatened damage by the sea; it is well exemplified by the work that has been done in recent years in the Netherlands, under a plan which provides for the eventual draining of almost the whole of the Zuider Zee and the adding of a new province to the country, and in Italy, where under the Fascist régime a large part of the Pontine marshes has been dealt with and the new province of Littoria formed. The process is accomplished by the building of dykes, and the draining off by channels of surplus water. In England much of the Fen country has been rendered agriculturally useful by similar work undertaken in the 17th Century, and plans have been made for draining the Wash.

Recognizance, a bond to compel a person under penalty to appear before the court issuing it or to do some act relating to a proceeding pending before it, or to keep the peace or be of good behaviour for a stated period. The court can declare it forfeited and enforce payment on it as if it were a fine on conviction. Sureties may be required to guarantee it, and if it is broken, any monetary sanction involved can be entered against both principal and sureties.

Recorder, an ancient flute-like musical instrument, conical in shape, blown from the end, and resembling the flageolet (q.v.).

Recorder, in Great Britain, the chief judicial officer of a city or borough; discharges the functions of judge at the Quarter Sessions of his district; must be a barrister of at least five years' standing; is appointed by the Crown, but paid by the local authority; he may practise at the bar while in office.

Recorder, an electrical measuring instrument which records graphically on a moving paper chart the value of the quantity of electricity measured from moment to moment, so as to afford an unbroken record of the circuit conditions. Such instruments may be ammeters, moving coil voltmeters, dynamometers, etc. The chart, either a graduated disc or continuous roll, is moved forward by a spring-driven or electrically-driven clock.

Record Office, the institution (in London) in which are kept the English national archives, which until 1850 had been stored, with but little attempt at arrangement, in various places. Here are to be found many national documentary treasures, including Domesday Book, the Treaty of the Field of the Cloth of Gold, the Papal Bull giving to Henry VIII. the title of Defender of the Faith, many famous military despatches and records relating to the overseas Empire.

Recruit, one who is newly engaged to serve in the armed forces of the Crown. Recruiting for the army is carried on by a department under the Director of Recruiting and Organization, under the control of the Army Council. Ordinarily a small pecuniary reward is given to recruiters and recruiting agents for each recruit attested and approved. After a period at the recruiting depot, a recruit is drafted to a regular unit in order to complete his training and take his place in the ranks. A high standard of physical and mental development is now required in view of the strain of mechanisation in the army.

Rectangle, a figure of four sides, all being equal in length and one of the angles a right angle; it is a particular case of a parallelogram (q.v.); a square is a special kind of rectangle.

Rectification, the process of changing an alternating into a unidirectional current; in the case of wireless set this is done by means of a valve. The name is also applied to the process of purifying alcohol and other volatile liquids by distillation, to produce "rectified spirits."

Rectified Spirit, otherwise known as white spirit, is ethyl (ordinary) alcohol of about 95 per cent. strength, the remaining percentage being water. It is obtained by fractional distillation or "rectification" of the crude product of fermentation.

Rector, a clergyman of the Church of England, who has a right to the great and small tithes of the living; where the tithes are inappropriate he is called a vicar.

Rectum (anatomical), the terminal part of the large intestine, in man, a part of the large intestine of somewhat variable length—usually about 8 in.—extending from the sigmoid flexure to the anus.

Recusants, persons who refused to attend the services of the Established Church in those days when such refusal involved legal penalties; the name was particularly applied to Roman Catholics between the reign of Elizabeth and 1829.

Red Admiral, a butterfly (*Vanessa atalanta*) found in Britain and other temperate countries, the wings being scarlet and black, marked with spots of blue and white. The food of its larva is the stinging nettle.

Redcar, borough and seaside resort of 665 m.; Yorkshire, England, in N. Riding, 5 m. NW. of Saltburn. It has a fine sandy beach, and there are golf links. Race meetings are held. Pop. 20,000.

Red Cross, the international emblem of organizations for the relief of the sick and wounded in wartime. Their operations are recognized by international agreement as the result of the Geneva Convention of 1864. Similar work is carried on in Islamic lands by organizations which use the Red Crescent as their emblem. The neutrality and non-combatant status of Red Cross workers are recognized in all civilized countries.

Red Deer

(*Cervus elaphus*), a large deer found throughout most of the Old World, including Great Britain, where it is found wild in south-western counties, and in parts of Scotland and Ireland. The average height is about 4 ft. at the withers, and the antlers are large, with a spread of over 3 ft. 6 in. They are symmetrically curved; the neck is thickly coated and grey, the body reddish-brown.



RED DEER

Redditch, town of Worcestershire, England, on the Warwick border, 13 m. SW. of Birmingham; manufactures needles, pins, fish-hooks, and motor cars. Pop. 22,200.

Redemptorists, a Roman Catholic religious order of men founded in the 18th Century by St. Alphonsus Liguori; mainly occupied in preaching and revivalist work.

Red Letter Days, the principal saints' days of the Church calendar, so called because in old service-books their names were frequently printed in red type.

Redmond, John, Irish politician; became leader of the Irish Nationalist party in 1900, when the Parnellite and Anti-Parnellite wings reunited, a post he retained till his death; on the outbreak of the World War assured Parliament that Britain could safely withdraw all troops from Ireland. To the end he remained a foe of Sinn Féin and its republican ambitions. (1851-1918).

Redoubt, a detached fieldwork enclosed by earthworks and a high parapet, with deep trenches behind and shelter pits. It may be either square, star-shaped, or irregular in plan according to the requirements of its site. It is used chiefly to resist infantry attacks and to keep open communications.

Redpoll, the common name of two small Lesser Redpoll (*Carduelis linaria*), resembling the siskin in habits and size, with a red crown and streaked back, nests in the N. of England and is distributed over the whole country in winter, and the other, the Mealy Redpoll, a larger sub-species, is an occasional winter visitor.

Red River, (1) an important western tributary of the Mississippi; flows E. and SE. through Texas, Arkansas, and Louisiana; has a course of 1,600 m. till it joins the Mississippi; is navigable for 350 m.;

falls into Lake Winnipeg after a course of 665 m.; is a navigable river.

Redruth, a town of Cornwall, England, on a hilly site nearly 10 m. SW. of Truro, in the midst of a tin and copper mining district; now amalgamated with Camborne (q.v.). Combined Pop. 35,300.

Red Sea, an arm of the Arabian Sea, stretching in a NW. direction between the shores of Arabia and Africa; is connected with the Gulf of Aden in the SE. by the Strait of Bab-el-Mandeb, and in the NW. divides into the Gulfs of Suez and Akaba, between which lies the Sinai Peninsula; the Suez Canal (q.v.) joins it to the Mediterranean; is 1,200 m. long, and averages 180 in breadth; has a mean depth of 375 fathoms (greatest 1,200); receives no rivers, and owing to the great evaporation its water is very saline; as a seaway between Europe and the East its importance was greatly diminished by the discovery of the Cape route, but since the opening of the Suez Canal it has much more than regained its old position; owes its name probably to the deep red tint of the water often seen among the reefs, due to the presence of microscopic organisms.

Redshank, a shore bird (*Tringa totanus*) of the Plover family, common on British coasts and in Europe and Asia generally, so named from the colour of the bare parts of the legs. It is about the size of the snipe but has larger wings; nests in rushes or grass.

Red Spider, a very small web-spinning mite, pale red when grown, which infests and destroys certain plants, particularly the cotton plant and greenhouse plants. It feeds on the under sides of leaves and causes them to turn yellow and wither.

Redstart, a resident English song-bird (*Phoenicurus phoenicurus*) of the Thrush family; has white forehead, grey upper parts, brown chest and white underparts. Another species, the Black Redstart (*Phoenicurus ochurus*), has a black head, throat and breast, brown tail and rump and grey underparts. It is a migratory bird occasionally seen in Britain in winter.

Reductio ad Absurdum, a term employed in logic when false conclusions are illogically deduced from the premises of the opponent. In this sense it is sometimes used in what are known as indirect demonstrations in propositions of geometry, where the proposition is shown to be true by proving that any supposition to the contrary would lead to an absurdity.

Reduction, in chemistry, is in its simplest form the removal of oxygen from a compound. Thus, when lead oxide is heated over charcoal, metallic lead is left, and the oxide is said to have been reduced. The term has, however, gradually acquired a wider meaning, and may now be taken to imply any process resulting in an increase in the proportion of electropositive constituent of a substance; the reverse process is known as oxidation. From the electronic point of view, reduction implies the addition of one or more electrons to the atom, or group of atoms, concerned, while oxidation occurs if one or more electrons are removed.

Redwing, a bird of the Turdidae (*Turdus iliacus*), found in Britain as a winter bird of passage. In size it closely resembles the song-thrush, but its colouring is richer, a light marking being present over one eye, while its song is quieter and more even.



REDWING (Adult Male)

Red River of the North, flows out of Elbow Lake, Minnesota; forms the boundary between North Dakota and Minnesota, and flowing through Manitoba,

Redwood, any wood yielding a red dye. The more useful redwoods in commerce are brazilwood, sapanwood, camwood, peachwood, and red sandalwood. Redwood is hard and resinous and is used in cabinet work.

Reed, any water, marsh or ditch plant of the genus *Arundo*. Includes also *Phragmites*, *P. communis* being the common British reed, a stout perennial from 4 to 10 feet high with long broad leaves and a large panicle of flowers towards the end of summer.

Reed, in many musical wind-instruments the part that produces the note, as in the bassoon, clarinet, or organ. The pitch of the note is decided by the frequency of the interruptions to the air stream caused by stopping the mouth of, or a slot in, the reed.

Reefing, in navigation, is rolling or tying up parts of the sails in order to reduce the surface exposed to the wind.

Reeve, name given to magistrates of times, the most important of whom was the shire-reeve or sheriff, who represented the king in his shire; others were borough-reeves, port-reeves, etc.

Refectory, a refreshment room or hall or apartment in a monastery or convent where the meals are eaten. In most monastic refectories a pulpit, often carved in stone, existed from which reading took place during meals.

Referee, Official, the name of certain officials of the High Court to whom are remitted for trial cases which involve prolonged examination of documents or accounts. A motion to set aside the judgment of a referee must be made not to the Court of Appeal but to a divisional Court.

Referees, Court of, a Court set up to benefit under the Unemployment Insurance Acts, consisting of a chairman appointed by the Labour Ministry and two other members representing employers and insurance contributors respectively. An Insurance Officer deciding against a claim for benefit must refer the claim to such a court.

Referendum, a political device for vote the national will on a single definite issue. In the Commonwealth of Australia, for example, it is one of the requirements to be observed before the Constitution can be amended. It was used recently in Western Australia to sound the people on the issue of secession from the Australian Commonwealth, and in the Irish Free State in 1937 to secure approval for the new Constitution of Eire. In 1911 an abortive attempt was made in the House of Lords to introduce it into British practice. It is not infrequently resorted to in Switzerland, where on the demand of 30,000 citizens or 8 cantons any new federal law must be made the subject of a referendum.

Refinery, place where the process of oil, metals, etc., is effected. The process is dependent on the nature of the product to be refined, thus, for petroleum the process is fractional distillation (q.v.); sugar is refined or de-coloured by charcoal; metals are refined by electrolytic methods.

Reflection. When a narrow pencil of light falls on a smooth polished surface, another pencil, termed the "reflected pencil," is thrown off from the surface at the point where the ray falls. If a perpendicular be drawn meeting the surface at the point of incidence of the ray, the angles on both sides, between it and the direct and reflected pencils respectively, are equal. The same effect is produced in acoustics when a sound-wave strikes a solid body.

Reflex Actions, name given to the mechanical reactions which an animal or plant manifests in answer to certain stimuli; they play an important part in the lives of all organisms.

Reformation, the great religious movement of the 16th Century in which a large section of the church broke away from Rome. The revival of learning consequent upon the fall of Constantinople was in part responsible for the movement, which was also fostered by the growing nationalist spirit of western Europe fretting under the domination of Rome. The first clash came when Luther defied Leo X. and stood out at the Diet of Worms for the right of individual liberty. In England the occasion of the Reformation was more political than theological, Henry VIII. wanting a divorce from Catherine of Aragon and the Pope refusing to grant one. This led to Henry proclaiming himself head of the church in England, and the establishment of the Church of England in 1534. Socially the Reformation was of immediate importance by giving the Crown a new source of revenue, the incomes of the monasteries that were dissolved.

Reformatories, or Industrial Schools, schools for the education and reformation of convicted juvenile criminals (under 16). Under an order of court offenders may be placed in one of these institutions for from 2 to 5 years. They are supported by the state, the local authorities and by private subscriptions, and sums exacted from parents and guardians. They are now known as "Approved Schools."

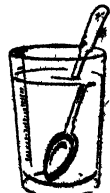
Reform Bills, Parliamentary measures altering the laws relating to the franchise. The first was passed in 1832 after two rejections, and abolished certain "pocket boroughs" and gave the vote to town-dwellers who paid a rent of £10. The 1857 Reform Bill gave a household and lodger franchise in boroughs, and further extensions were made in 1884. The 1918 Act extended the franchise to women over 30 and abolished all property qualification as well as plural voting. A measure of 1928 established practically universal suffrage regardless of sex at the age of 21.

Reformed Church, the churches in Switzerland, Holland, Scotland, and elsewhere, accepting the doctrines of Calvin or Zwingli, or both, separated from the Lutheran on matters of both doctrine and policy, and especially in regard to the doctrine of the presence of Christ in the Eucharist.

Reformed Episcopal Church, an evangelical Protestant denomination, founded on the basis of recognizing only two orders—presbyters and deacons—though the first order is in fact divided into bishops and presbyters. It originated in New York some 50 years ago. It still has a small following in England, known as the Free Church of England.

Refraction, the effect produced when a ray of light passes from one medium to another of different density, so that its direction is changed.

as when sunlight shines through a glass of water. The rays of light so transmitted are as a rule bent or "refracted" and a spoon standing in the water will appear as though bent or broken at the surface of the water. The relation between the direction of the ray before and after refraction is constant for any given medium. The index of refraction of a substance varies with the varying wave-length of the light refracted; thus a beam of white light, after



refraction, may appear as a band of coloured lights. (See *Spectrum*).

Refraction, Errors of, defects of vision caused by abnormal refraction entering the eye; the abnormality is due to faulty structure or functioning of the transparent parts of the eye. In hypermetropia or long sight the lens of the eye has too long a focal length, and the image of objects near the eye is formed behind the retina instead of on it. In presbyopia, advancing age has caused loss of power to alter the shape of the lens to focus objects at various distances, so that objects at a great distance can be seen clearly, but for nearer ones spectacles are needed. Myopia, or short sight, is a consequence of the eye-lens possessing too short a focal length, so that the image of objects far from the lens falls in front of the retina. In astigmatism the cause of the defect lies in the shape of the cornea, or transparent muscular covering of the lens. If this is abnormally curved, instead of being equally curved in all directions, rays of light passing through it are not all brought to a single focus; hence when looking, for example, at a number of parallel lines, or at spokes radiating evenly from a point, the patient sees some lines as much darker and clearer than others. All these defects can be corrected by wearing suitable lenses.

Refrigeration, the production of low temperatures by mechanical methods. Modern methods are based on the principle that the change from the liquid to the gaseous state is to be brought about by the absorption of heat. In the absorption system the substances mostly used as refrigerants are carbon dioxide, ammonia, and methyl chloride. The first named is most often used on ships.

Refuse Disposal, is undertaken by the sanitary departments of local authorities. It may be either tipped in large "dumps" at suitable spots outside towns, or into the sea, both methods being in use in various parts of the country. It is nowadays generally sorted or screened at central depots, large quantities of suitable material being pulverized and used as agricultural fertilizer; cans are generally sold as "scrap"; the residuum may be incinerated in a refuse destructor. See also *Sewage Disposal*.

Regalia, the symbols of royalty, more coronation. The English regalia includes the crown, the sceptre with the cross, the sceptre with the dove, St. Edward's staff (in reality dating from Charles II.'s coronation), the orbs of the king and queen, the sword of mercy called Curtana, the two swords of spiritual and temporal justice, the ring, bracelets, spurs, vestments, etc. They are normally exhibited at the Tower of London. The regalia of Scotland consists of the crown, the sceptre, and sword of state, and are on exhibition in the Crown Room in Edinburgh Castle.

Regeneration, in biology, the production of new tissue to supply the place of old tissue lost or removed. In certain lower animals a whole organ or limb may be thus replaced, but in man regeneration is far more restricted. If, e.g., a branch of continuity takes place in a muscle, it is repaired by a new growth of connective tissue, but muscular substance like that lost is not restored. Nerve, fibrous and areolar tissues are more easily restored.

Regeneration, Baptismal, the doctrine that the power of spiritual life, forfeited by the Fall, is restored to the "reborn" soul by the proper administration of the rite or sacrament of baptism. The doctrine that a man must be "born again" was taught by Christ to Nicodemus (John III).

Regensburg, or Ratisbon, one of the oldest towns in Bavaria, Germany, on the Danube, 82 m. N.E. of Munich; medieval in appearance, with Gothic buildings and winding streets; has a small university; till 1806 was the seat of the Imperial Diet; manufactures tobacco, porcelain, brass, steel, and other wares, and has printing works. Pop. 81,000.

Regent, one who governs a kingdom during the minority, absence, or disability of the sovereign. Sometimes a council is appointed to act as regent, as in Great Britain in 1751. In hereditary governments the regent is usually the nearest relative of the sovereign who is capable of undertaking the office; thus, George, afterwards George IV., was regent during the incapacity of his father, George III. In 1910 a Regency Act was passed providing that if King George V. died, Queen Mary should become Regent. Acts to regulate regencies were also passed in 1761 on the death of Frederick, Prince of Wales; and in 1785, 1788 and 1811, on the occasions of the insanity of George III.

Reggio, name of two cities in Italy: (1) called Reggio di Calabria, on the Strait of Messina, built on the ruins of ancient Rhegium; manufactures silks, gloves, hose, perfumes, etc.; greatly damaged in the Messina earthquake of 1908. Pop. 119,800. (2) Called Reggio nell'Emilia, 36 m. N.W. of Bologna; manufactures cheese, locomotives, and leather goods. Pop. 84,000.

Regicides, murderers of a king, specially applied to the 67 members of the court who tried and condemned Charles I. of England, amongst whom were Cromwell, Bradshaw, Ireton, and others, of whom 10 living at the time of the Restoration were executed and 25 others imprisoned for life.

Regillus, Lake, celebrated in ancient Roman history as the scene of a great Roman victory over the Latins in 496 B.C.; site probably near the modern town of Frascati.

Regiment, a number of companies united under the command of a field officer. In the British Army regiments, until recently, varied in strength from 2 to 4 battalions, though only a few, such as the Middlesex Regt. and the Rifle Brigade, etc., had 4 battalions. Previous to 1881 the battalions linked together in that year under the territorial reorganization were considered separate regiments. All infantry regiments now consist of 2 battalions under a lieutenant-colonel. The 2 battalions composing a regiment are, however, for all practical purposes separate units, serving at different stations. Territorial battalions are affiliated to the regular regiments, except the Guards. The whole corps of the Royal Artillery, Royal Engineers, Signals, etc., also constitute regiments.

Regina, capital of Saskatchewan, Canada, was founded as a North-West Mounted Police fort at Wascana Creek in 1882; is an important distributing and manufacturing centre, and the Western headquarters of the Royal Canadian Mounted Police (q.v.). Pop. 63,400.

Regional Planning, the development of territory in such a way as to conserve its natural beauties and make the best possible use of its resources; since the World War the art has received much attention in America and Europe, among its triumphs being the reclamation of parts of the marshy Italian coastal areas, the development in Russia of great industrial cities near the regions rich in minerals and power sources, the scheme for the improvement of the Tennessee Valley in the U.S.A., and the so far not very successful attempts to regulate the rapid growth of

industrial establishments and residential suburbs in the area around London.

Registers, Parish. Records of births, baptisms, marriages and deaths, in each English ecclesiastical parish, were first ordered to be kept under Henry VIII., but no complete system of registration existed until 1836. All such registers are open to inspection on payment of a small fee, and for the last century copies of all entries made therein have also been recorded at the General Registry at Somerset House, London. See also *Registration*.

Registrar, (1) any official whose duty it is to keep a register or record, as e.g., the registrar of Friendly Societies; the registrar of joint stock companies; who registers the memorandum of agreement of every company formed under the Companies Acts, and issues certificates of incorporation; the registrar of births, deaths and marriages; (2) judicial officers attached to various courts; these include registrars of the Chancery Division who prepare lists of causes for trial and notes of judgments in cases where an appeal is pending; registrars of the bankruptcy court or similar officials in county courts who conduct proceedings in bankruptcy; the registrar of the Principal Probate Registry at Somerset House, who determines certain interlocutory matters in probate and divorce cases; the Registrar of the Privy Council, who conducts preliminary proceedings in cases pending before the Judicial Committee of the Privy Council.

Registration of Births, Deaths and Marriages, is superintended by the General Registry Office at Somerset House, London, whose head is the Registrar-General. The whole country is divided into districts under superintendent registrars, and each district into smaller subdivisions under local registrars. When a birth takes place, personal information of it must be given to the local registrar and the register signed by the father, or mother, or the occupier of the house of birth, or falling all these, the person in charge of the child. Registration must be within 42 (in Scotland 21) days of the birth, and failure involves a penalty of forty shillings. After twelve months no birth can be registered without the Registrar-General's consent. In districts where the Notification of Births Acts, 1907-1918, have been adopted, notice of every birth must also be given by the father, or person in attendance on the mother, to the district medical officer of health within 36 hours of the birth.

There are similar regulations respecting registration of deaths. In default of relatives or other persons present at the death, an inmate of the house where the death occurred, or the person causing the body to be buried, must inform the local registrar of the occurrence and sign the register; and the registration must be within 5 days of the death, or within the same period, written notice of it sent to the registrar with a certificate of the cause of death signed by a registered medical practitioner if any such attended the deceased. A body must not be disposed of until the registrar has given a certificate that he has registered the death, or until the Coroner has made a disposal order.

Marriages are registered with the Registrar-General by the officials solemnising them.

Registration of Title. Titles to real property (q.v.) may be officially examined and registered in the Land Registry, London, as (1) absolute titles, (2) qualified titles, or (3) possessory or holding titles. In practice most registered titles are now either absolute or possessory. Registration is compulsory in London, and may be made so for any part of a county by order in Council and,

where it is compulsory, a valid legal title cannot be obtained by a purchaser unless his title is registered. The Land Registry was established by an Act of 1862 with the object of rendering dealings in land more simple and economical by setting up a State register of landowners who voluntarily submitted the titles to their land for approval by the Registrar on behalf of the State. The principle of compulsory registration was introduced by the Land Transfer Act of 1897. The Land Registration Act, 1925, consolidated and modified all the previous Acts. The principle of the system is that the machinery for land purchase and sale is assimilated to that for stocks and shares—the cost of buying, selling, or mortgaging registered land is much less than the cost in the case of unregistered land.

Regnault, Henri Victor, French physicist, born in Aix-la-Chapelle; rose to a professorship in Lyons; important discoveries in organic chemistry won him election to the Academy of Sciences in 1840; became director of the imperial porcelain manufactory of Sèvres; famous for his research work in connection with specific heat and expansion of gases. (1810-1878).

Regulars, persons in the Christian churches, especially the Roman Catholic Church, who live in accordance with a religious rule, including monks, nuns, friars, and canons. They are bound by vows of poverty, chastity, and obedience.

Regulator, in mechanics, a contrivance for regulating and controlling motion. In the steam engine, it is a balance valve for controlling the admission of steam to the steam chest. In electrical instruments, an automatic device for regulating the voltage of a dynamo with varying load. In mining, a sliding door for controlling ventilation.



REGULATOR
on The Rocket

Regulus, Roman general; was twice Consul, in 267 and 256 B.C.; defeated the Carthaginians, both by sea and land, but was at last taken prisoner; being sent, after five years' captivity, on parole to Rome with proposals of peace, dissuaded the Senate from accepting the terms, and despite the entreaties of his friends, returned to Carthage according to his promise, where he was slain after excruciating tortures.

Rehoboam, the Jewish king on whose accession at the death of Solomon, in 978 B.C., the ten tribes of Israel seceded from the kingdom of Judah.

Reich, The, the German Empire; the "First Reich" being the old Holy Roman Empire, the "Second Reich" the German Empire of 1870-1918, the "Third Reich" the German state as remodelled by Hitler in 1933.

Reichstag, the German Legislature, representative of the German nation, elected by universal suffrage, male and female, under a system of proportional representation; formerly its functions were equivalent to those of the English Parliament, but since the Nazi revolution in 1933 it has been called together only to hear declarations of national policy made from time to time by the Führer. The destruction by fire of the Reichstag buildings in 1933, laid without incontestable evidence at the door of the Communists, was one of the earliest incidents of the Nazi revolution.

Reid, Sir George Houston, British imperial statesman, born at Johnstone, Renfrewshire; emigrated with his parents in 1862; adopted law as his profession; became

Minister of Education in 1883; Premier of N.S.W. in 1884; was a great Free Trader, and visited England for the Jubilee in 1897; Prime Minister of the Australian Commonwealth, 1904, and afterwards its High Commissioner in London; entered the British Parliament in 1916. (1846-1918).

Reid, Captain Mayne, Irish novelist, born in Co. Down; led a life of adventure in America, and served in the Mexican War, but settled afterwards in England to literary work, and wrote a succession of tales of adventure, including *The Scalp Hunters* and *The Headless Horseman*. (1818-1883).

Reid, Thomas, Scottish philosopher, and chief of the Scottish school, born in Kincardineshire; for a time minister in the Scottish Church; became professor of Philosophy in Aberdeen in 1752, and in Glasgow in 1763, where the year after he published his *Inquiry into the Human Mind*, which was followed in course of time by his *Philosophy of the Intellectual and Active Powers*. His philosophy was a protest against the scepticism of Hume. (1710-1796.)

Reigate, town in Surrey, England, 21 m. S. of London; includes the neighbouring towns of Redhill and Merstham, all mainly residential centres for Londoners. Pop. 36,000.

Reign of Terror, the name period of the French Revolution which lasted from the fall of the Girondists on May 31, 1793, to the overthrow of Robespierre and his accomplices on July 27, 1794, during which several thousand supposed counter-revolutionaries were put to death by guillotine or otherwise.

Reims, city of France in the department of Marne, on the Vesle, 100 m. N.E. of Paris. As the former ecclesiastical metropolis of France it has historical associations of peculiar interest; the French monarchs were crowned in its cathedral (a Gothic structure of unique beauty) from 1179 to 1825; has a beautiful 12th Century Romanesque church, an archiepiscopal palace, a Roman triumphal arch, a Lycée, statues, etc. Situated in a rich wine district, it is one of the chief champagne entrepôts, and is also one of the main centres of French textiles, especially woollen goods; is strongly fortified. Entered by German troops in Sept., 1914, and sacked by them before being evacuated after nine days, the city was constantly bombarded for the next four years owing to the proximity of the enemy. This bombardment almost destroyed the cathedral, which was restored and reconsecrated in 1938. Pop. 116,700.

Reincarnation, the belief that after soul is reborn, on earth or elsewhere, in another physical body. It was taught by the ancient Pythagoreans, and appears to have been held by Plato. It is a cardinal principle of Indian religion and of Mahayana Buddhism, whence it has been adopted by theosophists.

Reindeer, a deer (*Rangifer tarandus*) found throughout the

northern parts of both Old and New Worlds. Both male and female have antlers; in winter, the fur is long and grey-brown while the neck, hindquarters and belly are white. It has long been domesticated, and widely used from early times in Lapland as a beast of draught and carriage, the animal being admirably adapted to travelling over broken snow in these regions.



REINDEER

Reindeer Lake, a lake in Manitoba provs., Canada, whose outlet is the Reindeer R.; it is about 130 m. long by 30 m. broad.

Reindeer Moss, a lichen (*Cladonia rangiferina*) which is the winter food of the reindeer, common in Britain on moors, heaths, and mountains, and abundant in the pine forests of Lapland. It has the taste of wheat-bran.

Reinforced Concrete, concrete strengthened by the inclusion in it of steel nets, rods, girders, etc., the object of the steel skeleton being to increase the resistance of the concrete to tensional forces. It has become the standard building material of the great cities of Europe and America.

Reinhardt (properly Goldmann), Max, Austrian theatrical director; born at Baden, near Vienna; a bank clerk, but in 1894 appeared on the stage in Berlin, at the Deutsches Theater, of which he became director; staged British and classical plays, adopting striking schemes of light and colour; since 1909 has produced in many other cities in Germany and elsewhere, but left Germany in 1933 at the beginning of the Nazi régime. (1873-).

Reinsurance, the minimization of liability under an insurance contract by passing on part of the risk to other insurers.

Reiters, German cavalry soldiers of the 14th to the 17th Centuries, especially those who were employed in the religious wars of the Reformation era.

Reith, Sir John, first director-general of the British Broadcasting Corporation. Born at Stenhouse, the son of a clergyman, he was educated at Gresham's School, Holt, and took an active part in the early days of broadcasting in 1922. He was knighted in 1927, and in 1938 left the B.B.C. to become chairman of Imperial Airways, Ltd. (1889-).

Relapsing Fever, a contagious fever due to micro-organisms in the blood developed by bad hygienic conditions. It comes on suddenly with a temperature up to 105° or 106°, which drops rapidly within a week, followed by a relapse usually within 7 days of the first attack, generally between the third and fifth days. It occurs, spasmodically, in densely populated districts in India, China and Eastern Europe.

Relativity, a set of physical theories first put forward in 1905 by Einstein (q.v.), on the basis that the absolute motion of matter in space is impossible of determination. It is, of course, possible to measure the velocity of the earth relative to the sun, or to some system of stars which are regarded, for the purpose, as stationary; but since these bodies may themselves be in motion, this measurement gives no information regarding the earth's absolute motion. The consequences of the postulate of relativity include: (1) If two observers are in motion relative to one another, two events which appear to one of them to occur simultaneously will not necessarily appear to do so to the other, even if both have made full allowance for what they consider to be the times which elapse between the occurrence of each event, and their own perception of it. (2) Times and distances as measured by an observer are purely subjective, and differ for different observers. (3) What any observer perceives is a kind of cross-section of a four-dimensional continuum of which space and time are merely components.

When applied to mechanics, the theory of relativity predicts various deviations from the results to be expected if Newton's laws of

gravitation were true. These are usually extremely small, but are in some cases sufficiently large to be measured experimentally, and in every case where this is possible, experiment has confirmed the theory of relativity. Some of the effects which are accounted for by means of the theory are (a) the precession of the orbits of certain planets—in particular that of Mercury; (b) the bending of rays of light which pass close to the sun; and (c) the displacement of the lines of the spectra of atoms which are situated in intense gravitational fields.

Relativity of Knowledge, the doctrine that all knowledge is of things as they appear to us and not of things as they are in themselves or of phenomena and not of noumena, and is thus subjective rather than objective.

Relay, the process in telegraphy and in wireless used to secure reception of signals over a great distance by causing a faint signal (electric current or wireless wave) to control a more powerful force and relay a more powerful signal.

Relief, a sculptured figure standing out from a plane surface. Works in relief are of three kinds; *alto rilievo*, high relief; *mezzo rilievo*, medium relief; *basso rilievo*, low relief.

Religion, the belief in some supernatural power wholly or partly responsible for or governing the universe and especially man, and the complex set of opinions and practices which may or does arise in consequence of such a belief. The comparative study of religions is one of the latest of the sciences; it has thrown much light on the origins of the religious idea, but has produced no evidence in support of or tending to the overthrow of any particular religious manifestation. The great world religions which still have a great following at the present time are Christianity, with perhaps some 680 million nominal adherents, divided among its three main branches of Roman Catholics (330 millions), Orthodox Eastern Catholics (145 millions) and Protestants (205 millions); Islam or Mohammedanism, with some 210 million followers; Judaism, with about 16 millions; Hinduism, 230 millions; Buddhism, which may perhaps claim 450 millions, many of whom would declare themselves also adherents of Taoism, Confucianism, or Shinto. Many primitive peoples in Africa, Northern Asia, Oceania and elsewhere still adhere to some form of crude animistic belief. But in the case of all the religious systems mentioned, their dogmatic hold on many of their nominal adherents to-day is very tenuous.

Reliquary, a portable shrine or case for relics of saints or martyrs; it assumed many forms, and was often rich in material and of exquisite design.

Remainder. In real property law, an estate in remainder is one the effect and enjoyment of which only operates after the termination of a prior interest. Remainders are either contingent, only taking effect upon an uncertain event or in favour of an uncertain person; or vested, by which a present interest passes to the party, though it is to be enjoyed only in the future.

Remarque, Erich Maria, German writer. A student when the World War broke out, he enlisted at 18, served in the trenches, and took afterwards to teaching and later to business. In 1929 he published *All Quiet on the Western Front*, a vivid realistic study of the horrors of modern war, which quickly achieved success throughout the world. He was deprived of German nationality in 1933 by the Nazi Government. (1898-).

Rembrandt, or Van Rijn, Harmenitz, Dutch historical and

portrait painter and etcher, born at Leyden, where he began to practise as an etcher; removed in 1630 to Amsterdam, where he spent the rest of his life and acquired a large fortune, but lost it in 1658 after the death of his first wife, and sank into poverty and obscurity. He was a master of all that pertains to colouring and the distribution of light and shade. Of his pictures "The Woman Taken in Adultery" is in the National Gallery, London, while a number of his etchings are preserved in the British Museum. (1606-1669).



REMBRANDT

Remembrancer, name given to officials, including the King's Remembrancer, an officer of the Scottish Exchequer, and the City Remembrancer, who represents the London City Corporation before Parliamentary committees and boards of enquiry.

Remington, Philo, inventor of the loading rifle, born at Litchfield, New York State; for 25 years manager of the mechanical department in his father's small-arms factory; the Remington typewriter was also the outcome of his inventive skill. (1816-1889).

Remizia (*Remijia*), a genus of tropical trees of the order Rubiaceae, from which comes the cuprea bark used in manufacturing quinine, especially from the species *Remizia vellocii*. The bitter principle of the bark is "vicine" or viceric acid.

Remonstrance, The, the name given to a list of abuses of royal power laid to the charge of Charles I. and drawn up by the House of Commons in 1641. With the petition that accompanied it, it contributed to bring about the Civil War that shortly followed.

Remscheid, town of Prussia, near Düsseldorf, one of the most important of German cutlery-manufacturing centres. Pop. 101,200.

Remus, (q.v.), the twin brother of Romulus, who was slain by the latter because he showed his scorn of the city his brother was founding by leaping over the wall.

Renaissance (*Renasceance*), the name popularly given to the revolution in literature and art in Europe during the 15th and 16th Centuries, caused by the revival of the study of ancient models in the literature and art of Greece and Rome, especially the former. The Renaissance was firmly established in Italy before it had much influence elsewhere; thence it spread to Germany; its influence, when once it had crossed the Alps, spread with great rapidity. English writers took both their material and their literary forms from Italian works, and it is because these signs of the Renaissance are so much more obvious and permanent a record of it than any others, that critics are disposed to forget that the Renaissance was not primarily an artistic and literary change, but began with an intellectual and moral ideal.

Renan, Ernest, French Orientalist and Biblical scholar, born in Brittany son of a sailor. Destined for the Church, he entered the seminary of St. Sulpice, where his studies caused him to abandon Catholicism. He was appointed professor of Hebrew in the Collège de France in 1861, though not installed till 1870; and made a member of the French Academy in 1878. Having distinguished

himself by his studies in the Semitic languages, he, in 1888, achieved a European reputation by the publication of his *Vie de Jésus*, the first of a series bearing upon the origin of Christianity and the agencies that contributed to its rise and development. (1823-1893).

Renfrew, a royal burgh and county-town of Renfrewshire, Scotland, situated on the Clyde, 6 m. below Glasgow; industries include thread, cotton cloths, shawl factories, boiler-making, and shipbuilding. Pop. 16,000.

Renfrewshire, a south-western county of Scotland; faces the Firth of Clyde on the W., between Ayr on the S. and S.W., and the R. Clyde on the N.; bordered on the E. by Lanark; hilly on the W. and S., flat on the E.; is watered by the Gryte, the Black Cart, and the White Cart; dairy-farming is carried on on an extensive scale. Nearly two-thirds of the county is under cultivation; coal and iron are mined, and in the Glasgow neighbourhood manufactures of all kinds are carried on. Largest towns Paisley, Greenock, Renfrew and Port Glasgow. Area 239 sq. m. Pop. 288,600.

Reni, Guido, Italian painter, born at Studied at Bologna under Calvaert, the Carracci, and Ferrantini. His best known painting is "Phœbus and Aurora," on the ceiling of the pavilion of the Palazzo Ros-pigliosi, Rome, 1609. He died at Bologna; his works are scattered all over Europe. (1575-1642).

Rennes, town in Brittany, France, capital of the department of Ille-et-Vilaine, situated at the junction of the Ille and the Vilaine; consists of a high and low town, separated by the R. Vilaine, mostly rebuilt since the disastrous fire in 1790; has handsome buildings, a cathedral, etc., is a military centre, and manufactures sail-cloth, linen, shoes, and hats. Pop. 98,600.

Rennet, the contents of the stomach of animal, or the lining membrane of the stomach, or any other preparation from animal intestines, used for curdling milk, and in the preparation of cheese. Its active element is the enzyme rennin.

Rennie, John, Scottish civil engineer, employed by the firm of Boulton & Watt at Birmingham, and entrusted by them to direct the construction of the Albion Mills, London, he became at once famous for his engineering ability, and was in general request for other works, such as the construction of docks, canals, and bridges; the former London and Waterloo bridges, the Kennet and Avon Canal, and docks and harbours at Holyhead, Dun Laoghaire and London being among them. (1761-1821).



JOHN RENNIE

Reno, U.S.A., 30 m. N. of Carson City; it is a place of pilgrimage for Americans seeking divorce, on account of the ease with which this is permitted by the laws of the State. Pop. 18,600.

Renoir, Auguste, French Impressionist painter, born in Limoges. He began to earn a living painting on porcelain at 18. From 1874 he worked at portraits, his works including studies of Cézanne, Wagner, and Monet. (1841-1919).

Rent, one of the three cardinal divisions of wealth—the others being the wages of labour and the profits of capital. Rent, in economics, is defined as that share of wealth which is claimed by owners of land. The rent of agricultural land is regulated by the fertility of the soil and the convenience of

situation, and when either of these conditions is altogether absent the land can command no rent. From the legal standpoint, rent is any monetary or other payment made for the use of land or of buildings thereon. It is generally due on the four quarter days, but, most small property being held on weekly tenancies the rent is payable weekly. In the case of many small houses the landlord compounds with the tenant for rates and rent, i.e., the landlord pays the rates and the tenant pays a lump sum to the landlord to cover both. Distress for arrears must be levied on the premises leased, but the landlord may follow goods fraudulently and secretly removed within 30 days. Six years' arrears are distrainable except in agricultural leases and in cases of bankruptcy, when the periods are 1 year and 6 months respectively.

Rentier, one who derives his income from investments in the French national funds or *rentes*.

Rent Restriction Acts, Acts

passed during the World War and continued, with amendments, after the War, to give tenants of certain houses security of tenure. The Acts provided that if the tenant paid his rent he could not be evicted, but under the original Acts, the landlord who wanted the house for his own personal occupation could obtain possession provided he found the tenant suitable alternative accommodation. The Act of 1915 protected only £30 tenants; the Act of 1919 extended protection to houses rented up to £70. In 1920 permissive rent increases were authorized, subject to repairs being effected by the landlord, the maximum rent increase being 40 per cent. plus certain allowances for rates' increases. This security of tenure was continued by the Act of 1925, but a gradual form of decontrol was introduced in 1923. Properties not subject to the Act are houses erected since April 8, 1919, and those which since then have been converted into flats. Subject to a month's notice by the landlord, the Rent Acts ceased to apply (as from September 29, 1933) to houses where both the annual amount of rent and the rateable value exceed: in London, £45; Scotland, £45; elsewhere, £35. Houses below these values could still become decontrolled under the 1923 Act (when the landlord came into possession) except those of or below: £30 in London; £26.5 in Scotland, and £13 elsewhere. The Act of 1933 expired on June 31, 1938, in England (May 28, in Scotland) and the Increase of Rent and Mortgage Interest (Restrictions) Act which received the Royal Assent on May 28, 1938, extended the decontrol to houses with a rateable value of over £35 a year in England and Scotland and over £30 elsewhere ("Upper Class A" houses). Control was maintained in respect of controlled houses in "Lower Class B" with a rateable value in 1931 of more than £20 and not more than £35 in the Metropolitan Police area or over £13 and not more than £20 elsewhere. It was necessary to register "Upper Class B" houses which were entitled to become decontrolled before Aug. 26, 1938, or they were deemed to be controlled again unless within 9 months the landlord could show good reason in the County Courts for his omission to register within the specified time. Under this Act some 400,000 to 500,000 houses were entitled to become decontrolled.

Reparations, the amount of indemnity demanded of Germany by the Allies after the World War. This was fixed, under the Versailles Treaty, in 1921 by the Financial Council of the Allies, in Brussels, at 13 milliards of gold marks, or £6,600,000,000, payable in bonds. Failure by Germany to meet her obligations led to the French and Belgian occupation of the Ruhr Valley in 1923. But in 1924 a new scheme

(Dawes Plan) was agreed upon with Germany, which provided for yearly payments rising to 2,500,000,000 gold marks. Then, in 1930, reparations were again revised and Germany agreed to pay, during a term of 37 years, annuities averaging 1,989,000,000 marks, and thereafter, until 1987-1988, annuities varying between 1,711,000,000 and 898,000,000 marks (Young Plan). Finally, in July, 1932, at Lausanne, the so-called "Gentlemen's agreement" was concluded by which reparations were abolished; while Germany agreed to make an eventual payment of \$150,000,000 by means of bonds as from the year 1935. The bonds are deposited with the Bank for International Settlements, and might be marketed, up to 1937, under safeguards for German credits, at a price not below 90. These bonds pay 5 per cent. interest, with 1 per cent. amortization, which will extinguish them in 37 years.

Repertory Theatre, a theatre with a permanent company and a repertoire of plays. Charles Frohman tried to establish such a theatre in London in 1910, but apart from the Abbey Theatre, Dublin, there exists no true repertory theatre in the British Isles, though there are various theatres, including the "Old Vic." in London and several in the suburbs and provinces, with stock companies which perform a fresh play every week or fortnight. The Birmingham Repertory Theatre (founded in 1913) under Sir Barry Jackson has had a successful career.

Replevin, the name of an action which may be undertaken by a tenant to recover goods removed under any illegal distress.

Repoussé, a name applied to a style of raised ornamentation in metal obtained by beating out from behind a convex design, which is then chased in front; was known to the Greeks, and carried to a high pitch of perfection by Benvenuto Cellini in the 16th Century; has been successfully revived, especially in France, in modern times.



REPOUSSE

Representatives, House of, the lower U.S.A. Congress; it consists of members from the various states, elected every second year on a population basis. The electorate comprises those who, by the laws of their state, may vote for members of the state legislature, which means in practice adult suffrage, at least for whites; various devices being adopted in the southern states to overcome the Constitutional provision forbidding disenfranchisement on the ground of race or colour. The actual number of members to which each state is entitled is determined by the decennial census. By the Apportionment Act consequent on the 1910 census the total was 435; it is at present 435. The lower House of the legislatures of the individual states is also called the House of Representatives.

Repression. In Freudian psychology many forms of mental disorder are held to be the consequence of conflict between repressed ideas and conscious thoughts, and the task of the psycho-analyst is to bring to the surface consciousness those repressed thoughts and ideas of which the subject is unconscious, so that they may be freed and overcome.

Reprieve, remission or commutation of a capital sentence. It may be granted by the King on the advice of the Home Secretary, or in the case of a

Jominion or Colony, by the Governor. In practice a reprieve is always granted in the case of a woman who is found by a jury of matrons to be pregnant; and in the case of a convicted person who becomes insane between sentence and the date fixed for execution.

Reprisal, in international politics the use of force by one nation against the property of another to obtain redress for supposed injuries without, at the same time, declaring war. There is no certainty in International Law as to what degree of force can be used without risking war, and in practice it is generally only exercised against weak nations, as e.g., when Germany seized a Spanish vessel during the Spanish Civil War (January, 1937). It differs from "retorsion" in that the latter consists of retaliation in kind for unfriendly or inequitable acts which are not at the same time illegal by International Law.

Reproduction, in animals is either sexual or asexual (non-sexual). The former is affected by the contact of a germ-cell or ovum and a sperm-cell. Asexual reproduction is by gemmation (budding) and fission (division of cells into new ones); by internal gemmation; by alternation of generations; or by parthenogenesis (fertilization of the ovum without the aid of a sperm). In plants, also, there may be sexual or asexual reproduction; the former is by germ cells, the latter by spores, gemmæ, conidia, etc.

The doctrine that every organism is the product of a single cell, which multiplies itself by successive divisions, thereby forming a cell group from which the organism is gradually evolved, is the basis of the whole study of comparative embryology.

No success has been achieved as a result of attempts to produce living matter in the laboratory, and science knows of no way in which life is produced except as the result of the reproduction of pre-existing living beings.

Reptile, any animal of the class Reptilia. The first appearance of reptiles is believed to be indicated by remains of a marine saurian of the Carboniferous age; but in Mesozoic times the reptilian type appears in such variety and in such a high state of development that the era has been distinguished as the Reptilian Age. Reptiles are popularly defined as including any animal which moves on its belly or on small, short legs, as the snake, lizard and caterpillar. In biological language, they are vertebrate animals having the skin covered with scales, or scutes, and distinguished from amphibia as being all air-breathers. The five chief groups are Chelonis (tortoises), Ophidia (snakes), Lacertilia (lizards), Rhynchocephala (New Zealand lizards), and Crocodilia (crocodiles).

Repton, a village of Derbyshire, England, 6½ m. SW. of Derby, once the capital of the Mercian kingdom; has a famous public school, founded in 1556. Pop. c. 1,000.

Republic, a form of political constitution in which the supreme power is exercised, not by an hereditary ruler, but either by certain privileged members of the community or by the whole community. The medieval republics of Venice and Genoa were exclusive oligarchies, the supreme power being vested in the nobles or a few privileged persons, but this older conception of republican policy has, apart from the constitutions of present-day totalitarian states under dictators, given way to the representative system, i.e., one in which the supreme power is vested in rulers chosen by and from the whole nation or by their representatives, as in France or the United States. Germany and Portugal afford outstanding examples to-day of republics ruled by dictators. Since the World War, Germany, Spain, Russia and Turkey have changed from monarchies to

republics; and new republics have been created in Czechoslovakia, Poland, and some minor states; while Greece, for a while republican, has reverted to monarchy.

Republicans, one of the two great parties of the U.S.A., the other being the Democrats. The party was organized in 1854 by Northern politicians who were agitating against slavery, and the first Republican President was Abraham Lincoln. It has been on the whole the dominant party in American political life; is strongly nationalist in outlook and stands for high protective tariffs. It sustained a great defeat at the Congressional and Presidential elections of 1932, and has not since been restored to power.

Requiem, a Mass offered for the soul of a dead person; many famous composers have written music for Requiem masses, among them Mozart, Brahms, and Verdi.

Reredos, the name given to the decorated portion of the wall or screen behind and rising above a church altar; it is often ornamented with niches and figures, and stands out from the east wall of the church, but is sometimes joined to the wall; splendid examples exist at All Souls College, Oxford, Durham Cathedral, and St. Albans.

Reservation, the practice of pre-empting, serving the consecrated elements of bread and wine from Holy Communion in church, for administration to the sick and for purposes of devotion. In the Roman Catholic Church the custom is general, in the Anglican common, though it would appear to be forbidden by the Prayer Book, the revision of which in 1927-1928 contained proposals for permitting reservation which were among the reasons for its rejection by Parliament.

Reserve, Army. The British Army Reserve comprises an "A" and "B" section; there is also a supplementary Reserve and, in theory, the Militia or Special Reserve. Normally, a man enlists on a twelve-year engagement, seven years being spent with the colours and five years with Section B of the Reserve (in the artillery the periods are six years with the colours and six with the reserve) and, as a reservist, he is paid a small retaining fee. Section "A" is composed of a certain number of reservists who are liable for active service at shorter notice than B reservists. The Supplementary Reserve is a post-war body of "tradesmen" (i.e., skilled men), and its purpose is to enable the technical corps to be brought up to establishment on mobilization. The strength of the Army Reserve and Supplementary Reserve is about 130,000.

Reservoir, an enclosed area for the water to be used for the domestic and business supply of a town. Most reservoirs are artificial, being constructed by damming a valley containing plenty of water, conveying the water by pipe-lines to the town. The dam is a wall of impounding water is by means of a dam of Portland cement, reinforced concrete or masonry. Masonry dams are now used in all countries, and generally have a triangular vertical section, the face on the water side being almost perpendicular, while the opposite or downstream face is built with a somewhat concave curve.

Resin, an organic substance of vegetable origin, transparent or translucent, and yellowish-brown in colour. Many varieties are products of the terpenes. The commercial varieties include copal, gulsacum, amber, lac and mastic; they are used in varnishes and soap. They are insoluble in water but soluble in alcohol and inflammable.

Resistance, the property of an electrical conductor by reason of which energy is expended in it when a current flows or a transfer of electricity occurs; or, in other words, the extent to which an electric conductor resists the passage of an electric current. The resistance is constant under constant physical conditions and varies according to the material of which the conductor is made.

Resolution, a formal decision or determination of a legislative or corporate body; or of a meeting or any association of individuals; or a formal proposition brought before a public body or meeting for discussion and adoption. In the House of Commons taxes and duties are brought before the members as "resolutions" before being included in the Finance Act; and money Bills are debated in the form of resolutions before coming on for second reading. A special resolution, confirmed by the Court, is the statutory preliminary to the extension of the powers of a company.

Resonance, the phenomenon exhibited by vibrating systems, which are brought into oscillation by a periodic disturbance, the frequency of which is equal to that of the system; e.g., a tuned wireless circuit responds to waves of a definite length but to no others. Air in a pipe can be set in violent vibration by a tuning fork of a certain frequency, thus augmenting the sound. Troops break step when marching over an insecure bridge as the regular paces might give rise to oscillations in the bridge.

Respiration, the process of breathing, in which oxygen is taken into the lungs by inspiration, and carbonic acid expelled by expiration, the carbonic acid being given out by the blood, and oxygen taking its place. When respiration is obstructed, asphyxia takes place, except in "hibernation" (torpor). The number of the respiratory movements in health is from fourteen to eighteen a minute. Besides carbonic acid, watery vapour and a very small quantity of organic matter are extracted in respiration, the latter varying with the state of digestion. Respiration may be produced by artificial means in cases of apparent death from drowning. (See Artificial Respiration).

Restitution of Conjugal Rights, a decree for in the Divorce Court by a spouse who has been deserted by the other spouse. If such a decree is granted and disobeyed, the petitioner becomes entitled to a decree of Judicial Separation on the ground of desertion. It is uncertain how far applications for such decrees may still be necessary after the Matrimonial Causes Act of 1937.

Restoration, the name given to the re-establishment of monarchy and the return of Charles II. to the throne, May 29, 1660, after the fall of the Commonwealth, on the suggestion of Monk.

Restraint of Trade. In English law, a contract in general restraint of trade, such as an agreement not to practise any business or profession, is void. The law will not permit any one to restrain a person from doing what his own interest and the public welfare require that he should do. A valid restraint must be such as, in view of all the facts, is reasonable and necessary to the protection of the party intended to be benefited; it must not be harmful to the public; and it must not extend to every business or trade. The tendency of judicial decisions has been to allow greater latitude in the scope of these agreements, since the changed conditions of modern commerce have involved corresponding changes in the views of the courts

as to what is, and what is not, contrary to the public interest.

Resurrection, the resuscitation of the body after death and its reunion with the soul or vital principle. The belief in a resurrection has been mainly developed in Christianity and Mohammedanism, the ancient Jews having apparently held no such doctrine. Christian religious tradition until modern times usually taught a resurrection of the actual physical human body, though the belief in this crude form was never officially imposed. It would seem however, that Christian teaching generally insists on some degree of actual continuity between the earthly body and the "resurrection body."

Resurrectionist, one who stealthily exhumed bodies from the grave and then sold them for anatomical purposes, a practice at its height from the middle of the 18th Century to early in the 19th, and associated with the names of Burke and Hare, two Irish ruffians convicted at Edinburgh of murdering several persons for the sake of the money then acquired by selling the corpses.

Reszke, *Jean de* (properly *Jan Meczilaw*) Polish singer, born in Warsaw. He first appeared in public at Venice in 1874, and in London the same year, as a baritone, changing to tenor in 1879. He attained fame in the Wagner music-dramas. (1850-1925).

Retainer, a fee paid to secure a right to the services of some professional adviser on behalf of the payer; the name is most generally used of a payment made to a barrister to ensure that his services in a case will be provided if called for. The right of retainer is the right of the executor of a will to pay any debts due to himself from the estate before the needs of other creditors are met.

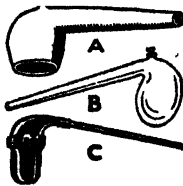
Retaining Wall, in civil engineering, a wall for sustaining a bank of earth liable to a landslide. Sometimes the term is restricted to a wall supporting earth filled in after the wall has been built.

Retford, or *East Retford*, market town of Nottinghamshire, England, on the Idle, 24 m. E. by S. of Sheffield; has foundries, paper and flour mills and dye works. Pop. 14,200.

Retina, the sensory layer of the eye, on which light is focused in an image through the lens, the sense impression being passed thence to the brain.

Retort, in chemistry, a vessel in whose chamber an object is subjected to distillation (q.v.) or decomposition by heat, a neck conducting off the volatile products. The retort of the laboratory is made of glass, porcelain or platinum; is flask-shaped and has a long neck attached in which the products of distillation are condensed and from which they pass into the receiver. The retort of the gas-works is a cylinder made of iron or clay.

Retriever, the name given to a breed of dog which is a hybrid between the New-foundland dog and the spaniel or poodle; it is employed in finding and bringing back game. The coat is generally black, but sometimes liver-coloured. There are three varieties, the flat-coated, curly-coated and Labrador.



RETORTS:

- (a) Earthenware.
- (b) Glass 18th Century
- (c) Cast-iron for distilling Mercury

Returning Officer, the official responsible for the arrangements made to hold a Parliamentary election. When the Speaker issues his warrants for an election, the writ, drawn up by the Clerk in Chancery, is directed to the returning officer, who is generally the Clerk of a County or Borough Council, or the university vice-chancellor. This officer receives the nominations, and the cautionary deposit of £150 from each candidate (except in university elections), announces the result, and reports it in proper form to the Speaker.

Reunion, (formerly *Île de Bourbon*), a French island in the Indian Ocean, 420 m. E. of Madagascar, 38 m. long by 28 broad; a volcanic range intersects the island; produces sugar (chief export), rum, manioc, tapioca, spirits, etc. St. Denis, on the N. coast is the capital. It has been a French possession since 1649. Area, 970 sq. m. Pop. 198,000.

Reuss, name of two former German principalities stretching between Bavaria on the S. and Prussia on the N., now included in the German State of Thuringia.

Reuter, *Fritz*, German humorist, born at Jena took part in a movement on behalf of German unity; was arrested and condemned, after commutation of sentence of death, to thirty years' imprisonment, but was released after seven of them, in broken health; later wrote a succession of humorous poems in Low German, which placed him in the front rank of German humorists. (1810-1874).

Reuter, *Paul Julius*, Baron, the organ-press service, born in Cassel; commenced at Aachen in 1849; in 1851 transferred his headquarters to London. The Press Agency so begun is now one of the world's most important news-collecting agencies. (1818-1899).

Reuters, an agency for the collection of news, for the press founded by Baron Reuter (q.v.), and now operating a service which covers the whole world, various national news agencies being affiliated to the organisation. Reuter telegrams are distributed in Great Britain by the Press Association.

Reval. See *Tallinn*.

Revelation, knowledge of God, or of divine things, imparted to the mind of man by His direct operation either on the individual soul or through an appointed intermediary.

Revelation, *Book of*, or the *Apocalypse*, the last book of the New Testament, differing markedly in character from the rest; it is generally supposed not to have been written by the same person as the Fourth gospel. It is largely concerned with the struggle then impending between the Christian Church and the Roman State, foreshadowing the victory of the former after a time of persecution; though in all ages it has likewise been taken by the devout as a prophecy of events to place in the last ages of the World; predictions of the future have from time been made on the basis of calculations based on its esoteric references.

Revels, *Master of*, also called *Lord of Misrule*, in olden times an official attached to royal and noble households to superintend the amusements, especially at Christmas time. He was a permanent officer at the English court from Henry VIII.'s reign till George III.'s, but during the 18th Century the office was a merely nominal one.

Revelstoke, *John Baring*, second Baron, British banker, one time chairman of the Bank of England; he died in 1939 during a sitting of a committee of experts on reparations. (1863-1929).

Reverberatory Furnace, a furnace with a domed roof, from which the flames of the fire are reflected upon the vessel placed within. Such furnaces are used extensively for smelting metals.

Reverend, a title of respect given to the clergy. *Very Reverend* to deans, *Right Reverend* to bishops, and *Most Reverend* to archbishops.

Reversing Layer, a hazy cloud photosphere of the sun; the layer is of lower temperature than the underlying layers and absorbs part of the radiation, giving rise to the dark lines in the solar spectrum.

Reversion, in biology, a tendency in an animal or plant to revert to the characters of previous generations. A supposed instance is the sudden appearance of coloured stripes on the legs and withers of asses, mules and horses. It has to a certain extent been explained by the laws of Mendelian inheritance (See *Mendelian*).

Reversion, the return of an estate to (as now) next of kin, after the death of any person to whom it has for a time been granted or left by will, or the interest which reverts to a landlord after the expiry of a lease.

Revival of Letters, the revival in the 15th Century of the study of classical, especially Greek, literature, largely owing to the arrival in Italy of certain learned Greeks, fugitives from Constantinople on its capture by the Turks in 1453, and promoted, by the invention of printing. See *Renaissance*.

Revivals, waves of religious enthusiasm preached, worked up by powerful preachers. In the middle of the 18th Century the Wesley brothers and Whitefield met with great success with their open-air preaching, and subsequent revivalists have largely followed their methods. Of these Sankey and Moody, Torrey and Alexander, and since the World War Aimée McPherson and the Rev. Billy Sunday have been the most famous. They are a regular phenomenon of religious life in many parts of the United States and in Wales, though less so in England.

Revolution, a sudden change in the constitution of a country in consequence of internal revolt, particularly when a monarchy is superseded by a republic, as in France in 1789, in 1848, and 1870. The English Revolution was the transference of power from James II. to William of Orange in 1688-1689; the American Revolution that in which English rule was overthrown in 1776. Important 20th Century revolutions are the two Russian in 1917, by the first of which the Czar was overthrown, and by the second power came into the hands of the Bolsheviks; the German of 1918, which overthrew the Empire, and that of 1933 which established Nazi rule; the Italian Fascist revolution of 1922; and the Spanish revolution of 1931, in which King Alfonso XIII. was overthrown. Revolutions are of frequent occurrence in the less highly developed republics of South America.

Revolver, a pistol in which the chambers in a revolving cylinder, the firing of a shot causing the cylinder to rotate in readiness for the next. See *Pistol*.

Revue, a form of musical entertainment connected plot, in which topical events and personalities play a prominent part; popular in Britain in the post-war years.

Rewa, native state in Central India, largely under forest, with valuable coal deposits. Area, 13,000 sq. m. Pop. 239,700. The capital, of the same name, has a pop. of c. 8,000.

Reykjavik, capital of Iceland, situated on the SW. coast; there is a cathedral and university; fish and skins are exported. Pop. 35,000.

Reynard the Fox, an epic of the Middle Ages in which animals represent men. The principal characters are Isengrim the wolf and Reynard the fox, the former representing strength incarnated in the baron and the latter representing cunning incarnated in the church, and the strife for ascendancy between the two, one in which, though frequently hard pressed, the latter gets the advantage in the end. There are versions in most Western European languages, including Latin, German, French and English.

Reynolds, Sir Joshua, chief of English portrait-painters, born at Plympton, Devon; went to London in 1740



REYNOLDS

to study art, and remained three years; visited Italy in 1749, lost his hearing, and settled in London in 1752, where he began to paint portraits, having as the subjects of his art the most distinguished people. He is said to have been responsible for over 2,000 portraits, of which that of Mrs. Siddons at Dulwich, London, is perhaps the best. He numbered among his friends all the literary notabilities of the day. He became in 1768 the first President of the Royal Academy, and delivered a succession of discourses to the students on the principles and practice of painting, 15 of which have been published. (1723-1792).

Rhabdomancy, a species of divination by means of a hazel rod to trace the presence of minerals or metals under ground. See *Divining Rod*.

Rhadamanthus, in Greek mythology, a son of Zeus and Europa, and a brother of Minos (q.v.); was after his death appointed one of the judges of the dead in the nether world along with Aeacus and Minos.

Rhætian Alps, the section of the N. of the Italian province of Lombardy; the highest peak being the Piz Bernina (13,800 ft.) and the chief pass the Splügen (6,950 ft.).

Rhapsodists, a class of minstrels wandered over the Greek cities reciting the poems of Homer, and through whom the latter became widely known and came to be translated with such completeness.

Rhatany (*Krameria triandra*), a leguminous Peruvian plant with an astringent root, used in medicine as a gargle and as a hemostatic.

Rhea, a family of flightless birds, found in S. America, akin to the ostriches of Africa and Arabia, and often called the South American ostrich. It is smaller than the African ostrich, has three toes, and the neck and head are completely feathered. The tail is undeveloped and long feathers droop over the hinder part of the body. There are three species ranging from N.E. Brazil to the S. of the continent and found on prairie and pampas lands.



RHEA.

Rhea, in Greek mythology, a goddess, the daughter of Uranus and Gaia, the wife of Kronos, and mother of the chief

Olympian deities, Zeus, Pluto, Poseidon, Hera, Demeter, and Hestia. She was identified by the Greeks of Asia Minor with the great earth goddess Cybele.

Rhea Silvia, a vestal virgin, the mother of the twins Romulus and Remus, whom she bore to Mars, the god of war, who had violated her.

Rheims. See Reims.

Rhenish Wines, wines made from grapes grown in the Rhineland area, including the Moselle country; the better kinds are white, but red wines are also produced. Hock and Moselle are the most famous varieties.

Rhenium, a metallic chemical element related to manganese; Symbol Re; atomic number 75; atomic weight 186.31. It occurs in traces of many minerals, but is mostly extracted from molybdenite; the metal is also obtained as a by-product in the extraction of copper from certain ores. It has no important industrial uses.

Rheostat, a variable resistance placed in an electrical circuit to regulate the current flowing through it.

Rhesus, an Indian monkey of the Macaque genus, of small size, reddish-brown in colour with bright-red buttocks; extremely intelligent and frequently tamed. It is looked upon as a sacred animal by the Hindus and frequents the neighbourhood of temples.

Rhetoric, the science or art of persuasive or effective speech, written as well as spoken, which, both in theory and practice, was cultivated to great perfection among the ancient Greeks and Romans, and to some extent in the Middle Ages and later, but is much less cultivated either as a science or an art to-day.

Rheumatic Fever, an acute form of rheumatism (q.v.). The symptoms vary somewhat between adults and children. In adults there are moderate febrile symptoms and the temperature rises, though not necessarily above 102°. The most painful symptom is the inflammation of the joints, which, beginning with one joint, spreads to others. In children, the pain may tend to be localised in certain muscles and there is no acid perspiration, as may be the case in adults. The cause is unknown, though a micro-organism of some kind is no doubt the infective agent; hereditary predisposition also plays a part. It is not seldom a sequel to scarlet fever. In children, recurrent attacks may lead to most serious complications, especially mitral valvular disease of the heart. One immediate concomitant may be chorea, or St. Vitus' dance.

Rheumatism, a group of diseases marked by similar symptoms, among them chronic rheumatism, rheumatic gout, rheumatic fever, lumbago, rheumatoid arthritis, sciatica, and gout, involving sharp pains and swelling in muscles and joints. The joints most often attacked in chronic rheumatism are the knees, ankles, hips and shoulders. The complaint is aggravated by changes in weather and temperature. The pain is sometimes worse at night, but more frequently it is worse in the day, and on exposure to wet and cold.

Rheumatoid arthritis or rheumatic gout has probably little connection with rheumatism. It is a chronic complaint often mistaken for gout, and frequently attacks the hands, so as to incapacitate the patient from exertion. See also Lumbago; Rheumatic Fever; Sciatica.

Rheydt, manufacturing town of the Rhineland, Rhineland, Germany, 3½ m. SE. of Gladbach, chiefly engaged in the textile industry. There are also breweries and distilleries. Pop. 77,000.

Rhine, one of the chief rivers of Europe; of several small Alpine head-streams, the Nearer and the Farther Rhine are the two principal, issuing from the eastern flanks of Mt. St. Gothard; they join at Reichenau, whence the united stream, the per Rhine—flows N. to Lake Constance, and issuing from the NW. corner curves westward to Basel, forming the boundary between Switzerland and Germany. From Basel, as the Middle Rhine, it pursues a northerly course to Mainz, turns sharply to the W. as far as Bingen, and again resumes its northward course. The Rhine-Highland between Bingen and Bonn is the most romantic and picturesque part of its course. As the Lower Rhine it flows in a sluggish, winding stream through the Rhenish Lowlands, enters Holland near Cleves, at Nimwegen bends to the W., and flowing through Holland some 100 m. reaches the North Sea, splitting in its lowest part into several streams which form a rich delta, one-third of Holland. It is 770 m. in length; receives numerous affluents, e.g., Neckar, Main, Moselle, Lippe; is navigable for ships to Mannheim.

Rhine, Occupation of the. Under the terms of the Treaty of Versailles the territory on the left of the Rhine was to be occupied by Allied troops for 15 years from 1919, prior to which evacuation would be gradual. British, American, French, and Belgian troops were all represented; America withdrew in 1920; Britain remained at Cologne till 1925, when headquarters was transferred to Wiesbaden; in 1929 all British troops were withdrawn, and by 1930 total evacuation was effected.

Rhineland, also known as Rhine Province or Rhenish Prussia, a prov. of W. Prussia, Germany, adjoining Holland, Belgium and Luxembourg. It is watered by the Rhine and the Moselle, is mountainous, except in the N., and has many forests. The vine flourishes in the S., and cereals, flax, hops and tobacco are also grown. It contains the Ruhr coalfields, and many other minerals are worked. Industries include the making of iron and steel, chemicals, silks, and cottons. Coblenz is the capital, and among other important towns are Cologne, Essen, Duisburg-Hamborn, Wuppertal, Düsseldorf, Bonn and Aachen, where are mineral springs. Area, 9,250 sq. m. Pop. 7,632,000.

Rhinitis, inflammation of the nose, especially of the mucous membrane of the nostrils. Acute rhinitis is merely the common cold or hay fever, but it may also be caused by some gaseous or other irritant.

Rhinoceros, the largest and most mammal, except the elephant, to which it is allied; usually harmless, but fierce when provoked, and, though clumsy, can run at a great speed. It has a very thick skin, which is raised into strong definitely-arranged folds; very large, pointed lateral incisor, and a single nasal horn, except in a two-horned Malaccan species. It is found in the East Indian islands, Northern India and Africa.

Rhode Island, the smallest but most densely populated of the United States, and one of the original 13; faces the Atlantic between Connecticut (W.) and Massachusetts (N. and E.); is split into two portions by Narragansett Bay (30 m. long); hilly in the N., but elsewhere level; enjoys a mild and equable climate, and is greatly resorted to by invalids from the E.; the soil is rather poor, and manufacturing



RHINOCEROS

form the staple industry; coal, iron and limestone are found. Providence (the capital), Pawtucket, and Woonsocket are the chief towns. Area, 1,300 sq. m. Pop. 687,500.

Rhodes, or **Rhodes**, an island in the Mediterranean, 12 m. distant from the SW. coast of Asia Minor; area 49 m. by 21 m.; mountainous and woody; has a fine climate and a fertile soil, which produces grapes and other fruit in abundance, also some grain; its population is mostly Greek; sponges, carpets, and wines are the chief exports. It figures considerably in ancient history; was occupied by the Knights Hospitallers of St. John for more than two centuries, and was taken from them by the Turks in 1523; since 1923 it has been an Italian possession and naval station. Area, 540 sq. m. Pop. 62,000 (town, 27,500).

Rhodes, **Cecil John**, British imperial statesman, born at Bishops Stortford; went to South Africa and amassed a large fortune from the diamond mines at Kimberley, entered the Cape Parliament, and became Prime Minister in 1890. He was active and successful in extending the British territories in South Africa, aiming at destroying race prejudice, and at establishing among the different colonies a federated union. He resigned in 1896 after the Jameson Raid but acting as a private individual he quelled a Matabele revolt and in the Boer War fought at Kimberley. On his death the bulk of his fortune was left to found the Rhodes Scholarships for British, American and German students at Oxford. (1853-1902).



CECIL RHODES

Rhodesia, name of two British colonies in central South Africa, between Lake Tanganyika and the Congo and the R. Limpopo; divided by the R. Zambesi into (1) **Southern Rhodesia**, a self-governing colony since 1923, comprising the two areas of Matabeleland and Mashonaland. Stock is raised, maize, tobacco and fruit, especially citrus fruits, grown, and there are valuable gold mines, while coal, asbestos, chrome ore and other minerals are worked. The capital is Salisbury (Pop. 33,000, including 11,400 Europeans); other towns are Bulawayo (29,000), Umtali and Gwelo. Area, 150,350 sq. m. Pop. 1,304,000 (55,500 Europeans). (2) **Northern Rhodesia**, administered as a Crown colony. It grows maize, tobacco, coffee, etc., and has large deposits of copper, zinc, and other metals. Its capital is Lusaka; other towns are Livingstone and Broken Hill. Area, 290,300 sq. m. Pop. 1,376,000 (10,000 whites). There is a movement for the amalgamation of the two Rhodesias with a view to their eventual development into a self-governing Dominion, and in 1938 a British Commission of enquiry was investigating the problem.

Rhodium, a metallic chemical element palladium; it occurs in small quantities in the ores of platinum, osmium and iridium; Symbol Rh; atomic number 45; atomic weight 102.91. It is a bluish-white, lustrous metal, whose salts possess a rosy-red colour. It is used as an ingredient of various alloys, and particularly for "rhodanizing," or electroplating silver articles to render them completely untarnishable.

Rhododendron, a genus of evergreen of the order Ericaceae, of which some 250 species have been identified. They are native to both hemispheres, including N. America,

but the Asiatic (especially S. China and Himalayan) representatives are especially numerous. The first introduced to England was *Rhododendron ponticum* in the 18th Century and from this a whole series of cultivated garden varieties have been derived. Other species have since been introduced. The Azaleas are now assigned to the same genus of Ericaceae.

Rhodope, mountain range in Bulgaria, an offshoot of the Balkan system, between Macedonia and Thrace; the range attains a height of over 9,600 ft.

Rhombus, a quadrilateral with all its sides equal but with oblique angles; its diagonals bisect one another at right angles.

Rhondda, **David Alfred Thomas**, first Viscount, British industrialist and politician, one of the largest of Welsh coalowners; he entered the House of Commons as a Liberal in 1888, was President of the Local Government Board in 1916, and Food Controller in 1917; he was raised to the peerage in 1917. (1856-1918). On his death the title descended to his daughter **Margaret Haig** (b. 1883), author of a life of her father, an autobiography, *This was my World*, and other works. (1883-).

Rhondda, urban district of Glamorgan-shire, Wales, in the valley of the Rhondda, the centre of the S. Wales coalfield; a thickly populated area which has suffered much from the economic depression of 1931 and later. Pop. 129,900.

Rhône, one of the four great rivers of France, rises on Mount St. Gothard, in the Swiss Alps; passes through the Lake of Geneva, and flowing in a south-westerly course to Lyons, is there joined by its chief affluent, the Saône; thence it flows due S.; at Arles it divides into two streams, which form a rich delta before entering the Gulf of Lions, in the Mediterranean; length, 504 m.; navigable to Lyons, but the rapid current and shifting sandbanks greatly impede traffic.

Rhône, a dept. of France lying wholly within the western side of the Saône and Rhône basin, hilly and fruitful; wine is produced in large quantities; industries are mainly textile (especially silk); there is some metal and coal mining; capital, Lyons. Area, 1,100 sq. m. Pop. 1,028,000.

Rhubarb (*Rheum officinale* and *Rheum rhaponticum*), two species of cultivated plants of the order Polygonaceae. The leaf-stalks of *Rheum rhaponticum*, a tall coarse herb with large leaves, are used for food. The root of *Rheum officinale*, is used as a purgative drug, and is frequently known as Turkey rhubarb.



GARDEN RHUBARB

Rhumb Line, a circle earth's surface making a given angle with all meridians which it crosses; applied in navigation to the track of a ship keeping to a constant course by compass.

Rhyl, watering-place of Flintshire, North Wales, situated on the coast at the mouth of the Clwyd, 16 m. E. of Conway; has a fine promenade, pier, esplanade, gardens, etc. Pop. 13,500.

Rhyme, a device used in poetry in languages; it consists in so arranging the words which end metrical lines that resemblances of sound occur between them at stated intervals according to fixed rules. Rhyme was not used by the poets of the classical world, but begins to be traced about the 4th Century B.C. A rhyme in the first syllable only (make, shake) is a male rhyme: one

extending over an accented and the following unaccented syllables (ponderer, wanderer), a female rhyme.

Rhymer, **Thomas the, or True Thomas**, a Berwickshire notable of the 13th Century, famous for his rhyming prophecies, who was said, in return for his prophetic gift, to have sold himself to the fairies; he is the hero of a well-known ballad.

Rhymney, a Welsh river, rising in Brecon, and for part of its S.E. course of 30 m. forming the boundary between Monmouthshire and Glamorganshire. On the Monmouthshire bank is the town of the same name, with steel works and coal mines. Pop. 10,500.

Rhys, **Ernest**, British author and man of letters; born in London; general editor of the series of reprints of classical English works, the *Camelot Classics* and *Everyman's Library*; author of several volumes of verse, including *Lays of the Round Table*, and an autobiography, *Everyman Remembers*. (1859-).

Rhythm, the regular or measured flow of sound, as in music, poetry, or some kinds of prose, or in action, as in dancing. The measures of rhythm are the bar, in music, or the foot, in verse, and the rhythmical arrangement depends on the varying degrees of accent or stress to which these are subject, and the pattern formed by the periodical recurrence of similar bars or feet.

Ribbentrop, **Joachim von**, German politician and diplomat; by profession a wine merchant; a close friend of Hitler, who in 1935 appointed him Ambassador for the Reich on various special missions; from 1936 to 1937 German Ambassador in London and subsequently German Foreign Minister. (1893-).

Ribble, English river, rising in the Pennines, in Yorkshire, and flowing W. through Yorkshire and Lancashire to the Irish Sea at Southport. Preston is the chief town on its course of 75 m.

Ribbon, a narrow piece of cotton or fastening for dress; military and civil medals are worn suspended from pieces of ribbon (ribbon) of distinctive colouring, and these are worn alone on occasions of less ceremony as an indication of the wearer's possession of the medal. Ribbon-weaving is an important industry of Coventry (England), Saint-Etienne (France), and other towns.

Ribbon Development Act, a far-reaching Act, passed in 1935, directed towards preserving the amenities of roads, by checking "ribbon" building development and securing greater road safety. It gives power to local authorities to "sterilise" areas by the sides of roads, their width varying with local conditions, so that it is thereafter unlawful, without the consent of the local authority, to plant buildings along or to make new means of access to such roads.

Ribbon Fish, any of certain species of elongated, greatly compressed, deep-sea fishes, so named from their shape, among them the so-called "King of the herrings" (*Regalecus glesne*). Some six species have been found round British shores including the Scabbard Fish, the Silvery Hairtail, Hawkin's Gymnetrus and the Red Band Fish, though as a rule they are only found floating dead on the surface. Some species can reach up to 20 ft. long.

Ribera, **Jusepe**, a Spanish painter of Spanish origin, known as *Lo Spagnoletto*, born near Valencia; remarkable for the gruesome realism of his paintings, which were mainly religious in subject-matter. (1588-1656).

Ribs, arched and very elastic bones from the vertebral column, and forwards the lateral walls of the thorax, normally twelve in number on each side, though sometimes a small additional rib is present. The first seven pairs or sternal ribs are affixed to costal cartilages, uniting them to the sternum; the three upper asternal ribs are joined by their cartilages to the ribs above them; the two lower, being unattached, are called floating ribs. The ribs protect the lungs from injury and serve to enlarge the chest for breathing.

Ricardo, **David**, English political economist, born in London of Jewish parentage; realized a large fortune as a member of the Stock Exchange; wrote on political economy from a mercantile standpoint, especially on taxation and currency, and was the first to enunciate clearly the quantity theory of money. (1772-1823).

Ricci, **Matteo**, founder of the Jesuit mission in China, born at Macerata, Italy; reached China in 1582, and initiated the policy of accommodation to Chinese manners and customs. (1552-1610).

Rice, an annual grass plant (*Oryza sativa*) bearing panicles of grain, each grain being enclosed in a separate husk. The original wild plant is supposed to be a native of the warmer parts of Asia, and from it have been derived many cultivated varieties, the majority adapted for lowland and marshy lands, and others, called hill rice, for growth on any land. By far the greater part of the enormous crop is grown on level stretches of land which are submerged in water by rainfall or by irrigation. The rice in the husk (paddy or *padi*) is threshed when ripe, and before consumption must be hulled, so that the husk may be removed. Polishing, though it improves the appearance and is supposed to preserve it from deterioration, is harmful, as it removes the bran and the germ and so renders the consumer whose rice is the main diet liable to beri-beri. It is grown throughout the Far East, the Mediterranean countries (especially Egypt), the U.S.A. and Brazil.

Rice, **Elmer**, American dramatist, born at New York; among his best known works are *The Adding Machine* (1923), *See Naples and Die* (1929), *Judgment Day* (1934). (1892-).

Rice, **James**, English novelist, born at Northampton, intended for the law, but took to literature; best known as the successful collaborator of Walter Besant (q.v.) in such novels as *The Golden Butterfly* and *Ready-Money Mortiboy*; also wrote a history of horse-racing. (1843-1882).

Ricepaper, so named from its supposed material, but really made from the pith of *Tetrapanax papyrifer*, a wild Formosan plant of the order Araliaceae. It is used for drawing and painting in China.

Richard I. (surnamed *Cœur de Lion*), King of England from 1189 to 1199, second son and successor of Henry II. His early years were spent in Poitou and Aquitaine, where he engaged in quarrels with his father. After his accession to the throne he flung himself with characteristic ardour into the Crusade movement. In 1190 joined his forces with Philip Augustus of France in the third crusade; upheld the claims of Tancred in Sicily; captured Cyprus, and won great renown in the Holy Land, particularly by his defeat of Saladin; was captured after shipwreck on the coast on his way home by the Archduke of Austria, and handed over to the Emperor Henry VI. (1193); was ransomed at a heavy price by his subjects, and landed in England in 1194. His later years were spent in his French possessions warring against Philip, and he died of an arrow wound at the siege of Chalus. Not more than a year of his life was spent in England. (1157-1199).

Richard II., King of England from 1377 to 1399, son of the Black Prince, born in Bordeaux; succeeded his grandfather, Edward III. During his minority till 1389 the kingdom was administered by a council. In 1381 the Peasants' Revolt broke out, headed by Wat Tyler, as a result of the discontent occasioned by the Statutes of Labour passed in the previous reign, and more immediately by the heavy taxation made necessary by the expense of the Hundred Years' War still going on with France. A corrupt church called forth the energetic protests of Wycliffe, which started the Lollard (*q.v.*) movement; an invasion of Scotland (1385), resulting in the capture of Edinburgh, was headed by the young king. Coming under French influence, and adopting despotic measures in the later years of his reign, Richard estranged all sections of his people. A rising headed by Henry of Lancaster forced his abdication, and he was imprisoned for life in Pontefract Castle, where he died (probably murdered) soon after. (1367-1400).



RICHARD II.

Richard III., King of England from 1483 to 1485, youngest brother of Edward IV., and last of the Plantagenets, born in Fotheringhay Castle; in 1461 was created Duke of Gloucester by his brother for assisting him to win the crown; faithfully supported Edward against Lancastrian attacks; married (1473) Anne, daughter of Warwick, the King-maker; early in 1483 was appointed Protector of the kingdom and guardian of his young nephew, Edward V.; put to death nobles who stood in the way of his ambitious schemes for the throne. Doubts were cast upon the legitimacy of the young king, and Richard's right to the throne was asserted. In July, 1483, he assumed the kingly office; almost certainly instigated the murder of Edward and his little brother in the Tower; ruled firmly and well, but without the confidence of the nation. In 1485 Henry, Earl of Richmond, head of the House of Lancaster, invaded England, and at the battle of Bosworth Richard was defeated and slain. (1452-1485).

Richardia, an alternative name for the *Zantedeschia* genus of South African arum lilies, comprising 10 species, of which the chief cultivated in Britain is the *Z. Africana*.

Richards, Gordon, jockey; born at Oakengates, Shropshire, son of a miner; began life as a clerk. He rode his first mount in 1920. He headed the list of winning jockeys every year from 1925 to 1938 inclusive, except in 1926 and 1930, and in 1933 broke Fred Archer's previous record by riding 250 winning horses. (1904-).

Richards, Theodore William, American, can scientist, born at Germantown; professor at Harvard. His greatest work was the careful revision of the atomic weights of the elements, for which he received a Nobel Prize in 1914. He also carried out work on problems connected with the structure of the atom. (1868-1928).

Richardson, Owen Williams, British physicist, professor at Princeton, U.S.A., and King's College, London, and Yarrow professor of the Royal Society; carried out much research and has written several books on the emission of electricity from hot bodies and the electron theory of matter and on *Molecular Hydrogen and its spectrum*; awarded the Nobel Prize for physics in 1928. (1879-).

Richardson, Samuel, English novelist, born in Derbyshire; starting life as a printer, he became Master of the Stationers Company in 1754, and King's Printer in 1761; published his first novel, *Pamela* in 1740, his masterpiece *Clarissa*, written in the form of letters, in 1748, and *Sir Charles Grandison* in 1753; all three novels of sentiment, they mark the beginning of the development of psychological fiction in England. (1689-1761).

Richborough, village in Kent, England, near Sandwich, where there are important Roman remains; converted in 1916 into a "mystery port," from which a train ferry ran to France.

Richelieu, Armand Jean DuPlessis, Duke and Cardinal de, born in Paris; was minister of Louis XIII and

one of the greatest statesmen France ever had. From his installation as Prime Minister in 1624 he set himself to the achievement of a threefold purpose, the ruin of the Protestants as a political party, the curtailment of the power of the nobles, and the humiliation of the House of Austria in the councils of Europe. His administration was marked by reforms in finance, in the army, and in legislation. He commanded in person at the siege of La Rochelle in 1628. He was a patron of letters, and the founder of the French Academy, and left important Memoirs. (1585-1642).



CARDINAL RICHELIEU

Richmond, (1) borough in Yorkshire, England, on the Swale, 49 m. NW. of York; has a fine 11th Century castle, now partly utilized as barracks, remains of a Franciscan monastery, a race-course, etc. Pop. 17,900. (2) A town in Surrey, England, 9 m. W. of London; picturesquely situated on the summit and slope of Richmond Hill and the right bank of the Thames; has remains of the royal palace of Sheen, a magnificent deer park and a handsome river bridge; has many literary and historical associations. Pop. 38,300. (3) Capital of Virginia, U.S.A.; has a hilly and picturesque site on the James R., 116 m. E. of Washington; possesses large docks, and is a busy port, a manufacturing town (tobacco, iron-works, flour and paper mills), and is seat of two Baptist universities, white and coloured. As the Confederate capital it was the scene of a memorable year-long siege during the Civil War, ultimately falling into the hands of Grant and Sheridan in 1865. Pop. 133,000.

Richmond, Sir William Blake, British painter. Born in London, and studying at the Royal Academy, he achieved reputation as a painter of portraits and historical subjects, and did the mosaics inside St. Paul's dome; he is renowned for his pictures of children. He was a Slade Professor at Oxford, an A.R.A. in 1888, an R.A. in 1895, and two years later was knighted. (1842-1921).

Richter, Hans, Hungarian musical conductor, born at Győr. He conducted the Hungarian national opera at Budapest, 1871; and opera at Vienna from 1875 to 1900. From 1897 he acted as conductor of the Manchester Symphony Orchestra, frequently conducting Wagner in London. (1843-1916).

Richter, Johann Paul Friedrich, usually called simply Jean Paul, German humorist, born at Wundtzel, near Bayreuth, in Bavaria; had a scanty education,

but his fine faculties and unwearied diligence supplied every defect. His writings procured him friends and fame, and at length he settled down in Bayreuth, where he died. His works are numerous, and the chief are novels, *Hesperus* and his masterpiece, *Titan*, being the longest and the best. (1768-1825).

Richthofen, Maurice, Baron Von, German aviator, who became the most famous of German air fighters in the World War; between 1917 and 1918 he brought down over 80 Allied machines and was himself shot down behind the British lines in April, 1918. In his honour Richthofen squadrons have been formed in the regenerated post-war German air-force. (1888-1918).

Rickets, or *Rachitis*, an infantile disease marked by incomplete development of the bones and impaired digestion. It is caused by faulty diet, consequent vitamin deficiency, and want of light and air. The bones become softened, and enlargements are formed about the joints or ends of the bones, particularly in the ankles, junction of the ribs with the costal cartilages, wrists, and toes.

Ricketts, Charles, English painter, sculptor, and wood-engraver; born at Geneva; son of an English marine painter and a French mother. With Charles Shannon, he edited the *Dial*, 1889-97; the Vale Press was founded by him in 1896. His chief pictures in public galleries are "Death of Don Juan," Tate Gallery; "The Plague," Luxembourg; "Montezuma," Manchester. R.A., 1928. (1866-1931).

Rickshaw (*Jinrikisha*), a light two-wheeled hooded vehicle on springs, drawn by one man, who runs between the shafts. They are very widely used in Japan, and in the Far East generally, and are supposed to have been invented by an American missionary.

Riddell, George Allardice Riddell, first Baron, British newspaper proprietor; born at Duns, Scotland. A London solicitor from 1888 to 1903, he bought up provincial newspapers, and later the London weekly, *News of the World*. During the World War, he was one of the links between the Government and the Press. Ennobled, 1920. Published, amongst other works, *A War Diary*, 1933-4. (1865-1934).

Riddle, a puzzle in the form of a question, the answer to which is obvious only when the sense of the terms used in putting the question is understood. The most famous example is the Riddle of the Sphinx regarding the animal which walks on four legs when young, two when adult, and three in old age—the answer being man.

Rideau, river of Ontario, Canada, rising mainly N. to the Ottawa R. at Ottawa. The Rideau canal, by way of river and lake, connects Ottawa with Kingston on Lake Ontario.

Ridley, Nicolas, English bishop and martyr, born in Northumberland, Fellow and ultimately Master of Pembroke College, Cambridge; on a visit to the Continent fell in with certain of the Reformers and returned convinced of the Protestant faith; became king's chaplain, bishop of Rochester, and finally of London; favoured the cause of Lady Jane Grey against Mary, who committed him to the Tower, and being condemned as a heretic was at Oxford burnt at the stake with Latimer. (c. 1500-1555).

Riel, Louis, Canadian rebel; headed the Red River rebellion of 1869-1870, which was suppressed by Sir Garnet (afterwards Lord) Wolseley; led a second rebellion in 1885, and established a government in Manitoba but when the rebellion was crushed, he was captured and executed. (1844-1885).

Rienzi, Cola di, Roman tribune, born in Rome, of humble origin; gave himself to the study of the ancient history of the city, became inspired with an ambition to restore its ancient glory, and with Papal sanction persuaded his fellow-citizens to rise against the tyranny of the nobles, in which he at length was successful; but his own rule became intolerable, and he was assassinated seven years after beginning his political career; his life suggested the romance of the name by Bulwer-Lytton. (c. 1313-1354).

Riesengebirge, (i.e., Giant Mts.) a range of mountains in Czechoslovakia and German Silesia; Schneekoppe (5,260 ft.) is the highest peak; a favourite German summer resort.

Rievaulx, village of Yorkshire, England, in the N. Riding, famous for its 12th Century abbey, whose beautiful ruins still stand.

Rif, the name given to the N. coast-lands of Morocco from Tangier to Algeria; is a mountainous and woody region, with a rugged foreshore inhabited by Berber tribes, who are kept subject with difficulty to the authority of the French and Spanish governments, and are concerned in repeated revolts.

Rifle, a gun whose barrel is grooved so that the projectile may have a rotatory motion on its own axis. In the British army the old smooth-bore musket was superseded by the rifle in the first half of the 19th Century. The rifle used by the

ARMY RIFLE

army to-day is the Short Magazine Lee-Enfield, Mark III, a rifle loaded by breech-bolt action. See *Lee-Enfield*. The rifled shotgun for sport is rifled for the last few inches of its length, but the choke-bore is considered the better weapon. Large bore rifles are used only for hunting large and dangerous game.

Riga, seaport and capital of Latvia, on the Dvina, 7 m. from its entrance into the Gulf of Riga; has some fine medieval buildings, and a university; a busy and growing commercial and manufacturing town, exporting grain, timber, flax, linseed, and wool; cotton, glass, etc., are manufactured. It was captured by the Germans from Russia in 1917 after a previous unsuccessful attempt, and German troops remained in occupation until 1919 as a bulwark against Russia. Pop. 385,000.

Riga, Gulf of, an inlet in the N.E. of the Baltic, between Latvia, Estonia, and the Estonian islands Hiiumaa and Saaremaa, about 60 m. long by 100 m. broad.

Right, in politics, a general expression for those parties or elements in the state which are Conservative in tendency and opposed to innovation and revolution, generally representing the property-holding classes. The name arose from the fact that in the French National Assembly of 1789 the more moderate elements happened to be seated at the right side of the Chamber.

Right Ascension, the name given to what corresponds to longitude in geography; it is measured round the celestial equator from the "first point of Aries" in hours and minutes. The right ascension of a star is the sidereal time at which it crosses the meridian.

Right of Way, a right of an individual or body of persons to pass over another person's lands. It is an easement (q.v.) and in the nature of a privilege or convenience and not a profit. It may be acquired by 20 years' uninterrupted user (prescription), by custom, by grant, or by "necessity" i.e., a conveyance of land must carry with it a right of access to the land; and it may be lost by release, or by non-user for 20 years (or less, if the intention be clear).

Rights, Declaration of, a declaration of the fundamental principles of the constitution drawn up by the Parliament of England and submitted to William and Mary on their being called to the throne, and afterwards enacted in Parliament when they became King and Queen. It secures their rights to the people as freeborn citizens and to the Commons as their representatives, while it binds the sovereign to respect these rights as sacred.

Right Whale (*Balaena*), the largest of the whalebone whales, reaching a length of 60 to 70 ft. The Greenland species (*Balaena mysticetus*), which sometimes reaches a length of 60 to 70 ft., has the lower jaw and tail marked with white; it is rapidly approaching extinction. There are several other species, including the Black Right Whales (*Balaena australis* and others) found in Northern and Southern temperate seas.

Rigi, an isolated mountain, 5,900 ft. high, in the Swiss canton of Schwyz, with a superb view from the summit; two toothed railways ascend it with a gradient of 1 ft. in 4.

Rigidity, in physics, resistance to four forces acting tangentially to four faces of a rectangular block of solid material can alter the shape of the block without altering its bulk; the ratio of the force per unit area to the angular deformation of the block in the plane of the forces is then known as the rigidity of the material. The rigidity remains constant under increasing forces until a definite yield-point is reached.

Rigor, an attack of cold and shivering, accompanied by a rise of temperature, a condition often found at the onset of fevers. The stiffening of the muscles of a dead body which sets in several hours after death and lasts for three or four days is called *rigor mortis*, and is due to the coagulation of the proteins in the body.

Rigveda, the earliest and most important of the four Vedas (*g.s.*), including the body of the hymns or verses of invocation and praises.

Rimini, a walled city of N. Italy, of the R. Marecchia, spanned by a fine Roman bridge close to its entrance into the Adriatic, 6½ m. SE. of Bologna; has a 15th-century Renaissance cathedral, an ancient castle, and other medieval buildings, and a Roman triumphal arch; manufactures silks and sail-cloth. Pop. 68,000.

Rimmon, a Syrian god mentioned in the Old Testament who had a temple at Damascus.

Rimsky-Korsakov, Nicolai Andreyevich, Russian composer; born at Tikhvin; while at St. Petersburg Military Academy he studied under Balakirev. His first symphony was produced at St. Petersburg, 1885; he was a professor at the Conservatoire there from 1871 till his death. He composed 13 operas, and re-orchestrated Mussorgsky's *Boris Godunov*. (1844-1908).

Rinderpest, or Cattle Plague, a feverish type, affecting cattle and other ruminants, usually fatal; it has not occurred in Britain during the last 50 years.

Ringbone, a hard, callous substance of the little pastern of a horse, just above the coronet; it sometimes goes quite round like a ring. It is due to injury or cold.

Ring Dove, or Wood Pigeon (*Columba palumbus*), a species of pigeon or dove, whose neck is surrounded by a ring-shaped mark; it occurs abundantly in the British Isles, causing much damage to green crops.

Ring Money, an early type of money, consisting of metal rings, known to have been used by the ancient Egyptians, among whom solid gold rings of a certain size and weight passed current as money. The early Britons and the Gauls also used ring money, and its use persisted even into the Middle Ages.

Ring-Ouzel (*Turdus torquatus*), a brownish-black plumaged

bird with a broad white patch on the throat, which nests in heather or on rough banks in moorland country. It belongs to the thrush family, and is a summer visitor to the British Isles and Europe generally.



Ring-Tailed

Eagle, the young RING-OUZEL, which is given this name for its tail being striped in its first two years.

Ringwood, market town in Hampshire, shire, England, in the Ringwood and Fordingbridge rural district, 8 m. NE. of Bournemouth; there are breweries and glove manufactures, and it is a tourist centre for the New Forest. Pop. 5,000.

Ringworm, a skin-surface disease, caused by a fungoid parasite. It is very contagious and causes some inflammation, but though children contracting it are often of poor constitution, it has no marked effect on the general health. Ringworm of the scalp, which leaves circular bare patches, may last a long while, but ringworm of the body is easily cured.

Rio de Janeiro, capital, federal district and chief seaport of Brazil, and after Buenos Aires largest city of South America, situated on the E. coast on the W. shore of a spacious and beautiful bay, 15 m. long, one of the finest natural harbours in the world; stretches some 10 m. along the seashore, and is hemmed in by richly clad hills; there is a university, national library, and museum, and many fine public buildings; has extensive docks; coffee, sugar and hides are the chief exports; manufactures cotton, flour, rubber, tobacco, etc. Pop. 1,711,000. The state of the same name (capital, Niteroy) has an area of 26,600 sq. m. and a pop. of 1,559,000.

Rio de la Plata, or River Plata, the estuary of the Uruguay and Paraná rivers, on the E. coast of South America, between Uruguay and Argentina. It is 145 m. wide at its mouth and extends inland for about 200 m., but is shallow and is gradually silting up. It is estimated that it receives the waters of about 1,200,000 sq. m. of land, and its muddy colour can be distinguished 70 to 80 m. out at sea. Montevideo stands on its left bank, Buenos Aires on its right.

Rio de Oro, Spanish colony of NW. Africa, S. of Morocco. It is mainly desert. Fishing is the chief industry. It is administered by the Governor of the Canary Is., and the capital is Villa Cisneros. Area (with Adrar), 109,200 sq. m. Pop. (white), c. 800.

Rio Grande (known also as *Rio Bravo del Norte*), river of North America, rises in the San Juan Mts. in Colorado; flows SE. through New Mexico, then divides Texas from Mexico, and enters the Gulf of Mexico after a course of 1,800 m.; is navigable for steamboats some 500 m.; chief tributary, Rio Pecos.

Rio Grande do Norte, a maritime state in the NE. corner of Brazil, called

after the Rio Grande, which flows NE. and enters the Atlantic at Natal, the capital of the State. Area, 22,199 sq. m. Pop. 537,000.

Rio Grande do Sul, the southernmost state in Brazil, lies N. of Uruguay, fronting the Atlantic; capital, Porto Alegre. Area, 112,280 sq. m. Pop. 2,182,000.

Rio Grande do Sul, city of Brazil, in the state and on the river of the same name. It exports hides, preserved meat, wool, tallow, and Paraguay tea. Pop. 41,000.

Rioja, a province of W. Argentina, embraces some of the most fruitful valleys of the Andes, which grow cereals, vines, cotton, etc.; some mining in copper, silver, and gold is done. The capital, Rioja, is in a vine and orange district at the base of the Sierra Velasco, 350 m. NW. of Cordoba. Area, 33,400 sq. m. Pop. 79,800.

Rio Negro, one of the larger tributaries of the Amazon, rises as the Guainia in SE. Colombia; crosses Venezuela and Brazil in a more or less SE. direction, and joins the Amazon (the Marañon here) near Manaus after a course of 1,350 m.; some of its tributaries connect the Orinoco with the Amazon.

Riot, a tumult or disturbance of the peace by a crowd, defined in English criminal law as constituted by a meeting of three or more persons assisting each other in some lawful or unlawful private enterprise and carrying out their object in a violent and tumultuous manner. It is a felony punishable by fine and imprisonment. Under the Riot Act, 1715, any unlawful assemblage of twelve or more persons can be commanded by proclamation (reading the Riot Act) to disperse on pain of forcible dispersal and prosecution for not doing so within one hour.

Rio Tinto, town of S. Spain, in Huelva province, the centre of one of the richest copper-mining regions in the world. Its mines were exploited by the Carthaginians and the Romans. Pop. 11,200.

Ripley, a manufacturing town of Derbyshire, England, situated 10 m. NE. of Derby, in a busy coal and iron district; manufactures silk lace. Pop. 17,800.

Ripon, city and spa of Yorkshire, England, in the W. Riding, 24 m. N. of Leeds. It has a cathedral begun in Norman times, and in the vicinity are Fountains Abbey and Studley Royal. Leather goods and varnish are made. Pop. 3,800.

Ripon, Frederick John Robinson, Earl of, British statesman, younger son of Lord Grantham, entered Parliament in 1806 as a Tory; rose to be Chancellor of the Exchequer, and was for a few months in 1827 Prime Minister; was subsequently in different Cabinets Colonial Secretary, Lord Privy Seal, and President of the Board of Trade; created an Earl in 1833. (1782-1859).

Ripon, George Frederick Samuel Robinson, Marquis of, British statesman, born in London, son of preceding; entered House of Commons in 1852 as a Liberal; became Secretary for War (1863), and three years later for India; was President of the Council in 1868, a popular Viceroy of India (1880-1884), First Lord of the Admiralty in 1886, and Colonial Secretary in 1892-1895; was created Marquis in 1871; went over to the Catholic Church in 1874, resigning in consequence the Grand-Mastership of the Freemasons. (1827-1909).

Risaldar, in India, a native cavalry officer in command of a squadron of native cavalry.

Risca, urban district of Monmouthshire, England, on the Ebbw, 6 m. N.W. of Newport. It is a colliery town, possessing U.E.

also chemical and tinplate works. Pop. 16,600.

Rishton, urban district of Lancashire, England, 3 m. NE. of Blackburn. It has coal-mines and paper, cotton and firebricks are among its other manufactures. Pop. 6,600.

Rita. See Humphreys, Mrs. W. Desmond.

Ritornello, in music, a brief repetition of the concluding phrases of an air, especially if played by one or more instruments while the principal voice pauses; also, the introduction to any musical piece.

Ritual, any organized system of behaviour, especially in connection with religion, extending from the elaborate formalities of a Papal High Mass to the ordered silence of a Quaker meeting. In the Far East, especially by Confucianists, it has been cultivated almost as an independent art and science. The degree of ritual movement and artistic effect allowable in worship has been the subject of bitter controversy between Protestants and Catholics ever since the Reformation, but the tendency to allow a greater amount of fixed ceremony is a marked feature of 20th Century Protestantism in many countries.

Ritualism, name given by its opponents to that school of religious thought which insists on the importance of decorous ceremonial in public worship and the administration of the Sacraments. The word first came into use in England in connection with the Oxford Movement (*q.v.*), to characterize its insistence on outward religious forms.

Riu-Kiu, or Luchu Islands, a group of 90 small islands in the N. Pacific Ocean, having an area of 921 sq. m. The islands lie between Japan and Formosa. Sugar is grown. The group was formally annexed by Japan in 1879. Pop. about 460,000.

River, a natural stream of water flowing in a channel. As an active agent in altering the surface of the earth a river effects erosion of its bed and banks, and transport of material in one part of its course, while in another part it deposits this material. Many of the great valleys of the world have been excavated by rivers. The action of the flowing water is greatly assisted by the earth and stones carried along by the stream, the running stream itself having but little abrading power.

Most rivers are subject to a periodical increase in the amount of water they convey and the seasons in which these "floodings" take place vary according to the latitude of the river, the nature of its source, and the direction of its course. In tropical countries, where violent rains fall in a short time, rivers rise with wonderful rapidity, converting the neighbouring land into sheets of water. Many great rivers form "deltas" *i.e.*, alluvial tracts at their mouths enclosed by diverging outlets. At times the pounding back of the waters by each rise of the tide in the mouth causes the deposition of the sediment to take the form of a line of accumulated material across the course of the river, known as a "bar."

Rivera, Miguel Primo de, Marquis d'Estella, Spanish general and politician, born at Jerez de la Frontera; was distinguished in 1892 for bravery in a Moroccan campaign, and served in the Philippines in the Spanish-American War. In 1893 he formed a military directorate, with the approval of King Alfonso dissolved Parliament and ruled as a dictator, though subsequent revolts compelled him to restore some measure of liberty. Several attempts were made to assassinate him; he resigned office in 1900 and died the same year. (1870-1930).

River Hog (*Potamochoerus*), a mammal found in W. African forests, also called the Red Bush-pig; it is red in colour, with a short, smooth coat, and is generally about 2 ft. high.



RIVER HOG

Riverina, district in the W. of New South Wales, Australia, between the Lachlan and Murray Rr. It is good wheat-growing country, and very suitable for sheep, enormous herds being reared. Albury and Wagga-wagga are the chief towns.

Rivers, Richard Woodville, first Earl, a prominent figure in the reigns of Henry VI. and Edward IV.; was knighted in 1435; espoused the cause of the Lancastrians in the Wars of the Roses, but changed sides on the marriage of his daughter with Edward IV., who created him an earl in 1460; fell out of jealousy into disfavour with the nobility, and was beheaded in 1469.

Rivet, a short bolt with a flat head, used for uniting two plates, the stub end being swaged to prevent its withdrawal. In riveting iron plates together, as in boilers or tanks, the rivet is made red-hot and, while a sledge is held against the head, the end is swaged down by striking directly with a riveting hammer.

Riviera, an Italian term for coast-land flanked by mountains, especially applied to the strip of land lying around the Gulf of Genoa from Nice to Leghorn, which is divided by Genoa into the Western and Eastern Riviera, the former the more popular as a health resort; but the whole coast enjoys an exceptionally mild climate, and is replete with beautiful scenery. Nice, Monaco, Mentone, and San Remo are among its most popular towns.

Riviere, British painter, born in London; among his pictures, which are largely animal paintings, are "Daniel in the Lions' Den," "Ruins of Pompeii," "Giants at Play" and "Vae Victis." (1846-1920).

Rivoli, (1) town in N. Italy, 8 m. W. of manufactures silks, woollens, &c. Pop. 8,000. (2) An Italian village, 12 m. NW. of Verona; scene of Napoleon's crushing victory over the Austrians in 1797. Pop. 1,700.

Rizzio, David, favourite of Mary, Queen of Scots, born in Turin; the son of a dancing-master; was employed by the queen as her secretary, and being offensive to the nobles, was by a body of them dragged from the queen's presence in Holyrood, Edinburgh, and stabbed to death, March 9, 1566.

Roach, a fresh-water fish (*Leuciscus rutilus*), with lower fins tinged with red and rather large scales, allied and very similar in appearance to the Dace and Chub. It swims in shoals in rivers and lakes. It is used as live bait for jack-fishing. They can scale up to 2½ lb. and a 3½ lb. specimen has been caught.

Roads. The great road-builders of the ancient world were the Romans; their lines of communication are still traceable in nearly all the countries of their dominion, Watling Street in England being a good example. The road of the Middle Ages was generally little more than a rough cart-track, but with the advent of the stage-coach in the 17th Century, attempts at improvement began, and the work of Macadam and Telford at the end of the 18th Century marked a new epoch in road-building. The first concrete road was laid in 1873 in Edinburgh, and the first reinforced concrete road in 1913 in Chesham. Wood-block paving was first introduced in London in 1836.

Since the World War the enormous increase of motor traffic has compelled the construction of many hundreds of miles of new "arterial" roads and the replanning and widening of many others, under the supervision of the Ministry of Transport. The total mileage of roads in Great Britain amounts to some 179,000, divided into "Class I," "Class II," and "unclassified" roads. Their maintenance is the concern of local authorities, except for certain trunk roads of first importance, which since 1937 have been maintained by the state acting through the Ministry of Transport.

Roanne, an old French town in the dept. of Loire, on the R. Loire, 49 m. NW. of St. Etienne; has interesting Gallo-Roman ruins, a college, muslin and calico manufactures, dye-works, and tanneries. Pop. 38,000.

Roanoke, city of Virginia, U.S.A., on the Roanoke R.; centre of steel, iron, machinery, tobacco, and other factories. Pop. 69,200.

Roaring Forties, a sailor's term for the Atlantic, for the Atlantic lying between 40° and 50° N. latitude, so called from the storms often encountered there.

Robbia, Luca della, Italian sculptor, born at Florence, where he lived and worked; executed a series of bas-reliefs for the cathedral, but is known chiefly for his works in enamelled terra-cotta, which is named after him "Della Robbia ware." (1399-1482.)

Robert, called The Devil, Duke of Normandy, father of William the Conqueror; a cruel but able ruler who became, after his death, the subject of many legends, one of which is the groundwork of Meyerbeer's opera named after him.

Robert I. See Bruce.

Robert II., King of Scotland from 1371 to 1390, son of Walter Stewart and Marjory, only daughter of Robert the Bruce; succeeded David II., and was the founder of the Stuart dynasty; his nobles were turbulent, and provoked invasions on the part of England by their forays on the Borders. (1316-1390.)

Robert III., King of Scotland from 1390 to 1406, son of Robert II. During his reign the barons acquired an ascendancy and displayed a disloyalty which greatly diminished the power of the Crown both in his and succeeding reigns. The government fell largely into the hands of the king's brother, the turbulent and ambitious Robert, Duke of Albany. An invasion (1400) by Henry IV. of England and a retaliatory expedition under Archibald Douglas, which ended in the crushing defeat of Homildon Hill (1402), were the chief events of the reign. (1340-1406.)

Roberts, Frederick Sligh Roberts, first Earl, English field-marshal; born at Cawnpore; entered the Bengal Artillery in 1851; served throughout the Indian Mutiny, winning the V.C.; commanded in the Afghan War, and achieved a brilliant series of successes; was made commander-in-chief of the Madras army in 1881, commander-in-chief in India in 1885, and commander of the forces in Ireland in 1895. He became commander-in-chief in South Africa in 1899, and at once the tide of the Boer War turned; defeating Kruger at Paardeberg he pushed on to Pretoria and then left Kitchener in charge. He was commander-in-chief of the British Army till 1904. He died of a chill caught while crossing to France in November, 1914. (1832-1914.)

Robertson, Frederick William, English ecclesiastic, born in London; entered the Church in 1846, was curate first at Winchester, next at Cheltenham, and finally settled in Brighton; attained a

great reputation as a preacher, his printed sermons being widely read. (1816-1853.)

Robertson, William, Scottish historian, born at Borthwick, Midlothian; became one of the ministers of Greyfriars Church, Edinburgh, and Principal of the University, having previously written his *History of Scotland*, which brought him other honours, and which was followed by a *History of Charles V.* and a *History of America*. (1721-1788).

Robertson, Sir William Robert, British field-marshal. Joining the army as a private in 1877, he was the first to rise from the ranks to field-marshal. He took a commission in 1888, served in India, and on the staff in the Boer War. In 1914 he became Quartermaster-General of the British Expeditionary Force, was chief of staff in France in 1915, and from 1916 to 1918, when he resigned, he was chief of the Imperial General Staff. From 1919 to 1920 he commanded the Rhine army. Knighted in 1913, he was made a baronet in 1919 and a field-marshal in 1920. (1860-1933).

Robeson, Paul Bustill, American-negro actor and singer; born at Princeton, N.J.; son of a Presbyterian minister. Graduated in law from Columbia University, 1923; but had already made his first theatrical appearance in *Simon the Cyrenian*, New York, 1921. He first appeared in England at Blackpool in 1922; has latterly made many appearances on the concert platform as a singer of "negro spirituals." He has attained fame for his performances in the plays of Eugene O'Neill. (1898-).

Robespierre, Maximilien, leader of the Jacobins in the French Revolution, born at Arras, of Irish origin; he resigned his office as a judge because he could not bring himself to sentence a man to death; inspired by the gospel of Rousseau, became a violent Republican; as head of the Committee of Public Safety, was responsible for the death sentence on Marie Antoinette, and was one of the leaders in the Reign of Terror; had the Worship of Reason established in June, 1794; at the end of the month following was beheaded by the guillotine. (1758-1794).

Robey, George, stage name of George Edward Wade, English comedian, born in London. After working for four years as an engineer, took to the music-hall stage in 1891. He organised many charity performances during the World War. Later he appeared on the "legitimate" stage as Falstaff and in other roles. (1869-).

Robin (*Erithacus rubecula*), a small red-breasted bird of the Thrush family, found all over Europe, and W. Asia. It is found in the British Isles throughout the year, resting in holes in banks and walls, near the ground. Olive-brown above, it has a reddish-orange breast and throat. Its boldness and tameness render it a popular favourite and it plays a considerable part in folklore and popular legend.

Robin Hood. See Hood, Robin.

Robin Hood's Bay, a small seaside resort of the N. Riding of Yorkshire, England, 5 m. S. of Whitby.

Robinia, or Locust-tree, a genus of leguminous plants of N. America, of which *Robinia Pseud-acacia*, or the false acacia, a tall tree with long compound leaves and racemes of white flowers, is grown as an ornamental garden tree in England.

Robins, Benjamin, English mathematician and engineer, born at Bath; established himself in London as a teacher of mathematics, and issued several mathematical treatises; turned his attention to the theoretical study of artillery and fortification; in

1742 published his celebrated work, the *New Principles of Gunnery*, which revolutionised the art of gunnery; was appointed engineer-in-general to the East India Company (1749), and planned the defences of Madras. (1707-1761).

Robinson, Lennox, Irish playwright; manager of the Abbey Theatre, Dublin, from 1910 to 1914 and 1919 to 1923; born at Douglas, Cork. His first play *The Clancy Name*, was produced at the Abbey Theatre in 1908. His best-known later plays are *The Big House*, *The White-headed Boy* and *Far-Off Hills*. (1886-).

Robinson, William Heath, English black-and-white artist; has illustrated or assisted in illustrating Hans Andersen's *Fairy Tales*, *Arabian Nights*, Poe's *Tales*, *Don Quixote*, and *Rabelais*, and his cartoons have appeared in many periodicals. (1872-).

Robot, a machine that does all the work of a human being. The term is applied to people of machine-like efficiency, and is derived from Karel Capek's play *R.U.R.*

Rob Roy, a Highland freebooter, second son of Macgregor of Glenogle; assumed the name of Campbell on account of the outlawry of the Macgregor clan; traded in cattle, took part in the rebellion of 1715; had his estates confiscated, and indemnified himself by raiding. (1671-1734).

Roc, a gigantic legendary bird of Arabian tales, represented as capable of mighty feats of strength.

Roch, St., a French saint, of Montpellier, being plague-stricken himself, and overtaken with the disease in a desert place, he was discovered by a dog, who brought him a supply of bread daily from his master's table till he recovered. (c. 1290-c.1327).

Rochambeau, Comte de, marshal of France, born at Vendôme; commanded the troops sent out by France to assist the American colonies in their rebellion against the mother-country. He served in the French Revolutionary armies until 1792, when he retired, and was subsequently imprisoned for a while, but released by Napoleon. (1725-1807).

Rochdale, town and cotton centre in Lancashire, prettily situated on the Roche, 11 m. N.E. of Manchester. Its woollen and cotton trade (fannels and calicoes) dates back to Elizabeth's time; has an interesting 12th Century parish church. Pop. 93,250.

Roche, Sir Boyle, Irish politician; served in the American war; obtained office in Irish revenue department, c. 1775; entered the Irish parliament in 1776. He was famous for his verbal duels, his strong support of the Union, and his antagonism to Roman Catholics. Knighted, 1776; baronet, 1782. (1743-1807).

Rochefort, town in W. France, in dept. Charente-Inférieure, seat of a large trade with the French colonial empire. Shipbuilding is a main industry. Pop. 33,000.

Rochelle, La, seaport of France, on an inlet of the Bay of Biscay, 95 m. NW. of Bordeaux; capital of the dept. of Charente-Inférieure; has a commodious harbour; ship-building, glass-works, and sugar-refineries are among its chief industries. It is historically important as a stronghold of the Huguenots after the Reformation. Pop. c. 49,000.

Rochester, (1) city of Kent, England, 29 m. S.E. of London, on the Medway, lying between Strood and Chatham; the seat of a bishop since 604; has a fine cathedral, which combines in its structure examples of Norman, early English,

and decorated architecture; a hospital for lepers founded in 1078; a celebrated Charity House, and remains of a Norman castle. Pop. 40,000. (2) city in the state of New York, on the Genesee R., near Lake Ontario, 67 m. N.E. of Buffalo; has a university and theological seminary, and varied and flourishing manufactures, especially of photographic materials. Pop. 328,000.

Rochester, of, English poet and courtier, author of some exquisite songs; born at Ditchley, Oxfordshire. Became one of Charles II.'s court favourites. (1647-1680).

Rochet, a linen vestment worn by dignitaries, in the form of a surplice, but shorter and open at the sides; the sleeves are caught round the wrist.

Rock, in geology, any solid part of the earth's crust whether hard or soft in consistency, and including clay, limestone, chalk, sand, coal, peat, granite, etc. The percentage of minerals in the earth's crust is felspar, 48; quartz, 35; mica, 8; talc, 5; carbonates of lime and magnesia, 1; hornblende, pyroxene, diallage and peridot, 1; clay, 1; and all other substances, 1. Coal, peat and amber consist of organic matter derived from plants; chalk and coral are organic matter derived from minute animals; hence they are usually called organic rock materials.

Rocks are classified, according to their origin, into stratified or aqueous and unstratified or igneous rocks. Stratified rocks possess marks of bedding; are derived from previously existing rocks; are usually situated in plains, and are formed of minerals of non-crystalline structure; have been deposited one after another from above; and contain fossils. Igneous rocks are the oldest and primitive rocks; are situated in mountainous districts; are formed of minerals of crystalline structure; have been erupted from the interior; and contain no organic remains. Stratified rocks which have undergone great alterations in composition and structure are called metamorphic rocks; such are clay-slate, statuary marble, mica-schist and gneiss.

Rock-climbing, as a sport, is carried on in the English Lake district, Snowdonia and the Scottish Cairngorms. The paths followed are usually plainly marked, and the exercise affords an excellent training for serious mountaineering. The Fell and Rock Club caters especially for followers of the sport.

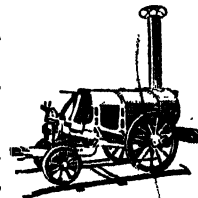
Rockefeller, John Davison, American financier; born at Richford, New York, he made his fortune in oil, and in 1870 founded the Standard Oil Company, remaining its president till 1911. To charity and education he gave during his lifetime over 500,000,000 dollars. (1839-1937).

Rockefeller Foundation, an institution created by J. D. Rockefeller (q.v.) in 1913 for the advancement of knowledge in subjects related to human welfare. It has made large benefactions to hospitals, nursing institutions, etc., and has been responsible for much investigatory work in such diseases as malaria, yellow fever, etc.

Rocket, a name given to some plants of the order Cruciferae, especially the genus *Hesperis*, or "Sweet Rocket," a plant of Italian origin now common in English gardens and having fragrant single or double flowers white, lilac, or purple in colour. Two species of rocket are found in Britain growing wild, viz., the Sea Rocket (*Cakile maritima*), a plant of the Cruciferae order bearing fleshy leaves and having a tap root, and Yellow Rocket or Winter Cross (two species of *Barbarea*).

Rocket, a cylindrical tube of paper or metal filled with a mixture of sulphur, nitre and charcoal, which, on ignition at the base, hurls the tube forward by the action of the liberated gases against the air. Apart from their use in pyrotechnic displays, rockets are used as signals at sea, and for carrying life-saving lines to ships in distress.

Rocket, The, the first locomotive, invented by George Stephenson (q.v.), which won the trials of 1825 held to determine whether stationary engines or locomotives should be employed on the Liverpool and Manchester Railway.



THE ROCKET

Rockford, town in Illinois, U.S.A., on the Rock R., 86 m. N.W. of Chicago. It has many industries, including hosiery, agricultural implements and leather goods. Pop. 86,000.

Rockhampton, chief port of Central Queensland, Australia, on the Fitzroy, 35 m. from its mouth; in the vicinity are rich gold-fields, also copper and silver; has tanning and meat-preserving industries. Pop. c. 30,000.

Rockingham, Charles Watson Wentworth, second Marquis of, British statesman; succeeded to the title in 1750; opposed the policy of Bute, and headed the Whig opposition; in 1765 became Prime Minister, and acted leniently with the American colonies, repealing the Stamp Act; was a bitter opponent of North's American policy of repression; held the Premiership again for a few months in 1782. (1730-1782).

Rocking Stones, large stones, numerous in Cornwall, Wales and Yorkshire, so finely poised as to rock to and fro under the slightest force. The Logan Rock, near Land's End, Cornwall, is over 700 tons in weight.

Rock Island, town of Illinois, U.S.A., on the Mississippi, 180 m. SW. of Chicago; a busy centre of railway and river traffic; derives its name from an island in the river, where there is an extensive Government arsenal; machinery, building materials, and soap are produced. Pop. 38,000.

Rockling, the common name of three species of small fish of the genus *Motella*, belonging to the cod family, and found in the N. Atlantic. The three species are the three-, four- and five-bearded, the five-bearded being the most common. It is dark-brown in colour, has white underparts and is not unlike the common loach.

Rock Soap, or Saponite, a soft anhydrous magnesium and aluminium silicate found as deposits in basalt rock. It dries brittle and is used in the manufacture of crayons.

Rock Temples, temples hewn out especially in Western India, such as those at Ellora (q.v.) and Elephanta. There are also examples at Petra in Arabia.

Rocky Mountain Goat (*Oreamnos Americanus*), a goat resembling the Himalayan serow or goat-antelope with backward sloping horns; native to the N. Rockies; its colour is white, and its coat shaggy and long in winter.

Rocky Mountains, an extensive chain of mountains in North America, belonging to the Cordillera system, and forming the eastern buttress of the great Pacific

Highlands, of which the Sierra Nevada and Cascade Mountains form the western buttress, stretching in rugged lines of almost naked rock, interspersed with fertile valleys, from New Mexico through Canada to the Arctic Ocean, broken only by a wonderfully beautiful tract of elevated plateau in southern Wyoming; their total length is about 4,000 m.; reach their greatest height in the N., with Mount McKinley in Alaska (20,300 ft.), Mount Logan in Canada (19,850 ft.); the highest peak in the United States is Mount Elbert (14,421 ft.). There are many glaciers in the Canadian section. Gold, silver, copper and other minerals are found abundantly.

Rocky Mountain Sheep,

or *Bighorn*, a species of sheep (*Ovis canadensis*) found in N. America and NE. Asia. Its brown wool becomes grey in the cold season.

Rococo, name given to a style of 18th Century architecture, overlaid with a tasteless profusion of fantastic ornamentation, without unity of design or purpose, which prevailed in France and elsewhere in the 18th Century.

Rocroi, a small fortified town of France, about 3 m. from the Belgian frontier, in the dept. of Ardennes; memorable for a great victory of the French under Condé over the Spaniards in 1643.

Rod, also known as *Pole* or *Perch*, an English linear measure equal to 5½ yards. A rod of bricks, consisting of a square rod, or 272½ sq. ft. is the measure used for brickwork estimating.

Rodents (*Rodentia*), an order of mammals, small in size, whose teeth are adapted for gnawing. They have in each jaw two functional chisel-shaped incisor teeth separated by long spaces from the back teeth and adapted for cutting hard substances. The order is divided into two sub-orders, the *Duplicidentata* or double-toothed rodents—hare, rabbit and plover; and the *Simplicidentata* or single-toothed rodents, including the squirrel, rat, mouse, jerboa, porcupine, and allied species.

Roderic, the last king of the Visigoths in Spain; slain in battle with the Moors, who had invaded Spain during a civil war near Jerez de la Frontera in 711.

Rodez, a town of France, capital of the dept. of Aveyron; 80 m. NE. of Toulouse; has a beautiful Gothic cathedral, and interesting Roman remains; manufactures textiles, leather, paper, and straw hats; coal is mined near. Pop. 15,200.

Rodin, (*François*) *Auguste* (*René*), French sculptor, born in Paris. His work embraced both portrait busts and symbolic groups, his bust of Victor Hugo being one of the best-known of the former, his "Burghers of Calais," of which there is a replica in the Victoria Tower Gardens, London, being an example of the latter. Other famous works are "La Belle Heaulmière" and "The Thinker." (1840-1917).

Rodney, *George Brydges*, first Baron, English admiral, born at Walton-on-Thames; entered the navy at the age of 13, and obtained the command of a ship in 1743; did good service in Newfoundland; was made Admiral of the Blue in 1759, and in that year destroyed the stores at Havre de Grace collected for the invasion of England; in 1780 defeated the Spanish fleet off Cape St. Vincent; in 1783 defeated the French fleet under Comte de Grasse by breaking the enemy's line; was first made a baronet and then a peer, with a pension of £2,000, for his services to the country. (1718-1793).

Rodriguez, an interesting volcanic island lying far out in the Indian Ocean, 350 m. NE. of Mauritius, of which it is a dependency; agriculture is the

chief employment; has a good climate, but is subject to severe hurricanes. Area, 42 sq. m. Pop. 9,700.

Roe Deer (*Capreolus caprea*), a small elegant deer, still found in the

northern counties of England and in Scotland. The adult male (roe buck) is about 2 ft. high, has a reddish-brown coat, which turns yellowish-grey in winter, large white patches on the hind quarters, and short antlers with two or three points.



ROEBUCK

Rogation Days,

the Monday, Tuesday, and Wednesday preceding Ascension Day, on which special litanies are sung or recited by the Roman Catholic clergy and people in public procession; has its origin in an old custom dating from the 6th Century. They are still marked in the Church of England Prayer Book, but no special ceremonies are associated with them.

Rogers, *Samuel*, English poet, born in London, by profession a banker; among his poems are *The Pleasures of Memory*, 1792, *Human Life*, 1819, and *Italy*, the chief, 1822. He was a good conversationalist, as is evidenced by his *Table-Talk*, published in 1856. On the death of Wordsworth he declined the post of Poet Laureate. (1763-1855).

Roget, *Peter Mark*, English physician and lexicographer, born in London; was professor of Physiology at the Royal Institution; was author of a *Thesaurus of English Words and Phrases*. (1779-1869).

Rohan, *Prince Louis de*, French ecclesiastic, astic; became archbishop and cardinal, but, falling out with royalty, was debarred from court; tried every means to regain the favour of Marie Antoinette, which he had forfeited, was inveigled into buying for her a famous "Diamond Necklace" in hope of thereby winning back her favour, found himself involved in a scandal connected with it, and was sent to the Bastille. (1734-1803).

Rohilkhand, a northern division of the Provinces of Agra and Oudh, British India; is a flat, well-watered, fertile district; takes its name from the Rohillas, an Afghan tribe, who had possession of it in the 18th Century. Chief town, Bareilly. Area, 10,830 sq. m. Pop. 5,200,000.

Rohillas (i.e., hillmen), a tribe of Afghans who settled in Rohilkhand (q.v.) and rose to power in the 18th Century, till their strength was broken by the British in 1774.

Roland, Count of Mans, one of the famous paladins of Charlemagne, who, being inveigled into the pass of Roncesvalles, was set upon by the Basques and slain, together with the flower of the Frankish chivalry, the whole body of which happened to be in his train. He is represented as having been 8 ft. high and a prodigy of valour. In Italian romance he figures as Orlando. Roland's horse was named *Vergilant*, his magic sword *Durandal*, and his horn *Oliant*.

Roland, *Madame*, French patriot, wife of Jean Roland de la Platière, a Girondist in the early days of the French revolution; was guillotined after summary trial, and is remembered for her exclamation on the scaffold, "O Liberty, what crimes are done in thy name!" (1754-1793).

Rolland, *Romain*, French novelist; as during the World War. He is known chiefly for his *Jean Christophe*, a long novel in ten volumes; has also written *above the Hills* and *a Life of Beethoven*. (1866-).

Roller, a bird of the family Coraciidae, the name being suggested by its habit of turning somersaults in the air like a tumbler-pigeon. There are several species, confined to Europe, Asia and Africa, all brightly coloured. *Coracias garrula*, the common roller, has blue to pale-green head and breast and reddish-brown back and is about a foot in length.



LONG-TAILED
ROLLER

Rollin, Charles, French historian, born in Paris; rector of the University; wrote *Ancient History* in 13 vols., and *Roman History* in 16 vols., once extremely popular. (1661-1741).

Rolling Mill, an apparatus for rolling bars, sheets, plates, etc. It consists essentially of two heavy rollers, mounted in pairs one above the other, in the iron standards or cheeks, and driven in opposite directions so that a piece of metal inserted between them is drawn in and squeezed into the required shape. The iron or other malleable metal for rolling is first heated in the puddling furnace; but for securing fine and accurate finish or other special properties, cold rolling is carried out.

Rollo, or *Rolf*, Norse pirate chief, who seized Rouen and much of the surrounding area. Charles the Simple surrendered to him part of Neustria, which thereafter bore from his followers the name of Normandy. After this Rollo embraced Christianity, was baptized and became the first Duke of Normandy. (880-932).

Rollright Stones, a megalithic circle near Little Compton, Oxfordshire, England, which legend declares to be men turned to stone, one of the pillars being styled "the king" and five others "the knights."

Rolls, Charles Stewart, British engineer and aviator, born in London; joined with F. H. Royce to found the Rolls-Royce firm of motor manufacturers; made an early record aeroplane flight over the English Channel in 1910; killed whilst flying later in that year. (1877-1910).

Romagna, the former name of a district in Italy which comprised the N.E. portion of the Papal States, embracing the modern provinces of Ferrara, Bologna, Ravenna, and Forlì. It was annexed to the Italian kingdom in 1860.

Roman Catholics, that section of the Church which acknowledges the supremacy of the Pope. Doctrinally it has seven sacraments—Baptism, Confirmation, Eucharist, Penance, Extreme Unction, Orders, and Matrimony; its doctrinal basis is the teaching summarised in the Creed of Pope Pius IV. It is the church of the majority of Christians in Ireland, the Latin countries of Europe and America, Poland, Hungary, and Southern Germany, and has large numbers of adherents in the United States, as well as in Canada, Australia, and other parts of the British Empire. The total number of Roman Catholics is estimated at over 360 millions. It is organized under the Pope (who is assisted by the College of 70 Cardinals) into dioceses (or, in missionary countries, vicariates) under archbishops or bishops, of whom there are in England and Wales 4 archbishops and 14 bishops, in Scotland 3 archbishops and 6 bishops, and in Ireland 4 archbishops and 23 bishops. Until the Reformation the Roman Catholic Church was established by law in England, after which Roman Catholics were excluded from the exercise of many civil rights until 1829.

Romance, a term of wide and vague tale, told in a Romance dialect, such as Provençal or early French, notably the various tales of the Arthurian cycle, of Amadis de Gaula, etc. Also means, derivatively, any popular epic belonging to the literature of modern Europe. It now also means a kind of novel, generally one depicting an entirely imaginary state of society, or a tale in which marvellous adventures befall the characters.

Romance Languages, the name given to the languages spring from Latin, and spoken in the districts of South Europe that have been provinces of Rome; the principal are French, Spanish, Portuguese, Catalan, Provençal, Italian, and Rumanian.

Roman de la Rose, a celebrated poem, being an elaborate allegory on the theme of the art of love; it was written, partly by Guillaume de Lorris, c. 1260, and completed c. 1300, by Jean de Meung. Its length is approximately 28,000 lines.

Roman-Dutch Law, the name jurists to the compound law evolved by Grotius, the famous Dutch jurist and publicist, by adopting much of Roman law into the substance of international law. The Roman law which he thus adopted was largely composed of that *jus gentium* or law of nations which the jurists had elaborated by a comparison of the laws of different peoples and which they identified with natural law. Roman-Dutch law is the basis of the present law of the Netherlands and of the Union of South Africa.

Roman Empire, *Moly*. See *Moly*

Romanes, George John, British naturalist, born at Kingston, Canada; came under the influence of Darwin, whose theory of evolution he advocated and applied to the mental field in his works, e.g., *Scientific Evidence of Organic Evolution*, *Mental Evolution in Animals*, *Mental Evolution in Man*; founded the Romanes Lectures at Oxford. (1848-1894).

Romanesque, the style of architecture prevalent in Romanized Europe between the classical and Gothic periods, i.e., from about the fifth to the 12th Centuries. Classified into the debased Roman, including Byzantine modifications; and the late Gothic-Romanesque of the 12th Century, comprising the later Byzantine, Lombard, Saxon and Norman styles. The first of these divisions is closely assimilated to the Roman, but the last is essentially Gothic in the predominance of vertical lines.

Romanoff, the name of an old Russian family from which sprang the last dynasty of Russian Cæars, the first Czar of which was Michael Fedorovich (1613-1645), and the last Nicholas II. (1868-1917).

Roman Question, the dispute between the Italian government which began in 1870 with the seizure of the States of the Church, and the occupation of Rome by Piedmontese troops. His sovereignty being no longer recognized, the Pope and his successors withdrew under protest as voluntary prisoners into the Vatican Palace. In 1929 Mussolini settled the dispute by the Treaty of the Lateran, which restored the Pope's temporal rule over a small area called the Vatican City (*q.v.*).

Romans, *Epistle* to the, an epistle written from Corinth, about the year 58, by St. Paul to the Church at Rome. It is the longest of his epistles, and is directed to prove that the special privileges of the Jews do not continue into the Christian dispensation.

Romanticism, the reactionary movement in literature and art at the close of the 18th Century and at the beginning of the 19th, against the formalism and classicism of the earlier part of the 18th Century. Among its leaders in England were Coleridge, Byron, Shelley and Wordsworth. It was closely bound up with a reawakened interest in the phenomena of nature and emphasized the value of feeling as opposed to correctness of style.

Rome, since 1871 capital of the modern kingdom of Italy (q.v.), on the Tiber, 16 m. from its entrance into the Tyrrhenian Sea. Legend ascribes its foundation to Romulus in 753 B.C., and the story of its progress, first as the chief city of a little Italian kingdom, then of a powerful and expanding republic (510 B.C. to 30 B.C.), and finally of a vast empire, together with its decline and fall in the 5th Century (476 A.D.), before the advancing barbarian hordes, forms one of the most impressive chapters in world history. As the mother-city of Christendom in the Middle Ages, and the later capital of the Papal States (q.v.) and seat of the Popes, it acquired fresh glory. It remains the most interesting city in the world, and is filled with the sublime ruins and monuments of its pagan greatness and the priceless art treasures of its medieval period. Of ruined buildings the most imposing are the Colosseum (a vast amphitheatre for gladiatorial shows) and the Baths of Caracalla (accommodated 1,600 bathers); the great aqueducts of its pre-Christian period still supply the city with water from the Apennines and the Alban Hills; the Aurelian Wall (12 m.) still surrounds the city, enclosing the "seven hills," the Palatine, Capitoline, Aventine, etc., but suburbs have spread beyond; St. Peter's is still the finest church in the world. The city is now being largely rebuilt and its streets rearranged so as to display its historic treasures to better advantage; it has few industries, but is a pilgrim resort for travellers from all parts of the world. Pop. 1,156,000. See also Vatican City.

Romford, town of Essex, England, on the Ingrebourne; 12 m. E. of London, of which it is a growing residential suburb; has cattle and corn markets; industries include brewing, market-gardening, etc. Pop. 60,000.

Romilly, Sir Samuel, English lawyer, family; was a Whig in politics, and was Solicitor-General for a time; devoted himself to the amendment of the criminal law of the country, and was a zealous advocate against slavery and the spy system. (1757-1818).

Romney, George, English painter, born in London for 35 years in rivalry with Reynolds and Gainsborough, among his best work being his studies of Lady Hamilton; specimens of his work may be seen at the National Gallery and Wallace Collection, London, but most are in private hands. (1734-1802).

Romney, New, one of the old Cinque Ports (q.v.), in S. Kent, 8 m. SW. of Hythe; the sea has receded from its shores, leaving it no longer a port. As centre of the fine pastoral district of Romney Marsh, it has an important sheep fair; the little village of Old Romney lies 1½ m. inland. Pop. 1,800.

Romsey, town in Hampshire, England, on the Test, 8 m. NW. of Southampton; has a remarkably fine old Norman church and a corn exchange; are leather manufactures. Pop. 5,800.



GEORGE ROMNEY

Romulus, legendary founder of Rome, reputed son of Mars and Rhea Silvia (q.v.), daughter of Numitor, king of Alba Longa; exposed at his birth, together with Remus, his twin-brother (q.v.); was suckled by a she-wolf and brought up by Faustulus, a shepherd; founded Rome in 753 B.C., peopling it by a rape of Sabine women and afterwards forming a league with the Sabines (q.v.); he was translated to heaven during a thunderstorm, and afterwards worshipped as Quirinus.

Ronald, Sir Landon, British musical composer, conductor. He first appeared as a solo pianist, and began his career as a conductor at Covent Garden in 1894. In 1906 he became conductor of the Royal Albert Hall (later the New Symphony) Orchestra, and in 1910 Principal of the Guildhall School of Music. He was knighted in 1922. Besides conducting he composed a number of songs, with ballets and orchestral works (1875-1938).

Ronaldsay, the Orkney Is., North Ronaldsay is the most northerly of the Orkney group; South Ronaldsay lies 6½ m. NE. of Duncauby Head. Both have a fertile soil, and the coast fisheries are valuable.

Roncesvalles, a valley of the Pyrénées, 23 m. NE. of Pampeluna, where according to medieval legend in 778 the rear of the army of Charlemagne was cut to pieces by the Basques, and Roland (q.v.) with the other Paladins was slain.

Rondeau, a form of short poem (originally French), which usually consists of 13 lines, eight of which have one rhyme and five another; is divided into three stanzas, the first line of the rondeau forming the concluding line of the last two stanzas. The form was much used by Swinburne.

Rondebosch, a residential suburb, of Cape Town, S. Africa, 5 m. S. of the city. Here are Groote Schuur, the official residence of the premier, and the university.

Rondo, a form of musical composition, which corresponds to the rondeau (q.v.) in poetry; a sonata movement in which a principal theme is repeated two or three times after the introduction of subordinate themes.

Ronsard, Pierre de, French poet, born near Vendôme; was for three years in the household of James V. of Scotland in connection with it, and afterwards in the service of the Duke of Orleans, but having lost his hearing devoted himself to literature, writing odes and sonnets. He was of the Pléiade (q.v.) school of poets, and contributed to introduce important changes in the idiom of the French language as well as in the rhythm of French poetry. (1524-1555).

Röntgen, Wilhelm Conrad von, discoverer of the Röntgen rays, born at Lennep, in Rhénish Prussia, in 1845, appointed Professor of Physics at Würzburg; his discovery of the Röntgen rays was made in 1895, and he received a Nobel Prize for Physics in 1901. (1845-1923).

Röntgen Rays. See X-Rays.

Rood, a cross or crucifix, especially one placed in a church over the entrance to the choir, and flanked by figures of the Virgin Mary and St. John; often fixed upon an ornamental partition of wood or stone, called the rood-screen, and having behind it a small gallery, the rood-loft, from which the Gospel was formerly chanted at High Mass.

Rook, a blue-black, hoarse-voiced bird of the crow family (*Corvus frugilegus*), which nests in colonies in wooded districts. It is very common in the British Isles. White varieties are known.

in an expedition against Cadix destroyed the Plate-fleet in the harbour of Vigo in 1703; assisted in the capture of Gibraltar from the Spaniards in 1704, and fought a battle which lasted a whole day with a superior French force off Malaga the same year. (1650-1709).

Roon, general, born in Pomerania; was Minister of War in 1859 and of Marine in 1861; was distinguished for the important reforms he effected in the organisation of the Prussian army, and conspicuous in the campaigns of 1866 against Austria and 1871 against France. (1803-1879).

Roosevelt, *Franklin Delano*, thirty-second President of the U.S.A., a distant relative of President Theodore Roosevelt, born at Hyde Park, New York; became Assistant Secretary of the Navy in 1913, and was Governor of New York, 1929-1933. At the Presidential Election of 1933, as Democratic nominee, he carried 43 states, and began an active campaign to raise the country from its economic depression by his "New Deal," involving a complete overhaul of American economic life, the development of the national resources, and the safeguarding of living conditions for labour. In spite of checks from Congress and the Supreme Court he carried much of his plan, and was re-elected in 1936 by the largest majority ever known in the U.S.A., carrying 46 of the 48 states. (1882-).

Roosevelt, *Theodore*, twenty-sixth States, born at New York. He became a member of the New York State Legislature in 1881, tried unsuccessfully to become Mayor of New York, became one of the New York police commissioners in 1895 and Assistant-Secretary of the navy in 1897. In the Spanish War he raised a regiment to fight in Cuba, and on its conclusion he was elected Governor of New York. Elected Vice-President of the U.S.A. in 1900, he succeeded McKinley the following year and remained in office till 1909. He was a noted sportsman and an explorer, and won a Nobel Peace Prize in 1906. (1858-1919).

Root, in botany, that part of a flowering plant which remains below the soil and grows downwards to absorb nutritive material by which the plant is fed. Some plants, such as the carrot, turnip, etc., store food material in their so-called "tap roots." In some cases secondary or so-called adventitious roots are formed from the stem or upper parts of the plant, and these often remain wholly or partly above the surface.

Root, *Elihu*, American statesman, born at Clinton, New York. He became a Republican senator in 1909, was Secretary for War, 1899-1904, during the Philippine insurrection, and Secretary of State, 1905-1909, when his "Gentleman's Agreement" with Japan settled the immigration problem for years. Member of the Permanent Court of Arbitration at the Hague; he received a Nobel Peace Prize in 1912. (1845-1937).

Rope, thick cord of vegetable fibre or several strands, each made up of a number of twisted fibres. The fibres used for vegetable ropes are mainly hemp, cotton, jute, and sisal. They were formerly manufactured by hand in rope-walks, where the rope-maker walked away from a hand-operated wheel on which the rope was spun, but are now made by mechanical processes.

Rorke's Drift, a station on the Tugela River, a station on the Tugela River, the defence of which was on the night of Jan. 22, 1879, successfully maintained by a small British detachment against 4,000 Zulu warriors.

Rorqual, the common name for a widely distributed genus of whales, *Balenoptera*, differing from sperm whales in not congregating in schools and in yielding but little blubber.

The important species of *Balenoptera* include the largest of all whales, the Blue Whale (*B. musculus*) which reaches a length of 100 ft.; the Common Rorqual (*B. physalus*) 65 to 85 ft. long in the adult stage; Rudolph's Rorqual (*B. borealis*) and the Lesser Rorqual (*B. acutorostrata*) about 30 ft. in length, all of which have been seen in British seas and occasionally left stranded on British shores. The genus is of world-wide distribution; other species are found in southern waters.

RORQUAL

Rosa, *Carl*, father of English opera, born in Hamburg; introduced on the English stage the standard Italian, French, and German operas with an English text; died in Paris. (1843-1889).

Rosa, *Monte*, the highest mountain in Switzerland, attaining an altitude of 15,217 ft. It is in Canton Valais, on the Italian frontier, one peak of it, on which is an observatory, being in Italy.

Rosa, *Salvator*, Italian painter, born near Naples, a man of versatile ability; could write verse and compose music, as well as paint and engrave. His paintings of landscape were of a sombre character, and generally representative of wild and savage scenes. He lived chiefly in Rome, but took part in the insurrection of Masaniello at Naples in 1647. (1615-1673).

Rosaceae, a natural order of plants, containing some 100 genera and over 2,000 species of cosmopolitan distribution. It includes the rose family and also most fruits of the temperate zone—apple, pear, plum, cherry, quince, strawberry, raspberry, blackberry, etc.

Rosario, second city of the Argentine Republic, public, on the Paraná, 190 m. NW. of Buenos Aires; exports wool, hides, maize, and wheat; flour, beer, etc., are produced. Pop. 509,600.

Rosary, a string of beads used by Roman Catholics as an aid to the memory during devotional exercises. It is usually in the form of a circle, containing 50 small beads with a larger bead between each 10 small ones, with a row of 3 or 5 extra beads and a crucifix attached to one of the larger beads. Similar devices are used by the Mohammedans and Northern Buddhists for like purposes.

Rosas, *Juan Manuel*, Argentine statesman, born in Buenos Aires; organised the confederation; was dictator from 1835 to 1852; failed to force the Plate River States into the confederation, and took refuge in England, where he died. His period of dictatorship was one of bloodshed and terror. (1793-1877).

Roscius, *Quintus*, famous Roman comic actor, born near Lanuvium, in the Sabine territory; was a friend of Cicero, and much patronised by the Roman nobles; was thought to have reached perfection in his art, so that his name became a synonym for perfection in any profession or art; d. about 61 B.C.

Roscoe, *Sir Henry*, English chemist, born in London, grandson of succeeding; professor at Owens College, Manchester, and later vice-chancellor of London University; was in Parliament for ten years from 1885; president of the British Association at Manchester, 1887; carried out research on spectrum analysis and the atomic theory; author of treatises on chemistry. (1833-1915).

Roscoe, *William*, English historian, born in Liverpool; author of the *Life of Lorenzo de' Medici* and of *Leo X.*, as well as

of *Handbooks of the Italian Renaissance*, and a collection of poems. (1753-1831).

Roscommon, an inland county of (Ireland); is poorly developed; one-half is in grass, and a sixth mere waste land; crops of hay, potatoes and oats are raised, but the rearing of sheep and cattle is the chief industry. The rivers Shannon and Suck lie on its E. and W. borders respectively. There is some pretty lake-scenery, interesting Celtic remains, castle, and abbey ruins, etc. Area, 951 sq. m. Pop. 77,500. The county town, Roscommon, 86 m. NW. of Dublin, has a good cattle-market, and remains of a 13th-century Dominican abbey and castle. Pop. c. 1,800.

Roscrea, an old market town of Tipperary, Eire (Ireland), 77 m. SW. of Dublin; its history reaches back to the 7th Century, and it has interesting ruins of a castle, round tower, and two abbeys. Pop. c. 2,700.

Rose, typical genus (*Rosa*) of the plant family Rosaceae, consisting of spiny, wing-leaved shrubs and beautiful, and usually fragrant, red, yellow or white flowers. There are a number of species, from which many varieties have been bred by gardeners, more than one thousand being recognized and named. Well-known wild British species are the Sweetbriar (*Rosa rubiginosa*), and the Dog rose (*Rosa canina*). In the wild state the flowers are single, but varieties such as the damask and musk roses have double flowers. Indian and Persian varieties, e.g. *R. moschata*, *R. damascena*, yield the toilet perfume rose-water, and the oil known as Otto or Attar of Roses.



DOG ROSE

Rosebery, Archibald Philip Primrose, fifth Earl of, British statesman, born in London; succeeded to the earldom in 1868; in 1881 became Under-Secretary for Home Affairs, and was twice Secretary for Foreign Affairs under Gladstone, in 1885 and 1892; was first Chairman of London County Council; became Prime Minister in March, 1894, on Gladstone's retirement, and resigned in June, 1895; one of the founders of the Liberal League, and the only Prime Minister to win the Derby while in office. (1847-1929).

Rosecrans, William Starke, American, Ohio; trained as an engineer, he had settled down to coal-mining when the Civil War broke out; joined the army in 1861, and greatly distinguished himself during the campaigns of 1862-1863, winning battles at Iuka, Corinth, and Stone River; but, defeated at Chickamauga, he lost his command; reinstated in 1864 he drove Price out of Missouri; was minister to Mexico, a member of Congress, and Registrar of the U.S. Treasury. (1819-1898).

Rosemary, an evergreen fragrant shrub of the family Labiatae, grown in S. Europe. The fragrant oil of Rosemary is distilled from it in France and Spain.

Rosenheim, town of Bavaria, Germany, many, on the Inn, 40 m. SE. of Munich. It has extensive salt works, and its saline and sulphur baths are noted. Pop. 18,000.

Rosenkranz, Johann Karl, German Hegelian philosopher of the Hegelian school, born at Magdeburg; professor of Philosophy at Königsberg; wrote an exposition of the Hegelian system, a *Life of Hegel*, and *Goethe and his Works*. (1805-1879).

Rose of Jericho, a plant of the order Cruciferae.

(*Anastatica hierochuntina*), found in the sandy deserts of Palestine, Arabia, and other Near Eastern countries. In dry weather it loses its leaves, rolling up into the shape of a ball, but on being brought into contact with moisture reopens, displaying its branches and seed-vessels. It is also known as the Resurrection Plant.



ROSE OF JERICHO

Roses, Wars of the, the most protracted in English history, fought out during the reigns of Henry VI., Edward IV., and Richard III. between the adherents of the noble houses of York and Lancaster—rival claimants for the throne of England, whose badges were the white and the red rose respectively; began with the first battle of St. Albans (1455), in which Richard, Duke of York, defeated Henry VI.'s forces under the Duke of Somerset; but not till after the decisive victory at Towton (1461) did the Yorkists make good their claim, when Edward (IV.), Duke of York, became king. Four times the Lancastrians were defeated during his reign. The war closed with the defeat and death of the Yorkist, Richard III., at Bosworth, 1485, and an end was put to the rivalry of the two houses by the marriage of Henry VII. of Lancaster with Elizabeth of York, 1486.

Rosetta, town in Egypt, on the left 44 m. NE. of Alexandria, famous for the discovery near it by M. Boussard, in 1799, of the Rosetta stone with hieroglyphic inscriptions, demotic and Greek, by the help of which archaeologists have been able to interpret the hieroglyphics of Egypt.

Rose Window, a circular window by tracery and mullions, arranged so as to radiate from a central small circle; the compartments are frequently filled with stained glass. Rose windows were a special feature of the Gothic cathedrals of the 13th and 14th Centuries; many examples may be seen in English churches of that era. Those at Chartres Cathedral are generally considered the finest in the world.

Rosewood, wood used for furniture manufacture, making, veneering, the manufacture of musical instruments, etc., imported mainly from S. America, and derived from trees of the genus *Dalbergia*, especially *Dalbergia nigra*. Its name derives from the rose-like smell observed when it is sawn.

Rosicrucians, a secret society which takes its name from a German, Christian Rosenkreuz, at the beginning of the 16th Century; it pretended by the study of alchemy and other occult sciences to be possessed of sundry wonder-working powers. Modern societies in the U.S.A. and elsewhere have borrowed the name.

Ross, market town of Herefordshire, England, 12 m. SE. of Hereford. Beautifully situated on the Wye, it has old houses and a curious Market House. Here lived John Kyrie, the Man of Ross, written of by Pope. Pop. 4,700.

Ross, Sir Edward Denison, British philologist, gist. He studied Oriental languages in London, Paris, and Strasbourg, and then travelled widely in Russia, Asia Minor, and the East; in 1896 he became a professor of Persian at University College, London, subsequently held official posts in India, and

from 1914 to 1916 was a keeper in the British Museum, after which he became Director of the London School of Oriental Studies; has written extensively on Eastern subjects. (1871-).

Ross, Sir James Clark, British explorer. He entered the navy in 1818, accompanied Parry and Sir John Ross on Arctic voyages, and in 1831 discovered the north magnetic pole. In his Antarctic expedition of 1839-1843 he discovered Mount Erebus, Victoria Land, and the south magnetic pole. (1800-1862).

Ross, Sir John, British Arctic explorer, born in Wigtownshire; made three voyages, the first in 1818, under Parry; the second in 1829, which he commanded and in which he discovered the Scotch Peninsula; and a third in 1850, in an unsuccessful search for Franklin, publishing on his return from them accounts of the first two, in both of which he made important discoveries. (1777-1856).

Ross, Sir Ronald, British physician, famous for his work on malaria; he showed that the disease was propagated by mosquitos and that a suppression of the latter reduced the ravages of malaria; awarded a Nobel Prize in 1902. (1857-1932).

Ross and Cromarty, mountainous and sparsely populated co. of N. Scotland, lying between Sutherlandshire and Inverness-shire, the Atlantic and the North Sea. Some of the Hebrides, including parts of Lewis, are included in it. Its coastline is indented with many firths and sea-lochs; deer forests occupy much of the area; cattle and sheep are reared and fishing is carried on. Dingwall is the county town. Area 3,089 sq. m. Pop. 63,000.

Roszbach, village in Prussian Saxony, 9 m. SW. of Marburg, where Frederick the Great gained in 1757 a brilliant victory with 22,000 men over the combined arms of France and Austria with 60,000.

Ross Dependency, the territories of the Ross Sea in Antarctica which were proclaimed a British Settlement in 1933 under control of the Governor-General of New Zealand. It is an important whaling centre.

Rosse, William Parsons, third Earl of, English astronomer, born at York; constructed a monster reflecting telescope at the cost of £30,000 at Parsonstown, his seat in Ireland, by means of which important discoveries were made, especially in the resolution of nebulae; he was president of the Royal Society from 1849 to 1854. (1800-1867).

Rossetti, Christina Georgina, English of Dante Gabriel Rossetti. Her first volume, called *Goblin Market*, contains a number of very beautiful short poems. She exhibits, with a sense of humour, a rare pathos blended with religious fervour; wrote *The Prince's Progress* and other volumes of verse. (1830-1894).

Rossetti, Dante Gabriel, English poet and painter, born in London, the son of Gabriele Rossetti; was a painter one of the pre-Raphaelites (s.e.). Among his chief paintings were "Ecce Anselm Domini," "Beata Beatrix" and "Dante's Dream," while his written works include *Dante and His Circle*, *Ballads and Sonnets*, and many translations from the poets. The *W* is one of his poems. (1828-1882).



D. G. ROSSETTI

Rossetti, Gabriele, Italian poet and orator, born in Vasto; for his patriotic affections had to leave Italy, took refuge in London, and became professor of Italian in King's College, London; was the father of Dante Gabriel, Christina, and William Michael Rossetti, the last of whom translated his *Autobiography*. (1783-1854).

Rossetti, William Michael, English Rossetti, author, son of Gabriele Rossetti, born in London; held civil service appointments until 1894, when he retired; published a translation of Dante's *Inferno*, *Lines of Famous Poets* and a *Memoir* of his brother, D. G. Rossetti (s.e.). (1829-1919).

Rossini, Gioacchino, Italian composer of operatic music, born at Pesaro. His operas were numerous, and received with unbounded applause, beginning with *Tamara*, followed by *Barber of Seville*, *La Cenerentola*, *Semiramide*, *William Tell*, etc. He composed a *Stabat Mater*, and a *Mass* which was performed at his grave. (1793-1868).

Rosslare, seaport of Co. Wexford, Eire (Ireland), 7 m. S.E. of Wexford, a fishing village until it was made the terminus of the steamship line from Fishguard, Wales. Pop. 700.

Ross Sea, part of the Antarctic Ocean, between S. Victoria Land and King Edward VII. Land. It is free of ice in the summer, and was therefore used as a way of approach to the South Pole by both Amundsen and Scott.

Rostand, Edmond, French dramatist. He was the author of *Cyrano de Bergerac* in 1898, but perhaps his best play was *Chamberlain*, written in 1910. Another famous drama was *La Princesse Lointaine*; and he published several volumes of verse. (1868-1918).

Rostock, German port in Mecklenburg, on the Warnow, 7 m. from its entrance into the Baltic; exports large quantities of grain, wool, and flax, has important wool and cattle markets; shipbuilding and fishing are among the varied industries; has a flourishing university, a beautiful Gothic church and a palace. Pop. 93,600.

Rostov-on-Don, town in the U.S.S.R., on the Don, 24 m. E. of Taganrog; manufactures embrace tobacco, ropes, leather, and shipbuilding. Pop. 521,000.

Rostra, (lit. beaks), a pulpit in the forum of Rome from which the orators delivered harangues to the people, so called as originally constructed of the prows of war vessels taken at the first naval battle in which Rome was engaged, the Latin for a prow being *rostrum*, plural *rostra*.



ROSTRUM OF ROMAN SHIP

Rosyth, Scottish dockyard and naval base on the north side of the Firth of Forth; the site was acquired by the Government in 1800.

Rotary Club, a club belonging to the Rotary International, an organization called the principles of service and international peace. The name arises from the former practice of holding club meetings at members' houses, in rotation. The first club was formed in 1905 by Paul Harris of Chicago, and soon there were many others throughout N. America. The British Association of Rotary Clubs was formed just before the World War; this Association is now styled the Association for Great Britain and Ireland (Rotary International). Members are selected on a classification basis, various trades and professions being represented in all clubs, of which there are over 3,000 in the world.

Rotation, in astronomy, the movement of a planet about its imaginary axis. The word is applied in agriculture to the rotation of crops, the cultivation of a different crop each year over a period of years to prevent soil exhaustion.

Rothamsted, an agricultural station in Hertfordshire, England, founded and endowed by Sir John Bennet Lawes, where experimental work is carried on in soil testing, intensive farming, etc., with state assistance.

Rothenburg, town of Bavaria, Germany, many, 36 m. S.E. of Nuremberg. It retains its medieval appearance, and its capture by Tilly in the Thirty Years' War is commemorated annually. Pop. 10,000.

Rothenstein, Sir William, English painter, lithographer, and etcher; born at Bradford. He was for long an exhibitor at the New English Art Club, and has produced lithographed portraits of many notable persons. He was one of the official artists during the World War, and Principal, Royal College of Art, 1920-35. Knighted, 1931. (1872-).

Rother, small river of E. Sussex, rising near Rotherfield and flowing to the sea near Rye, passing Rotherbridge and Bodiam. Another Rother flows through W. Sussex, past Midhurst and Petworth to join the Arun near Pulborough.

Rotherham, town of Yorkshire, England, situated on the Don, 5 m. N.E. of Sheffield; its cruciform church is a splendid specimen of Perpendicular architecture; manufactures ironware, chemicals, pottery, etc. Pop. 75,000.

Rothermere, Harold Harmsworth, first Viscount, British newspaper proprietor. A younger brother of Lord Northcliffe (q.v.), and former owner of the *Sunday Pictorial*, he succeeded to the control of the *Daily Mail* group of papers in 1923. He became Air Minister for a year in 1917 in the Coalition Government, and in 1919 was raised to the peerage. (1868-).

Roths, burgh of Elgin, Scotland, 10 m. S.E. of Elgin. Distilling is carried on. Pop. 18,000.

Rothsay, watering-place on the W. coast of Scotland, capital of Bute, charmingly situated at the head of a fine hill-girt bay on the N.E. side of the Isle of Bute, 19 m. S.W. of Greenock; has an excellent harbour and esplanade; Rothsay Castle is an interesting ruin. Pop. 9,350.

Rothschild, Mayer Amschel, Jewish celebrated Rothschild banking business, born at Frankfurt-on-the-Main; his original name was Bauer, that of Rothschild (Red Shield) being adopted from the family trading sign; began his career as a money-lender and made a large fortune (1743-1812); left 5 sons, who were all made barons of the Austrian empire: Amschel von R., eldest, head of the house at Frankfurt (1773-1858); Salomon von R., the second, head of the Vienna house (1774-1855); Nathan von R., the third, head of the London house (1777-1838); Carl von R., the fourth, head of the house at Naples (1788-1856); and Jacob von R., the fifth, head of the Paris house (1792-1868). Lionel, son of Nathan (1808-1879) became the first English member of Parliament of the Jewish faith; his son Nathan, (1840-1915) received a British peerage in 1885 as first Baron Rothschild, and was succeeded by Lionel, second Baron, (1868-1937), founder of a zoological museum at Tring, Hertfordshire; he was succeeded by Nathaniel, third Baron (1916-), Anthony Gustave (1887-) and Lionel Nathan de Rothschild (1893-) are partners in the present London house of N. M. Rothschild.

Rothwell, urban district of Yorkshire, England, in the W. Riding, 4 m. S.E. of Leeds. There are coalmines, and rope and twine and matches are made. Pop. 24,600.

Rotorua, town of New Zealand, in N. Island, capital of Rotorua co., on the S.W. border of beautiful Lake Rotorua. It is in the hot spring district, at an altitude of 2,500 ft., and is a tourist and a health resort. Pop. 4,000.

Rotterdam, chief port and second city of Holland, situated at the junction of the Rotte with the Maas, 19 m. from the North Sea and 36 m. S.W. of Amsterdam. The town is cut in many parts by handsome canals, which communicate with the river; the quaint old houses, the stately public buildings, broad, tree-lined streets, and canals, combine to give the town a picturesque appearance. Boymans' Museum has a fine collection of Dutch and modern painting, and the Groote Kerk is a Gothic church of imposing appearance; there is also a large zoological garden. Shipbuilding, distilling, sugar-refining, machine and tobacco factories and the making of furniture, chocolate and chemicals are the chief industries. Pop. 589,000.

Rotunda, in architecture, a circular building covered by a dome, as the Pantheon in Rome or the large central chamber in the Capitol of Washington.

Roubaix, town in the dept. of Nord, France; situated on a canal 6 m. N.E. of Lille; is of modern growth; actively engaged in the manufacture of all kinds of textiles, in brewing, etc. Pop. 107,000.

Rouble, a Russian monetary unit, since 1936 a gold coin equal in value to three French francs; it is divided into 100 kopeks.

Rouen, the ancient capital of Normandy, France, a busy manufacturing town on the Seine, 87 m. N.W. of Paris. A good portion of the old, crowded, picturesque town has given place to more spacious streets and dwellings; the old ramparts have been converted into handsome boulevards; it has several Gothic churches unrivalled in beauty, a cathedral (the seat of an archbishop), etc. The river affords an excellent waterway to the sea, and as a port Rouen ranks fourth in France. It is famed for its cotton and other textiles. William the Conqueror died here, and Joan of Arc was burned here in 1431. Pop. 123,600.

Rouge, properly a ferric oxide in the form of a fine red powder, used by jewellers as a polishing material, in flint-glass manufacture, and as a pigment in certain paints. The name is commonly used for a face cosmetic of varied composition.

Rouge-et-Noir (i.e., red and black), a gambling game of chance with cards, so called because it is played on a table marked with two red and two black diamond-shaped spots, and arranged alternately in four different sections of the table.

Rouget de Lisle, French military officer, born at Lons-le-Saulnier; immortalised himself as the author of the *Marseillaise* (q.v.); was thrown into prison by the extreme party at the Revolution, but was released on the fall of Robespierre; fell into straitened circumstances, but

of Bruges; engaged in manufacturing cottons, lace, etc.; scene of a French victory over the Austrians in 1794. Pop. 29,708.

Roulette, a game of chance, in extensive and gambling houses, especially at

Carlo. It is played with a revolving disc and a ball, bets being made as to the section of the disc in which the ball will come to rest.

Round Churches, to a circular or polygonal design adopted from Roman memorial buildings by Christian architects in the early Christian period and in the Middle Ages; a celebrated example is the church of S. Costanza at Rome. They are especially associated with the Knights Templars (q.v.), all of whose churches were built in this form.

Roundel, in heraldry, a sub-ordinary in circular form. Roundels have distinguishing names, according to their tinctures; when blazoned or, they are called bezants; when argent, plates; when vert, pomels; when azure, hurts; when sable, pellets; when gules, torteaux, etc. A small circular shield used by 14th Century soldiers, composed of osiers or ropes covered with leather or metal plates, either concave or convex, with an umbo or boss in the middle, bore the same name.

Rounders, an outdoor ball and stick game, so named because the unit of scoring is a rounder or circular run by the player who has struck the ball. There are generally 10 players a side. The purpose of the fielding side is to dismiss the members of the striking side either by catching the ball as in cricket, or by striking the runner with it before he can reach a base. The American national game of baseball has developed from rounders.

Roundheads, the name given to the Cavaliers to the Puritans or Parliamentary party during the Civil War, on account of their wearing their hair close cropped.

Round Robin, a document, letter or petition signed by a number of persons in such a way that the order in which they have signed cannot be discovered.

Round Table, The name given to the knighthood of King Arthur, from the table at which they were seated when in general assembly, made in circular shape so that no question of precedence arose. There are said to have been two tables, a larger, including as many as 150 knights; and a smaller, including only 12 of the highest order, the latter being, it is said, preserved at Winchester.

Round Towers, ancient towers, found chiefly in Ireland, of a tall, round, more or less tapering structure, divided into storeys, and with a conical top, erected in the neighbourhood of some church or monastery, presumably of Christian origin, and probably used as strongholds in times of danger; of these there are 118 in Ireland, and three in Scotland.

Roup, a disease of domestic poultry, of a highly contagious character, manifested by oral and nasal discharges.

Rousseau, Jean Jacques, French philosopher, sophist, and one of the great prose writers of French literature, born at Geneva, the son of a watch-maker; in his early years led a vagrant life, acting as footman, lackey, secretary, etc.; was converted to Catholicism largely through the efforts of Madame de Warens, with whom in 1731 he took up residence for nine years as general factotum, and subsequently lover. Supplanted in the affections of his mistress, he took himself off, and landed in Paris in 1741; supported himself by music copying; formed a liaison with a servant-girl



JEAN JACQUES
ROUSSEAU

by whom he had five children, all of whom he handed over to the foundling hospital.

The foundation of his literary fame was laid in 1749 by *A Discourse on Arts and Sciences*, in which he audaciously negatives the theory that morality has been favoured by the progress of science and the arts; followed this up in 1753 by a *Discourse on the Origin of Inequality*, morosely rejected the advances of society, and from his retreat at Montlouis issued *The New Héloïse* (1760), *The Social Contract* (1762), and *Emile* (1762).

These lifted him into the widest fame, but brought down on him the enmity and persecution of Church and State; fled to Switzerland, where, after his aggressive *Letter to the Mountain*, he wandered about, the victim of his own suspicious, hypochondriacal nature; found for some time a retreat in England under the patronage of Hume; returned to France, and died, not without suspicion of suicide, at Ermenonville. His *Confessions* and other autobiographical writings, although unreliable in facts, reflect his strange and wayward personality with wonderful truth. He had a great influence in bringing on the revolutionary movement. (1712-1778).

Rousseau, Pierre Étienne Théodore, a French artist, born in Paris; at 19 exhibited in the Salon; slowly won his way to the front as the greatest French landscape painter; in 1848 settled down at Barbizon, in the Forest of Fontainebleau, his favourite sketching ground. His pictures include "The Alley of Chestnut Trees," "Early Summer Morning" and "The Edge of the Forest." (1812-1867).

Rovigo, town of Venetia, Italy, 27 m. S. of Padua, with many fine old buildings and a famous library. Pop. 40,000.

Rovuma, or Ruvuma, river of East Africa, separating Tanganyika Territory from Mozambique. It is un-navigable. The Mozambique river of Lugenda is its chief tributary. Length about 275 m. It was the scene of fighting between German and Portuguese forces in the World War.

Rowe, Nicholas, English dramatist and poet-laureate, born at Little Bedford, Bedfordshire; was trained for the law, but took to literature, and made his mark as a dramatist. *The Fair Penitent* and *Jane Shore* long maintaining their popularity; translated Lucan's *Pharsalia*, which won Dr. Johnson's commendation; edited Shakespeare; became poet-laureate in 1715; held some government posts; was buried at Westminster Abbey. (1674-1718).

Rowing, a way of propelling a boat by term refers to boat-racing (as distinct from sculling) between eights, fours or pairs, each member of the crew wielding an oar apiece. It has long been a British sport, which the Universities have done much to encourage. The oldest race is the Thames Waterman's Race, for Doggett's Coat and Badge, instituted in 1715 by Thomas Doggett, a comedian. It is rowed annually on Aug. 1 from London Bridge to Chelsea. A Thames race of more recent institution is the Head of the River Race. One of the most important rowing events is the Henley Royal Regatta, founded in 1839, a four days' meeting for amateurs only. It is here that the race for the Grand Challenge Cup for eights is rowed, the trophy being the most highly prized in the rowing world. But the best-known race is the University Boat Race, held at the end of March between Oxford and Cambridge. It was instituted in 1829 at Henley, and, since 1856, has been held annually (except during the World War, 1915-1918). It is rowed from Putney to Mortlake, on the flood tide. Up to and including the year 1938, Cambridge has won 47, and Oxford 42 races. In 1977

the race was drawn. The Henley Stewards are the governing body for rowing in England, but the Amateur Rowing Association issues rules and is in control of amateur regattas.

Rowlandson, Thomas, English caricaturist, born in London; studied art in Paris; displayed great versatility and strength in his artistic work, e.g., in "Imitations of Modern Drawings," illustrations to Sterne's *Sentimental Journey* and *Munchausen's Travels*; ridiculed Napoleon in many cartoons. (1756-1827).

Rowley Regis, town of Staffordshire, shire, England, 3 m. SE. of Dudley; has large ironworks and potteries. Pop. 43,000.

Rowton Houses, establishments where working-men can obtain lodging for the night, and facilities for cooking their food at a small charge. The name traces back to Lord Rowton, who opened the first such institution in 1892.

Roxana, wife of Alexander the Great, the Bactrian, a daughter of Oxyartes the Bactrian, who fell into Alexander's hands at the hill-fort of Sogdiana, 327 B.C. After Alexander's death, she placed herself and Alexander's son under the protection of Olympias, wife of Philip II., but both, together with Olympias, were murdered by Cassander, 311 B.C.

Roxburghshire, a Border pastoral land, between Berwick (Nk.), and Dumfries (SW.); the Cheviots form its southern boundary; lies almost wholly within the basin of the Tweed, which winds along its northern border, receiving the Teviot, Jed, etc.; includes the fine pastoral districts of Teviotdale and Liddesdale, where vast flocks of sheep are reared; agriculture and woollen manufactures are important industries; Hawick is the largest town, and Jedburgh the county town; near Kelso stood the royal castle and town of Old Roxburgh, which gave its name to the county, destroyed in 1460. Area, 666 sq. m. Pop. 62,800.

Royal Academy of Arts, in London; was instituted in 1768 by George III., as a result of a memorial presented to him by 29 members who had seceded from "The Incorporated Society of Artists of Great Britain" (founded 1765); for some years received grants from the privy purse, and was provided with rooms in Somerset House; removed to Trafalgar Square in 1836, and to its present quarters at Burlington House in 1869; receives now no public grant; holds yearly exhibitions, and supports an art school; membership comprises 42 Royal Academicians, besides Associates. The Royal Hibernian Academy (founded 1823) and the Scottish Academy (1826) are similar institutions.

Royal Academy of Music, a body founded in 1823 in London to provide musical education for professional students of music. It confers fellowships, associateships and licentiatehips, and conducts examinations jointly with the Royal College of Music (q.v.), besides offering a number of scholarships.

Royal Air Force. See Air Force, Royal.

Royal Army Medical Corps (R.A.M.C.), a British army corps founded in 1873 to deal with the health of troops, treatment of casualties, examination of recruits, field ambulances, and the maintenance and manning of military hospitals. Its members are not considered as combatants during hostilities, although they wear military uniform.

Royal Army Pay Corps,

an army unit which mans pay offices at home and abroad, and audits the pay accounts of the Army, Territorial Force and Reserve, and pays service pensions and reservists' allowances.

Royal Army Service Corps,

(R.A.S.C.), a military unit founded in 1870 to undertake transport work and the care of military stores, and to attend to the commissariat. In warfare transport units of the Corps operate with each brigade of the fighting divisions.

Royal College of Music,

a British institution for musical education which originated in the National Training School for Music, founded in 1873, and opened in 1876, its first principal being Sir Arthur Sullivan. In 1882 this college was taken over by the Royal College of Music and formally opened as such in 1883. It bestows Associateships by examination and gives fellowships. The pupils average over 600, about 80 being scholars and exhibitors.

Royal Engineers.

See Engineers, Corps of Royal.

Royal Exchange, a mercantile building in London near the Bank of England, originally built by Sir Thomas Gresham in 1566. It was destroyed in the Great Fire, and was followed by a second, also burnt in 1838. The present building, designed by Sir William Tite, was opened in 1844. It is now used as the head offices of an Assurance company.

Royal Family, in Great Britain, comprises the reigning sovereign and all the members of his family, including collaterals. The surname of the present royal family was during the World War changed from Guelph to Windsor. Where the sovereign is a King, the first person of the Royal family after the King is the Queen consort, if any. Under the Royal Marriage Act, 1772, no descendant of George II. may lawfully marry without the consent of the King, all marriages in defiance of this rule being void. The King's eldest son at birth becomes Duke of Cornwall if his father (or mother) is on the throne. If and when the sovereign chooses he can make his eldest son Prince of Wales and Earl of Chester. The reigning sovereign can control the custody and education of the children of his heir. See also Household, Royal.

Royal Household.

See Household, Royal.

Royal Observatory,

an astronomical observatory at Greenwich, founded in 1675 by Charles II. The building was designed by Moore and Sir Christopher Wren and opened in 1676. There are other Royal Observatories at Blackford Hill, Edinburgh, and at the Cape of Good Hope.

Royal Society, The, incorporated by royal charter in 1662; owes its origin to the informal meetings about 1645 of a group of scientific men headed by Theodore Haak, a German, Dr. Wilkins, and others. In 1665 the first number of their *Philosophical Transactions* was published, which, with the supplementary publication, *Proceedings of the Royal Society*, begun in 1800, constitute an invaluable record of the progress of science to the present day. Encouragement is given to scientific investigation by awards of medals (Copley, Davy, Darwin, &c.), the equipping of scientific expeditions (e.g., the *Challenger*), &c. Weekly meetings are held at Burlington House (quarters since 1857) during the session (Nov. till June). It receives a parliamentary grant of £4,000 a year, and acts in an informal way as scientific adviser to Government.

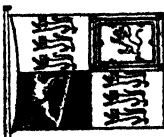
Royal Standard,

incorporating the arms of England, Scotland and Ireland. It is flown only on buildings, ships, &c., in which the monarch is at the moment present.

Royal Tank Corps,

a British Army unit formed after the World War to man and operate tanks (q.v.). It is organized in seven battalions, and was largely increased and reorganised in 1937 and 1938.

the personal banner of the King.



ROYAL STANDARD

Royan, a pretty seaside town of France, on the estuary of the Gironde, 60 m. NW. of Bordeaux; trebles its population of about 8,000 in the summer.

Royston, market town of Hertfordshire, England, on the Leikaleid Way. It has artificial manure works, flour mills, and malting and brewing industries. Pop. 3,900.

Royton, a town of Lancashire, England, 2 m. from Oldham. Cotton spinning is carried on. Pop. 16,700.

Ruabon, a mining town in Denbigh shire, Wales, 4½ m. SW. of Wrexham; has collieries and ironworks. Pop. 3,300.

Ruanda, a district to the E. of the Belgian Congo, on the border of Tanganyika Territory. Ruanda, together with the district of Urundi, were formerly part of German East Africa, and were handed over to Belgium as mandatory after the World War. Area of the two districts 20,535 sq. m. Pop. (est.) 3,510,000.

Rubber, formerly known also as caoutchouc or gum elastic, is a product of the milky juices of several tropical and subtropical plants found chiefly in the East Indies, Ceylon, Central and South America, West Africa, and India. Its properties were partially known to the Spaniards in the West Indies early in the 17th Century; its first introduction to this country was about 1770, when it was employed by artists for erasing black-lead pencil marks, hence its familiar name. It is collected by making incisions in the tree-trunk and gathering the slowly exuding juice, which is first solidified by drying, then purified by boiling and washing. It is flexible and elastic, insoluble in water, and impenetrable to gases and fluids, and these qualities give it great commercial importance.

The use of pure rubber has been greatly superseded by that of "vulcanised" rubber; mixed with from ½ to 1 of its weight of sulphur and combined by heat, the rubber acquires greater elasticity, is not hardened by cold or rendered viscous by heat, and is insoluble in many of the solvents of pure rubber. The world production now approaches 900,000 tons per year, of which about five-eighths is produced in the British Empire; an output restriction scheme has been agreed on between Britain and the Netherlands. Artificial rubber has been made from isoprene; the process was used during the World War, but owing to its cost cannot compete commercially with the natural product.

Rubble, fragments of stone of irregular walls. Rubble boundary or fence walls can be laid dry, with a coping of edge stones set in earth. For walls of buildings, lime mortar is used for bedding the stones.

Rubefacient, a medicinal agent the skin induces redness or hyperæmia. The purpose of a rubefacient is to check inflammation by counter-irritation; those most

often used are mustard, pepper, chloroform and turpentine.

Rubens, Peter Paul, Flemish painter, born at Siegen, in Westphalia; came in 1587 to Antwerp, where he sedulously

cultivated the painter's art, and early revealed his masterly gift of colouring: went to Italy, and for a number of years was in the service of the Duke of Mantua, who employed him on a diplomatic mission to Philip III. of Spain; executed at Madrid some of his finest portraits; returned to Antwerp in 1609; completed in 1614 his masterpiece, "The Descent from the Cross," in Antwerp Cathedral; with the aid of assistants he painted the series of 21 pictures, now in the Louvre, illustrating the principal events in the life of Marie de' Medici; during 1628-1629 diplomatic missions engaged him at both the Spanish and English Courts, where he executed many paintings for Charles I.—e.g., "War and Peace," in the National Gallery—and Philip IV.; was knighted by both; in all that pertains to chiaroscuro, colouring, and general technical skill Rubens is unsurpassed, and in expressing particularly the "tumult and energy of human action," but he falls below the great Italian artists in the presentation of the deeper and sublimer human emotions; was a scholarly, refined man, an excellent linguist, and a successful diplomatist; was twice married; died at Antwerp, and was buried in the Church of St. Jacques. (1577-1640.)



RUBENS

Rubiaceae, the madder family of which contains 450 genera and over 5,000 species, mostly tropical; among the principal genera are *Coffea* and *Cinchona*, containing the species which yield coffee and quinine respectively; *Rubia*, which produces the rich scarlet madder dyes; and *Uragoga*, containing the species which yield ipecacuanha.

Rubicon, river of Italy, associated with Julius Caesar, now identified with the Flumicino, a mountain torrent which springs out of the eastern flank of the Apennines and enters the Adriatic N. of Rimini. It was the boundary between Roman Italy and Cisalpine Gaul, a province administered by Caesar; his crossing of it in 49 B.C. was tantamount to a declaration of war against the Republic, hence the expression "to cross the Rubicon" is applied to the decisive step in any adventurous undertaking.

Rubidium, a metallic chemical element belonging to the group of the alkali metals; symbol Rb; atomic number 37; atomic weight 85.45. It colours a flame reddish-violet. It is widely distributed in soil in minute traces, and certain rare minerals such as lepidolite contain a fairly high percentage of it; it is weakly radioactive.

Rubinstein, Anton, Russian pianist of Jewish parents, near Jassy, in Moldavia; studied at Moscow, under Liszt in Paris, and afterwards at Berlin and Vienna; established himself at St. Petersburg in 1848 as a music-teacher; became director of the Conservatoire there; toured for many years through Europe and the United States, achieving phenomenal success; resumed his directorship at St. Petersburg in 1887; composed operas (e.g., *The Maccabees*, *The Demons*), symphonies (e.g., *Ocean*), sacred operas (e.g., *Paradise Lost*), chamber music, and many exquisite songs; as a pianist he was a master of technique and expression. (1829-1894).

Rubrics, instructions in the Book of Common Prayer, the Roman Breviary and Missal, and similar service-books, for the recitation of prayers and the conduct of divine service; so called because they were originally written or printed in red characters.

Rubus, a genus of shrubs of the natural order Rosaceae, bearing white or pink flowers and edible fruits, including the blackberry or bramble (*Rubus fruticosus*) and the raspberry (*Rubus idaeus*).

Ruby, a gem which in value and hardness ranks next to the diamond; is dichroic, of greater specific gravity than any other gem, and belongs to the hexagonal system of crystals; is a pallid, ruddy-tinted stone, and, like the sapphire, a variety of corundum, also found (but rarely) in violet, pink, and purple tints. The finest specimens come from Upper Burma. The spinel ruby is the commoner jeweller's stone, is of much less value, specific gravity, and hardness, non-dichroic, and forms a cubical crystal.

Rückert, Friedrich, German poet, born at Schweinfurt, in Bavaria; at Würzburg University showed his talent for languages, and early devoted himself to philology and poetry; was for 15 years professor of Oriental Languages at Erlangen; introduced German readers, by excellent translations, to Eastern poetry; filled for some time the chair of Oriental Languages in Berlin. (1788-1866).

Rudd, or Red Eye, British fresh-water fish (*Scardinius erythrophthalmus*) allied to the roach; tinged with bronze, and has reddish fins; the dorsal fin is farther back than in the case of the roach. It is found in lakes and slow streams, and apart from Britain is found in Europe (except Spain), Asia Minor and Siberia. It can grow as long as 18 in. and weigh 3½ lb.

Rudolf I., founder of the House of Hapsburg; born, the son of a count, at Schloss Limburg (Briegau); greatly increased his father's domain by marriage, inheritance, and conquest, becoming the most powerful prince in S. Germany; acquired a remarkable ascendancy among the German princes, and was elevated to the imperial throne in 1273, and by friendly concessions to the Pope, Gregory IX., terminated the long struggle between the Church and the empire; shattered the opposition of Ottocar, king of Bohemia, and brought peace and order to Germany. (1218-1291).

Rudolf II., Holy Roman Emperor, son of Maximilian II., born in Vienna; became king of Hungary in 1572, and of Bohemia three years later; ascended the imperial throne in 1576. He left the empire to the care of worthless ministers; disorder and foreign invasion speedily followed; persecution inflamed the Protestants. By 1611 his brother Matthias, supported by other kinsmen, had wrested Hungary and Bohemia from him. He had a taste for astrology and alchemy, and patronized Kepler and Tycho Brahe. (1552-1612).

Rudolf, Lake, in Africa, between the Anglo-Egyptian Sudan, Kenya, and Italian East Africa, 185 m. long and over 30 broad, and brackish in taste; discovered in 1888.

Rue (*Ruta graveolens*), an erect, bushy, evergreen shrub, 2 to 3 ft. high, type of the rue family (Rutaceae), introduced from S. Europe into Britain in the 16th Century and cultivated in many gardens. The leaves yield an oil valuable as a narcotic and stimulant, and the presence of this oil gives the plant a strong smell.

Rueil-Malmaison, a town in the dept. of Seine-et-Oise, France, on the R. Seine, 5 m. N.E. from Versailles. Photographic materials are manufactured. Pop. 24,909.

Ruff, a light-brown spotted or mottled Africa, bird (*Macheles pygmaea*) native to

Europe generally, but a spring migrant to Britain and N. Europe generally, becoming ever rarer. In the breeding season the neck of the male is ringed with a ruff or frill of long, black, red-barred feathers. The males fight savagely for the female birds, which are known as reeves.



MALE RUFF

Ruffe, or Pope (*Acanthopoma cernua*), a small, speckled, freshwater-edible fish, of olive-green hue marked with brown, common in the Norfolk Broads.

Rufiji, a river of Tanganyika Territory, East Africa. It rises in the Livingstone mountains by Lake Nyasa, flows E. and discharges by a delta into the Indian Ocean SW. of Mafia I.

Rugby, town in Warwickshire, England, at the junction of the Swift and the Avon, 83 m. NW. of London; an important railway centre and seat of a famous public school founded in 1567, of which Dr. Arnold (q.v.), and Archbishops Tait and Temple were former headmasters. The town is a centre of the motor industry, and near to it is the largest wireless transmitting station in the country, used for Imperial communication. Pop. 36,000.

Rugby Football. See Football, Rugby.

Rugby Union, the English association of Rugby football clubs, founded in 1871, to ensure uniformity of regulations. Scotland, Wales and Ireland have their own Rugby Unions. The English Union owns a ground at Twickenham, and the Scottish one at Murrayfield, Aberdeen.

Rugeley, market town of Staffordshire, England, 25 m. from Birmingham. Coal mines are in the district. Pop. 7,100.

Rügen, a deeply-indented island of Germany, in the Baltic, separated from the Pomeranian coast by a channel (Strela Sund) about a mile broad. The soil is fertile, and fishing is actively engaged in. Bergen is the capital. Pop. c. 45,000.

Ruhr, an affluent of the Rhine, which joins it at Ruhrort after a course of 142 m.; navigable to craft conveying the product of the coal-mines to the Rhine.

Ruhr Occupation, the advance of French and Belgian troops into the Ruhr valley in Germany in Jan., 1923, on account of the failure of the German government to meet its reparations (q.v.) obligations. The occupation was terminated in 1925.

Ruislip-Northwood, Urban District in Middlesex, England, 15 m. NW. of London, of which it is a rapidly-growing residential suburb. Pop. 16,000.

Rule of Faith, the name given to any or standard in religious belief, such as the Bible alone, as among Protestants; the Church and the Bible as interpreted by her, as among Roman Catholics; reason alone, as among rationalists; the inner light of the spirit, as among mystics.

Rum, an alcoholic spirit made from sugar cane. The ordinary clear Jamaican rum is distilled from the fermented skins of sugar-bollers and molasses, together with some cane juice to impart flavour. Like all other spirit, it is colourless as it issues from

the still, and is coloured either by storing in sherry casks or by adding burnt sugar. Much so-called rum is made in Europe from beet-sugar spirit with a flavouring of real rum.

Rum, a mountainous island in the Inner Hebrides, lies 15 m. off Arinamurchan Point; a very small portion of it is cultivated. Area, 42 sq. m.

Rumania, a kingdom of SE. Europe, Ukraine (N.) and Bulgaria (S.), with an eastern shore on the Black Sea; comprises the old principalities of Moldavia and Wallachia, which, long subject to Turkey, united under one ruler in 1859, and received their independence in 1878, in which year the province of Dobruja was ceded by Russia; in 1881 the combined provinces were recognized as a kingdom; after the World War Transylvania, formerly Hungarian, was added to the kingdom; and Bessarabia and Bukovina annexed. It forms a fertile and well-watered plain sloping N. to S., which grows immense quantities of grain; the chief exports are grain and cereals, petroleum, live animals and wood. Wheat, maize and barley are the main crops; natural gas, petroleum, salt and lignite the principal mineral wealth. The bulk of the people belong to the Greek Church; peasant proprietorship on a large scale is a feature of the national life; government is vested in a hereditary limited monarchy, a council of ministers, a senate, and a chamber of deputies. Bucharest is the capital, and Galatz the chief port, other large towns are Chisinau, Cernauti and Iasi. Area, 113,890 sq. m. Pop. 19,420,000.

Rumelia, Eastern name for a district Thracæ and a portion of Macedonia; it was incorporated in Bulgaria in 1885.

Rumford, Count (Benjamin Thompson), American soldier, philanthropist, and physicist, born at Woburn, Massachusetts; fought on the British side during the American War; became a lieutenant-colonel, and for important services was knighted in 1782 on his return to England; entered the Bavarian service, and carried through a series of remarkable reforms, such as the suppression of mendicancy, the amelioration of the poorer classes by the spread of useful knowledge, culinary, agricultural, etc.; was made a Count of the Holy Roman Empire, and placed in charge of the War Department of Bavaria; was a generous patron of science in England and elsewhere; his later years were spent in retirement near Paris, where he devoted himself to physical research, especially as regards heat. His great contribution to science was the recognition of heat as a form of energy. (1753-1814).

Ruminants, a division of the Mammalia, mammalian order Ungulata, possessing the habit of chewing the cud. After swallowing their food, which passes in the first place into the paunch, it is later returned to the mouth for leisurely chewing, passing thence back to the stomach. The class includes camels, goats, deer, sheep and cattle.

Rump, The name of contempt given to the Remnant, the remnant of the Long Parliament (q.v.) in 1659.

Runciman, Walter, first Viscount, British statesman; born at South Shields. Entered Parliament as a Liberal in 1899; held minor government offices from 1905 to 1908, when he became President of the Board of Education; from 1911 to 1914 was Minister of Agriculture, and President of the Board of Trade from 1914 to 1916 and 1931 to 1937, in which year he received a peerage. In 1938 he undertook a mission to mediate unofficially between the Sudeten-Germans and the Czechoslovak Government. (1876-)

Runcorn, river-port of Cheshire, England, on the Mersey and the Manchester Ship Canal, 12 m. SE. of Liverpool, at the terminus of the Bridgewater Canal; has excellent docks; industries embrace ship-building and iron-founding. Pop. 22,600.

Runes, an alphabet used by the Northmen of Sweden, Norway, Denmark, Britain and Ireland, used mainly for cutting inscriptions on wood or stone. There are three runic alphabets, much alike, the oldest being the Gothic of 24 letters or runes. The letters are formed almost entirely of straight lines; it is uncertain whether they were derived from the Latin alphabet or had an independent origin.

Running, a form of athletics popular since earliest times, the principle track races to-day being classified as sprint (short distances requiring great speed), middle distance (requiring speed and endurance), and long distance (requiring great endurance). Other forms of running races are relay, cross-country, steeplechasing and the marathon (q.v.).

Runnymede, a meadow on the right bank of the Thames, near Staines, Middlesex, England, 36 m. SW. of London, where King John signed the Magna Carta, June 15, 1215.

Rupee, of India, with an exchange value of 1s. 6d.; lakh of rupees equals 100,000, a crore, 10,000,000. It is divided into 16 annas, 64 pice, or 192 pies.

Rupert, Prince, son of Frederick V., Elector Palatine, and grandson of James I. of England; took part in the Thirty Years' War, and suffered 3 years' imprisonment at Linz; in England, at the outbreak of the Civil War was entrusted with a command by Charles I., and took an active part in all the great battles; finally surrendered to Fairfax at Oxford in 1646; two years later took command of the Royalist ships and kept up a gallant struggle till his defeat by Blake in 1651; escaped to the West Indies, where he kept up a privateering attack upon English merchantmen; came in for many honours after the Restoration, and distinguished himself in the Dutch War; the closing years of his life were quietly spent in scientific research. (1619-1682).



PRINCE RUPERT

Rupert's Land, a name given by the territory around Hudson Bay or Strait; it now forms part of Quebec, Manitoba and the NW Territories.

Rural Dean, a clergyman of the Church of England, who, under the bishop and archdeacon, has the oversight of the clergy within a given district.

Ruschuk, town in Bulgaria, on the Danube, 40 m. S. by W. of Bucharest; manufactures pottery, bricks, sugar and soap; has a number of interesting mosques; its once important fortifications were reduced in 1877. Pop. 49,500.

Rush, the common name of the plants of the genus *Juncus* of the family Juncaceæ, comprising some 225 species, 18 of which are found in Britain, generally in ditches, on riverbanks, and marshy places. The stems are cylindrical and soft, sometimes destitute of leaves, 2-3 ft. high, with flowers in clusters. They are used for making chair-seats, baskets, mats, etc.; the pith was formerly made into wicks for "rush-light" candles. One species *Juncus squarrosus*, is

especially common and affords valuable fodder for sheep if grass is scarce.

Rush, Benjamin, American physician, near Philadelphia; became professor of chemistry at Philadelphia in 1769; sat in Congress, and signed the Declaration of Independence (1776); held important medical posts in the army; resigned and assumed a medical professorship in Philadelphia; won a European reputation as a lecturer, philanthropist, and medical investigator; published several treatises, and from 1799 acted as treasurer of the U.S. Mint. (1745-1813).

Rushden, town of Northamptonshire, England, 4 m. SE. of Wellingborough; a centre of the boot and shoe trade. Pop. 14,260.

Ruskin, John, English art-critic and social reformer, born in London.

The first volume of his *Modern Painters*, mainly in defence of the painter Turner and his art, appeared in 1843, and soon extended to five considerable volumes, followed in 1849 by *The Seven Lamps of Architecture*; this was followed in 1851 by the *Stones of Venice*. In 1862 he published *Unto this Last*, on the first principles of political economy, the doctrines in which were further expounded in *Munera Pulveris*, *Time and Tide* and *Fors Clavigera*. From 1869 to 1879, and again from 1883 to 1884, he was professor of fine art at Oxford. The story of his life is told in part in his unfinished *Preterita*. (1819-1900).



JOHN RUSKIN

Russell, Bertrand Arthur William Russell, British philosopher and mathematician. His works include *Principia Mathematica* (with A. N. Whitehead), *An Introduction to Mathematical Philosophy*, and numerous semi-popular works on social philosophy, ethics, and mathematical and physical questions. A convinced pacifist, he was imprisoned for 6 months in 1918 for a newspaper article; he has visited the U.S.A. and China in the cause of international peace. (1872-).

Russell, George William, Irish poet and writer under the pseudonym A. E.; born at Lurgan. He turned from painting to poetry in early life, and after 1897 became an enthusiast for agricultural co-operation in Ireland, in the interest of which he edited for some years from 1905 a weekly periodical, *The Irish Homestead*. His published volumes of verse and essays include *The Earth Breath*, *Impressions and Reveries*, and *The Avengers*. (1867-1935).

Russell, John, Earl, known best as Lord Russell, British statesman, entered Parliament in 1813, took up vigorously the cause of parliamentary reform and Catholic Emancipation, joined Earl Grey's ministry in 1830 as Paymaster of the Forces, framed and zealously advocated the Reform Bill (1832), drove Peel from office in 1836, and became, under Lord Melbourne, Home Secretary and leader of the Commons. Four years later he was appointed Colonial Secretary, warmly espoused the cause of repeal of the Corn Laws, formed a ministry on the downfall of Peel in 1846, and dealt with Irish difficulties and Chartism; resigned in 1852, and in the same year became Foreign Secretary under Aberdeen; became unpopular on account of his management of the Crimean War (1855) and conduct at the Vienna Conference; again Foreign Secretary in Palmerston's ministry of 1859, an earl in 1861, and premier a second time in 1865-1866; author of various pamph-

lets, biographies, memoirs, etc.; was twice married; was nicknamed "Finality John" from his regarding his Reform Bill of 1832 as a final measure. (1792-1878).

Russell, William, Lord, English politician, son of Charles II.'s reign, younger son of the Earl of Bedford; entered the first Restoration Parliament, became a prominent leader in the Country Party in opposition to the Cabal (q.v.) and the Popish schemes of the King; vigorously supported the Exclusion Bill to keep James, Duke of York, from the throne in 1683; was charged with complicity in the Rye-house Plot, was found guilty on trumped-up evidence, and beheaded. (1639-1683).

Russell, William Clark, English novelist, born in New York; gained his experience of sea life during 8 years' service as a sailor; was a journalist before, in 1887, he took to writing novels, which include *John Holdsworth* and *The Wreck of the "Grovenor"*. (1844-1911).

Russell, Sir William Howard, British war correspondent, born near Dublin; had already acted for some years as war correspondent for *The Times* before his famous letters descriptive of the Crimean War won him a wide celebrity; subsequently acted as correspondent during the Indian Mutiny, American Civil War, Franco-Prussian War, etc.; knighted in 1895. (1820-1907).

Russell of Killowen, Charles Russell, British lawyer and judge, born in Newry; called to the English bar in 1859, entered Parliament in 1880. Was counsel for Parnell in the *Parnell v. The Times* trial; became Attorney-General in 1886, receiving also a knighthood; in 1894 was elevated first to a Lordship of Appeal, later to the Lord Chief Justiceship, and created a life-peer. (1832-1900).

Russia, or the Union of Socialist Soviet Republics (U.S.S.R.), comprises a federation of 11 Soviet Republics (Russian, Ukrainian, White Russian, Armenian, Georgian, Azerbaijan, Turkmenistan, Uzbekistan, Tadzhik, Kazak and Kirghiz), with a number of other territories and regions in various states of political evolution. It occupies the whole of Eastern Europe and Northern Asia, the European boundaries marching with Finland, Estonia, Latvia, Poland and Roumania, the Asiatic with Turkey, Iran, Afghanistan, India, Tibet, Mongolia and Manchuria. Its total area is about 8,100,000 sq. m., and estimated population 166,000,000. The capital is Moscow.

A great part of the area is flat steppe, suitable especially in the Asiatic regions for pasture; agriculture, though still occupying most of the population, is giving place in many areas to manufacturing industries. The minerals include coal, iron, oil, manganese, copper, and gold. Agriculture is being reorganised by the establishment of collective farms, which are rapidly replacing peasant holdings. Since the revolution of 1917, which overthrew the power of the Czar, and established a Communist ("Bolshevik") administration, government has been carried on by local soviets federated by steps to a supreme Soviet at Moscow; but in actual fact the Communist Party exercises a practical dictatorship through its representatives in the local and central Soviets. Freedom of religion is in theory granted, but the state as such has no religious belief. Education is making rapid strides, great emphasis being laid on technical training. There are 23 Universities. The army ("Red Army") is organized on a universal service basis.

In 1928 and 1933 two Five-Year Plans were formulated, aiming at the development of Russia's natural resources, wide-scale industrialisation, economic planning on a Socialist

basis, and the attainment of universal education. In May, 1937, plans were required from the leaders of industry for a third Five-Year Plan. Since 1928 the U.S.S.R. has gradually been entering into the field of European politics. In 1928 it originated the move for general disarmament, in 1929 entered into diplomatic relationship with Gt. Britain, and in 1931 with France, the Franco-Soviet Pact being signed in 1935, and reaffirmed a year later. In 1932 the Soviet Government was recognised by the U.S.A., but on the other hand the U.S.S.R. feels itself gravely menaced by the growth of Fascist power in Europe and the encroachments of Japan in N. China. In 1934 it was admitted to the League of Nations, with a permanent seat on the Council.

Russian Revolution. The gradual discontent of the Russian masses with the Czarist government in the World War led in March 1917, to open rebellion, the collapse of that government, and the abdication of the Czar. A series of provisional democratic governments followed, but Lenin's return to Russia and the growth of Bolshevik sentiment eventually brought about the complete transfer of power to the Soviets on November 7, 1917. After a Constituent Assembly had met in the following year a period of chaos followed, the peace of Brest-Litovsk being signed with Germany, the Czar and his family assassinated, the Church disestablished and the national debt repudiated. Anti-Bolshevik groups in various parts of the country were supported by Allied intervention in N. Russia (Murmansk and Archangel).

In 1921 the anti-Bolshevik risings had been suppressed and the strict Communism of the early days of the revolution was replaced by a less revolutionary system allowing of private trading. Relations were gradually established with other Powers, though in 1927, after a raid on the London trade delegation premises, those with Great Britain were for a time suspended. Lenin, the leader of the nation throughout these years, died in 1924, and the effective power fell into the hands of Stalin (q.v.). Dissension broke out in the ruling Communist Party, and in 1928 Trotsky, the leader of the anti-Stalinists, was exiled to Siberia, later leaving the country.

Two successive "Five-Year Plans" for economic and industrial development were carried through with a high degree of success, but from the beginning of the 'thirties increasing dissatisfaction with Stalin's rule showed itself, and from time to time "purges" and mass trials of alleged "counter-revolutionaries" and "Trotskyists" took place, a large number of the chief figures of the early days of the Revolution being put to death or otherwise "liquidated." Meanwhile the military forces were organised on a defensive basis, and the U.S.S.R. entered the League of Nations. By 1938 the authority of Stalin seemed firmly established, and the Trotskyist opposition practically overthrown.

Russo-Japanese War, the, was started by Japan in 1904 on the failure of her demand that Russia should evacuate Korea and Manchuria. Russia suffered naval reverses in February off Port Arthur, and a military defeat at Nanshan in May. Despite strenuous efforts by Russia, Port Arthur fell in January, 1905, and after American mediation the war ended in September, Japan gaining most of her demands by the Treaty of Portsmouth (1905).

Russo-Turkish Wars, the three wars in (1) 1827-8, ended by the Treaty of Adrianople which secured independence for Greece and the freedom of the Dardanelles; (2) 1844-6,

(the Crimean War) in which the English and French supported Turkey, and which ended with the Peace of Paris guaranteeing Turkish integrity; (3) 1877-8, which ended in the Treaty of San Stefano, securing the independence of the Balkan States.

Rust, the film which appears on metals on account of atmospheric corrosion. It consists of the oxide of the metal, but also sometimes of basic carbonate or sulphate. The oxidation of iron is most difficult to counteract; but iron will not rust in the absence of carbon dioxide in the moisture film on its surface. Rust on copper forms a green patina which protects the metal from further action. In botany the name is given to a disease that attacks the leaves and stems of plants. Wheat rust (*Puccinia*) first develops on the leaves of the barley, the spores being then carried by the wind to the wheat stems and so causing the "red rust" of wheat.

Rutaceae, a family of dicotyledonous trees and shrubs, including the typical genus *Ruta* (of which *Ruta graveolens*, Rue, is the common one), and the genus *Citrus*, including the orange, lemon and shaddock, or grapefruit.

Ruth, a Book of the Old Testament telling the story of the marriage of a Moabitish woman, Ruth, an ancestor of David. It almost certainly dates from after the Exile, but nothing valid can be conjectured as to its exact date or its authorship.

Ruthenia, one of the constituent areas of Czechoslovakia, with an area of 4,900 sq. m. and a pop. of 726,000. It is mainly agricultural; the chief town is Mukachevo.

Ruthenium, a metallic chemical element related to rhodium and palladium; it occurs in small quantity in the ores of platinum, osmium and iridium, and was discovered in 1828 by Osann. Symbol Ru; atomic number 44; atomic weight 101.7. It has little application and is of no commercial importance.

Rutherford, Ernest, first Baron, British physicist, born in New Zealand and educated at Cambridge. Professor of Physics at McGill University (Montreal) and Manchester, he in 1919 succeeded Sir J. J. Thomson as Cavendish professor at Cambridge. He did much to lay the foundations of the study of radioactivity and the conduction of electricity through gases. His greatest work has been in connection with the structure of the atom. Carrying on the work of Thomson, he gave the experimental basis to modern theories of the atom. He brought forward the planetary theory of the atom. He received a Nobel Prize for Chemistry in 1908, the Order of Merit in 1925, and was created Baron Rutherford in 1931. (1871-1937).

Rutherglen, a town of Lanarkshire, 3 m. S.E. of Glasgow, on the Clyde, a suburb; an important metal and chemical manufacturing centre, with shipyards and collieries. Pop. 25,000.

Ruthin, an interesting old town of Denbighshire, Wales, on the Clwyd, 8 m. S.E. of Denbigh, with mineral water manufacture. Pop. 3,000.

Ruthven, a town of a conspiracy entered into by certain Scottish nobles, headed by William, first Earl of Gowrie, to seize the young King James VI., and break down the influence of his favourites, Lennox and Arden. At Ruthven Castle, or Huntingtower, in Perthshire, on August 23, 1592, the king was captured and held for 10 months. Arden was imprisoned, and Lennox fled, to die in France. The conspirators were proclaimed guilty of treason, and Gowrie was executed in 1594.

Ruthwell Cross, a remarkable sandstone cross, 17½ ft. high, found in Ruthwell parish, 9 m. SE. of Dumfries, Scotland; dates back to the 7th Century; bears runic and Latin inscriptions; was broken down in 1842, but found and re-erected in 1892.

Rutland, the smallest county of England, bounded by Lincoln, Northampton, and Leicester; has a pleasant undulating surface, with valleys in the N., and extensive woods; is watered by the Welland; is largely pastoral, and raises fine sheep; dairy produce (especially cheese) and wheat are noted; Oakham is the county town. Area, 152 sq. m. Pop. 17,400.

Rutland, a title in the English peerage, first conferred (as an earldom) on Edward Plantagenet (1373-1415), son of Edmund, duke of York, and later assumed (perhaps without real title) by other members of the house of York. The earldom was conferred again in 1525 on Thomas Manners (d. 1543) and has been held in his family ever since. The most important members of this line have been Thomas himself, a favourite of Henry VIII. from whom he received Belvoir Castle, the family residence, and John the ninth earl (1632-1711) who favoured the 1688 Revolution and was created marquis of Granby and duke of Rutland in 1703 by Queen Anne; and John, the seventh duke, an English statesman, associated with the "Young England" party under Disraeli, subsequently holder of a number of governmental offices. (1812-1906). The present duke, John Henry Montagu Manners, the ninth of the line, succeeded to the title in 1925. (1886-).

Ruwenzori, a mountain range of Central Africa between Lakes Albert and Edward. It has a length of about 65 m. and a width of 30 m. The highest peaks, about 17,000 ft., are Mt. Stanley and Mt. Margherita. The range was discovered by Stanley in 1888.

Ruysdael, Jacob, Dutch landscape painter, born and died at Haarlem. Few particulars of his life are known. His best pictures, to be seen in the galleries of Dresden, Berlin, and Paris, display a fine poetic spirit. (c. 1628-1682).

Ruyter, Michael Adriaanszoon de, Dutch admiral, born at Flushing; from a boy of 11 served in the merchant and naval service; commanded a ship under Van Tromp in the war with England, 1652-1654; was ennobled in 1660 by the king of Denmark for services rendered in the Dano-Swedish war; for two years fought against Turkish pirates in the Mediterranean; commanded the Dutch fleet in the second war against England, and in 1687 struck terror into London by raiding and burning the shipping in the Thames; held his own against England and France in the war of 1672; co-operated with Spain against France; was routed and mortally wounded off the coast of Sicily. (1607-1675).

Ryazan, city of Russia, 116 m. SE. of Moscow, a railway centre with industries of various kinds. Pop. 56,000.

Rybinsk, town in Russia, on the Volga, 48 m. NW. of Yaroslavl; connected by canal with Leningrad; industries embrace boat-building, brewing, and distilling. Pop. 37,000.

Rydal Water, Westmorland, one of the smaller English lakes. It lies immediately SE. of Grasmere, from which it receives the R. Rothay, and is about ½ m. in length and between 1 and 2 m. in circumference. In the centre of the lake is an island with groups of lofty pine trees, and near its western head is the famous "Wishing Gate." It is famous for its associations with Wordsworth and other literary men.

Ryde, watering-place on the NE. coast of the Isle of Wight, 4½ m. SW. of Portsmouth; rises in pretty wooded terraces from the sea; has a fine promenade, park, and pier. Pop. 18,900.

Rye, town and former port in the SE. corner of Sussex, situated on rising ground flanked by two streams, 63 m. SE. from London; is one of the Cinque Ports (q.v.); the recession of the sea has left it now 2 m. inland; has a fine Norman and Early English church. Pop. 4,000.

Rye, the grain, *Secale cereale*, the prevailing cereal of Scandinavia, the Netherlands and Northern Germany. It grows on poor soils unsuited to wheat, and is about 90 per cent. as nutritious. It is the chief grain from which Holland is distilled. It is subject to a disease known as ergot, and when attacked thereby is said to be "spurred."

Rye Grass, the common name of certain grasses of the genus *Lolium*, applied especially to the *Lolium italicum* and *Lolium perenne*, cultivated as fodder. Several weeds are included in the same genus, including the damel (*Lolium temulentum*), the only poisonous British grass, the poison being due to a fungus in the grain.

Rye House Plot, an abortive conspiracy in 1683 to assassinate Charles II. of England and his brother James, Duke of York, planned by Colonel Rumsey, Lieutenant-Colonel Walcott, the "plotter" Ferguson, and other reckless adherents of the Whig party. The conspirators were to conceal themselves at a farmhouse called Rye House, near Hertford, and to waylay the royal party returning from Newmarket. The plot miscarried owing to the king leaving Newmarket early; the chief conspirators were executed.

Rykov, Alexei Ivanovich, Russian politician. Born at Saratov; before the World War was several times imprisoned for revolutionary activities; after the 1917 revolution he was elected to the Central Committee of the Moscow Soviet. In 1918 he was made chairman of the Supreme Economic Council, and in 1924 succeeded Lenin as President of the Council of People's Commissars; was expelled from the Communist Party from 1929 to 1931, after which he became Commissar for Posts and Telegraphs; in 1937 he was sentenced to 10 years' imprisonment as a Trotskyist. (1881-).

Rylands, John, English textile manufacturer, factor and philanthropist, born at St. Helens; inherited and improved a large business begun at St. Helens and removed to Wigan, with branches elsewhere. His widow founded as his memorial the John Rylands Library, Manchester. (1801-1888).

of the most prominent men of his day, including the monument to Sir Isaac Newton in Westminster Abbey, statue of Marlborough, busts of Walpole, Bellingbrooke, and Pope. (1694-1770).

Ryswick, Peace of, signed in Ryswick, 3 m. S. of The Hague, by England, Holland, Germany, and Spain on the one hand and France on the other, terminating the sanguinary struggle which had begun in 1688.

Ryton, urban district of Durham, England, on the R. Tyne, 3 m. from Gateshead. There are collieries in the district. Pop. 14,300.



RYE

S

Saadi. See *Sadi*.

Saale, river of Germany, rises in the Fichtelgebirge, near Zell, in Upper Bavaria, flows N. for 226 m. and joins the Elbe at Barby; Jena, Halle and Naumburg stand on its banks.

Saar, or Saarland, state of Germany, adjoining the French frontier and lying N. of Lorraine. It is watered by the R. Saar, has an area of 738 sq. m., and is an important source of coal and iron. Saarbrücken is the chief town. Chiefly belonging to Prussia prior to 1920, by the Peace Treaty the Saar was placed under the rule of the League of Nations for 15 years, and in 1935, as the result of a plebiscite, was returned to Germany. Pop. 812,000.

Saarbrücken, town of Germany, capital of the Saar state; it stands on the R. Saar, 50 m. ENE. of Metz, and is the centre of an important colliery district which supports many local industries, including the manufacture of glass and iron goods, chemicals and textiles. Pop. 125,000.

Saarlouis, a town in the Rhine province, on the R. Saar, 31 m. SE. of Trier. There are manufactures of leather, pottery and glass, and in the district are coal-mines. Pop. 16,300.

Sabæans, a trading people in ancient times, inhabiting SE. Arabia, the modern regions of Yemen. Hadhramaut and Asir, bordering the Red Sea. They early became supreme in S. Arabia, and their kingdom—of which the famous Queen of Sheba, or Saba, who came to visit Solomon, is thought to have been queen—was rich and powerful. In the 1st Century B.C. they suffered from incursions by the Romans and local tribes; in the 6th Century A.D. the Abyssinians, and later the Persians, conquered the country. They have left numerous inscriptions in a Semitic dialect and also the great stone dam at Marib (the ancient Saba, their capital), a masterpiece of engineering.

Sabatini, *Raffaele*, English novelist and dramatist, born at Jesi, in Central Italy, of an Italian father and an English mother, author of many popular novels, including *Scaramouche*, *Anthony Wilding*, *The Black Swan*, *Captain Flood*, etc., also of a number of plays and biographies of Cesare Borgia and Torquemada. (1875–).

Sabbath, the seventh day of the week, observed by the Jews as a day of abstinence from all work and regarded as sacred to the Lord, in commemoration of His rest from the work of creation. In the Christian church observance of the Sabbath has been transferred to the first day of the week, in commemoration of Christ's resurrection.

Sabellianism, the doctrine of Sabellus (flourished c. 230), a Christian theologian of Libya, who maintained that there was in the Godhead only one person, in three functions or manifestations. His doctrine, in various modifications, was prominent until the 4th Century.

Sabine, a river of the U.S.A., which, rising in the NE. of Texas, flows SE. and S., forming for 250 m. the boundary between Louisiana and Texas. It passes through Sabine Lake and enters the Gulf of Mexico after a course of 500 m.

Sabines, an ancient tribe of Italy, near Rome, neighbours of the Latins, a colony of whom is said to have settled on the

Quirinal and contributed towards the formation of the Roman people, especially the patrician class.

Sable (*Mustela sibirica*), a small carnivorous mammal of the weasel tribe, about 18 in. in length, found in Northern Asia, and hunted for its fur; it is brown in colour with yellowish-grey markings at the neck. Allied species are found in Japan and N. America.



SABLE

Sable, in heraldry, the colour or "tincture" black. In engraving it is represented by intersecting perpendicular and horizontal lines.

Sabotage, a name given to methods of obstruction in industrial establishments on the part of workmen who damage machinery, slow down the rate of operations, or otherwise interfere with normal production as a protest against economic conditions or as a method of propaganda; it is sometimes extended to any attempt to interfere with the normal working of an institution or system of any kind directed to similar ends.

Sabre, a sword with a broad, heavy blade, curved towards the point (in the typical weapon), and adapted for both cutting and thrusting. Of oriental origin, it was introduced into Europe by the Turks and Hungarians, and by the Napoleonic period had become the favourite cavalry weapon. The British cavalry sabre is 32 in. in length and has a straight blade, sharpened on one edge. In sabre-fencing a lighter weapon is used, introduced from Italy: actually it is blunt and unpointed, but for the purpose of scoring is assumed to be sharp. The sabre is employed for duelling on the Continent.

Saccharin, a chemical sweetening substance (ortho-benzosulphinide), prepared from toluene, a coal-tar product. It is 700 times as sweet as ordinary sugar when pure, and is used by diabetics, who cannot take sugar.

Sacco and Vanzetti, two Italian communists who were executed in 1927 for a double murder committed in Massachusetts in 1921. They were arrested at a time when there was a stern campaign against alien revolutionaries, and their case became a political question, as it was alleged that their Radical opinions were being used against them. Legal delays postponed the execution for six years, and when it eventually took place there were widespread demonstrations and riots.

Sacheverel, *Henry*, an English clergyman who became notorious in the reign of Queen Anne for his embittered attack (contained in two sermons in 1709) on the Revolution Settlement and the Act of Toleration. The impolitic impeachment of Sacheverel by the unpopular Whig Government roused intense popular feeling in his favour. He was suspended from preaching for three years, at the expiry of which time the Tories, then in power, received him with ostentatious marks of favour. (1674–1724).

Sachs, *Hans*, German poet, born at Nuremberg; by trade a shoe-maker he became a Meistersinger and an ardent

champion of Luther, whose cause he assisted with his pen. He wrote well over 6,000 compositions—songs, lyrics, tales, fables and lively dramatic pieces. (1494-1576).

Sack, an old name for various kinds of, dry wines, especially sherry; a sack-posset was a drink compounded of milk, sack and spices.

Sackbut, a primitive form of trombone, developed originally out of the Roman buccina, or long, straight trumpet, by the addition of a slide by which the pitch could be varied and additional fundamental notes obtained. The Biblical "sackbut" was a stringed instrument, and the term there is a mis-translation.

SACKBUT

Sackville, George, first Viscount, British soldier and minister. As Lord George Sackville, he distinguished himself at Fontenoy, 1745, and in subsequent campaigns, but was dismissed the service for refusing to move up the British cavalry at Minden, 1758, on the orders of Prince Ferdinand. As colonial secretary under Lord North (1775) he was responsible for conducting the war with the American colonists. (1716-1785).

Sackville, Thomas, Earl of Dorset, born at Buckhurst, Sussex; entered Parliament in 1558 and for years was engaged in important diplomatic work, but is best known as the author, with Thomas Norton, of *Gorboduc*, the first real English tragedy; he also contributed to a collection of legends called the *Mirror for Magistrates*. (1536-1608).

Sacramento, river of the U.S.A., the largest in California. It rises in the N.E., in the Sierra Nevada, follows a SW. course, draining the central valley of California, and falls into San Francisco Bay, after a course of 400 m.

Sacramento, city of the U.S.A., the capital of California, situated on the Sacramento R., 90 m. N.E. of San Francisco; the chief industry is fruit-canning, and there are factories for meat-packing, pickling, box-making and rice-cleaning. Pop. 93,800.

Sacraments, ceremonial observances in the Christian Church the celebration of which was enjoined by Christ upon his followers, namely, the ceremonies of baptism and the Eucharist. The Roman and Eastern Churches observe five additional Sacraments: confirmation, penance, holy order, matrimony and extreme unction.

Sacred Heart, a name applied by the Roman Catholics to the Heart of Jesus Christ considered as a symbol of his love for humanity. Devotion to the Sacred Heart was much advanced by the 17th-Century French saint, Margaret Mary Alacoque, and a feast in its honour, on the second Friday after Trinity Sunday, was established throughout the Church in 1856, its liturgical rank being raised to the first class in 1928. It is one of the most popular of Catholic devotions.

Sacred Wars. See Amphictyonic Council.

Sacrilege, in criminal law, a felony committed in a place of divine worship (including a vestry), accompanied by breaking into or out of such a place. The punishment can be as much as penal servitude for life, and even attempted sacrilege may be punished with seven years' imprisonment.

Sacristan, an officer of the church in whose care are the sacred vessels and church furnishings, etc. In English cathedrals the sacristan is a minor canon.

Saddle, a seat, usually of leather, placed on the back of a horse or other animal for the use of its rider; the name is applied by extension to the rider's seat on a bicycle or motor-cycle. The saddle was not in use until about the 8th Century, the horse's back being previously covered, if at all, merely with a cloth. Saddles vary in shape according to their purpose—the lady's "side-saddle," enables the rider to keep both legs on the same side of her mount.

Sadducees, a sect of the Jews prominent in the time of Christ by their opposition to the Pharisees. They acknowledged the obligation only of the written law, and refused to accept tradition at the hands of the Scribes. They denied the immortality of the soul and the existence of angels and spirits. At bottom a purely political party, they disappeared from Jewish history with the fall of the Jewish state in A.D. 70.

Sade, Donatien Alphonse François, Comte de, French novelist, usually known as the "Marquis" de Sade. He was sentenced to death for an unnatural offence in 1772, and having escaped, was recaptured and imprisoned in the Bastille, where he wrote a number of licentious romances; he died a lunatic. The term "sadism," used in psychology for a form of sexual perversion characterized by delight in cruelty is derived from his name. (1740-1814).

Sadi, a celebrated Persian poet, born in Shiraz. He spent many years in travel, making the pilgrimage to Mecca no fewer than 16 times; captured by Crusaders, he was ransomed by a merchant of Aleppo, and afterwards retired to a hermitage near Shiraz. The most celebrated of his works are the *Bustan*, or "Fruit-garden," and the *Gulistan* or "Rose-garden," being collections of moral tales in verse, full of philosophical reflections and maxims. (c. 1184-1293).

Sadler's Wells, a London theatre, Avenue, Islington, where in 1683 a surveyor named Sadler discovered chalybeate wells. The site had been used from Elizabethan times for entertainments. It was last rebuilt in 1931 and has since been run jointly with the Old Vic (especially by the late Lillian Baylis), latterly for the production of Opera and Ballet. It has a flourishing school of Ballet, and is the centre of a powerful new movement in English ballet.

Sadowa (Czech, Hradec Králové), a village of Czechoslovakia, near Königsgrätz. Here was fought in 1866 the decisive battle of Sadowa (known in Germany as the Battle of Königsgrätz) between the Prussians and Austrians, the victory resting with the Prussians.

Safeguarding. See Protection.

Safety Lamp, a lamp used by coal-miners and specially constructed so as to minimise the danger of igniting the explosive mixture of natural gases known as "fire-damp." To-day electric safety lamps are extensively used. See also Davy Lamp.

Safety Valve, a contrivance for avoiding the risk of explosion (generally in a steam boiler), operating upon the principle of opposing the pressure inside the boiler by a force that will yield before it reaches danger-point and allow the steam to escape. The simplest type is the "pop" valve, consisting of a metal plate or other device pressed down upon an aperture in the boiler by a weight or spring, and steam-tight at normal pressures. Upon a rise of steam pressure above a pre-determined limit, the valve opens, remaining open until the pressure has been sufficiently reduced and then being closed again by the control.

Saffron (*Orocroc sativus*), a plant of the iris family, with purple flowers, a native of S. Europe and W. Asia. The orange-yellow stigmas yield the dye and flavouring known as saffron. For Meadow Saffron, see *Colchicum*.

Saga, the name given to a collection of ancient Scandinavian myths and legends worked into a continuous narrative and forming a sort of prose epic. Sagas originated in the recital of tales by the skald, or poet, during convivial banquets, especially in ancient Iceland, and for long were handed down by word of mouth. They usually centre on some mythological or historical hero; among the greatest are the Njala Saga, and the Volsunga saga.

Sage (*Salvia officinalis*), a dwarf shrub of the Mint family, with hoary leaves and blue flowers. It has long been known as a culinary herb, and formerly was used for making the infusion known as "sage tea."

Saghalien, or Sakhalin, a large island of the N. Pacific, situated close to the E. coast of Siberia, from which it is separated by the Gulf of Tartary; about 600 m. in length from N. to S., and between 16 m. to 105 m. in breadth, with an area of 29,000 sq. m. It is divided between Russia and Japan, the S. or Japanese portion (known as Karafuto), covering about 14,000 sq. m. Mountainous and forest-clad in the interior and rich in wild life, it produces quantities of larch and fir, but a cold, damp climate prevents successful agriculture. There are valuable coal-mines, and iron, gold, naphtha and amber are found; the fishing and whaling industries are important. Pop. Karafuto: 332,000; Russian part: 12,000.

Saginaw, city in Michigan, U.S.A., about 15 m. from Lake Huron, on the river of the same name; mainly a distributing centre for commerce; there are railway-wagon works. Pop. 80,700.

Sagittarius, the ninth sign of the zodiac, which the sun enters on or about November 20. The constellation of Sagittarius, which lies in the Milky Way, is remarkable for its great number of star clusters, nebulae, cepheid variables and other phenomena, indicating a maximum extension of the stellar galactic system in this direction.

Sago, a popular article of food, especially used for making milk puddings, prepared from the pith of the sago palm (*Metrozylon rumphii* and *M. keel*), native of the East Indies. After having been extracted, the pith is dried and granulated through sieves; it consists chiefly of starch.

Sagunto, town in the province of Murviedro, Valencia, Spain, also called Murviedro. As the ancient Saguntum, it played a large part in the wars between Rome and Carthage. Pop. 8,900.

Sahara, desert of N. Africa, stretching from the Atlantic to the valley of the Nile, a distance of 3,000 m. Limited on the N. by the Atlas Mts., and on the S. by the valleys of the Senegal and Niger Rs., it consists of undulating sand-dunes, elevated plateaux, and hill and mountain ranges furrowed by dried-up watercourses and dotted with fertile oases, which yield date-palms, oranges, lemons, figs, etc. The most sterile tract is in the W., between Cape Blanco and Fezzan. Rain falls over the greater part at intervals of from two to five years. Regular caravan routes connect Timbuktu and the central Sudan with the Niger and coastlands. The greater part lies within the sphere of French influence.



SAFFRON

Saharanpur, a town of India, in the N. of Delhi, in a district formerly malarial, but now drained and healthy. It is an important railway junction, with repair-shops, and has a celebrated wood-carving industry. Pop. 78,700.

Saigon, capital of French Cochinchina, on the Saigon R., one of the delta streams of the Mekhong, 34 m. from the China Sea. It has a government house, law courts, cathedral, and botanical and zoological gardens. It is the chief French military base in the Far East, and has a modern harbour, with a large rice trade. Pop. 109,500.

Sails and Sailing. The sails of a ship are supported by the masts, spars, or stays of the vessel, and take their names from the mast, yard or stay on which they are stretched or set, as the mainsail, foresail, jib, mizen, etc. A sail set upon a gaff, boom, or stay is called a fore-and-aft sail. A square sail is one extended by a yard hung or slung by the middle and balanced. Sailing is the art of navigating a vessel by means of the propulsive force of the wind. Also, the navigating of any vessel at sea, whether mechanically propelled or wind-driven.

Sainfoin (*Onobrychis sativa*), a perennial, tough-rooted plant of the leguminous family; the pink flowers are borne in clusters and somewhat resemble miniature peablossoms; it is cultivated for fodder.

Saint, one whose life has attained a state of outstanding holiness; in a more restricted sense, one who has been canonized by the Christian church. See Canonization.



SAINFON

St. Abb's Head, a promontory in Berwickshire, Scotland, 4 m. NW. of Eyemouth. It is 310 ft. high and is surmounted by a lighthouse.

St. Albans, city of Hertfordshire, England, on an eminence by the Ver, a small stream which separates it from the site of the ancient Roman city of Verulamium. It is notable for its splendid cathedral, with a Norman tower, founded in 1077; industries include brewing, printing and straw-plaiting; two famous battles (1455 and 1461) were fought here during the Wars of the Roses. Pop. 28,600.

St. Aloysius. See Gonzaga, Luigi.

St. Andrews, city of Fifeshire, Scotland, on St. Andrews Bay, 42 m. NE. of Edinburgh, associated with many stirring events in Scottish history; it has numerous interesting ruins, including those of a 12th Century priory, a cathedral and a castle or bishops' palace, built in the 13th Century; the celebrated university dates from 1411. The town is a healthy and popular holiday resort, and is especially famed as the "home of golf," where the Royal and Ancient Club, with its splendid links, is located. Pop. 8,900.

St. Anne's-on-Sea, seaside resort of Lancashire, England, 4 m. S. of Blackpool. Since 1922 it has been incorporated with Lytham, in the borough of Lytham St. Anne's. It has remains of Roman baths.

St. Asaph, city of Flintshire, N. Wales, 8 m. SE. of Rhyl. Its cathedral, one of the smallest in the kingdom, dates mainly from the 16th Century, but has

been much restored; the bishop became in 1920 the first archbishop of the disestablished church in Wales. Pop. 1,800.

St. Austell, town in Cornwall, England, on St. Austell Bay, 8 m. S. of Bodmin, with a china-clay industry. Pop. 8,300.

St. Bernard, Passes of, two mountain passes in the Alps: (1) the Great St. Bernard, in the Pennine Alps, leading from Martigny to Aosta, is 8,190 ft. high; near the summit stands a famous hospice of Augustinian monks, who, with the aid of the celebrated St. Bernard dogs, have done noble service in acting as guides and rescuing travellers from the snow; (2) the Little St. Bernard (7,180 ft.) in the Graian Alps, crosses the mountains which separate the valley of Aosta from Bourg St. Maurice, in Savoy. Hannibal is supposed to have crossed the Alps by this pass. There are now motor roads over both passes.

St. Bernard Dog, a handsome dog foundland and famous

for its intelligence in guiding and rescuing travellers lost in the snow of the Great St. Bernard Pass, Switzerland. The true St. Bernard is large and massive in build; muzzle, short; ears, medium in size and lying close to the cheeks; eyes, small and deep-set; nose, large and black. It should stand about 34 in. high at the shoulder.



ST. BERNARD DOG

St. Catharine's, city and capital of Ontario, Canada. It is on the Welland Canal, 13 m. NW. of Niagara, and has engineering shops and fruit-growing, paper-making and ship-building industries. Pop. 24,800.

St. Christopher's, or St. Kitts. See Christopher's, St.

St. Cloud, town of France, near the Seine, 10 m. W. of Paris, the former site of a fine chateau, built by Louis XIV.'s brother, the Duke of Orleans, and for long the favourite residence of Napoleon. In the park is the factory where the porcelain, known as St. Cloud, has been made since the 17th Century; the town is a popular pleasure resort. Pop. 15,600.

St. Croix, or Santa Cruz, island of the West Indies; it belongs to the U.S.A., having been purchased from Denmark, with others of the group, in 1817. Farming, cattle-raising, and the production of sugar and tomatoes occupy the people. There are two small towns, Christiansted (the capital) and Frederiksted. Area, 82 sq. m. Pop. 11,400.

St. Cyr, L'école, town of France, 3 m. W. of Versailles, where Louis XIV., at the request of Madame de Maintenon, founded an institution for the education of poor girls of noble birth, which was suppressed at the time of the Revolution, and afterwards converted into a military school. Pop. 5,000.

St. Davids, town of Pembrokeshire, Wales, on the R. Alun, 1 m. N. of St. Bride's Bay; its small but beautiful cathedral, rebuilt after 1180, was at one time a famous resort of pilgrims. On the other side of the Alun stand the ruins of Bishop Gower's palace (c. 1249). Pop. 1,800.

St. David's Head, in headland in Pembrokeshire, Wales, to the N. of Whitesands Bay, near St. David.

St. Denis, town of France, 4 m. N. of Paris, of which it is a suburb; noted for its old abbey church, founded by Dagobert I. in the 7th Century, in

which most of the French monarchs were buried. The tombs and the church itself are masterpieces of Gothic art. The town manufactures chemicals, printed calicoes, machinery and soap. Pop. 78,400.

St. Denis, capital of the French island of Réunion, in the Indian Ocean, on the NW. coast. It stands at the mouth of the St. Denis R. Pop. 24,800.

St. Denys, or Denis, of France, known as the Apostle of the Gauls, among whom he introduced the Gospel about 260. He became the first bishop of Paris, but refusing to give up his faith, was executed by the Roman governor in 272. Festival, Oct. 9.

St. Dunstan's, a British charitable organization founded in 1915 by Sir Arthur Pearson for caring for men of the fighting forces blinded in the World War, or in any subsequent wars. The inmates are taught useful trades, by which they can afterwards support themselves, and there is also provision for pensions and allowances, sickness benefits, etc.

Sainte-Beuve, Charles Augustin, French literary critic, born at Boulogne-sur-Mer; studied medicine and wrote for the *Globe* newspaper the articles *Premiers Lunds*; in 1827 came under the influence of Victor Hugo, and began to write indifferent poetry; in 1840 became keeper of the Mazarin Library, and in 1849 began his famous series of weekly literary articles *Causeries de Lundi*, published in various journals; in 1845 he was elected to the Academy; for variety of interest, subtlety, and psychological insight, he ranks among the greatest constructive critics. (1804-1869).

St. Elias, Mount, an isolated volcanic mountain in Alaska, situated close to the Pacific Ocean and upon the frontier of Canada. It is 18,010 ft. in height; on the S. is the vast Malaspina glacier.

St. Elmo's Fire, a popular name for appearances which sometimes play about the masts of ships, steeples, etc., accompanied at times with a hissing noise; commoner in southern climates and known also by other names, e.g., Fire of St. Clara, Corporeant, etc.

St. Etienne, town of France, capital on the R. Furens, 36 m. SW. of Lyons. The "Birmingham" of France, it is the centre of a rich coal district, and produces every kind of iron and steel product, including armaments; the manufacture of silks and ribbons is also an important industry; there is a school of mines. Pop. 199,000.

St. Gall, or St. Gallen, a canton of NE. Switzerland, on the Austrian frontier. It entirely surrounds the canton of Appenzell, and on the NE. borders Lake Constance; it has splendid lake and mountain scenery and mineral springs (especially at Ragatz, a popular resort). The manufacture and embroidery of cottons and other textiles are important industries. It joined the Swiss confederation in 1803. Capital is St. Gall. Area, 771 sq. m. Pop. 286,000.

St. Gall, town of Switzerland, the capital of the canton of St. Gall, on the Steinach, 53 m. E. of Zurich. It has a magnificent medieval cathedral and an old Benedictine monastery now used for government purposes, but still contains its famous collection of MSS. Embroidering textiles is the chief industry. Pop. 64,000.

Saint-Gaudens, Augustus, American sculptor, born in Dublin, Ireland (Ire). After studying in Paris and Italy, he made his home in New York, and by his statue of Admiral Farragut (in Madison Square) became world-famous in 1886. His

many other fine works include a rugged statue of Abraham Lincoln, the beautiful Adams memorial at Rock Creek, and an equestrian bronze of General Sherman. (1848-1907).

St. George's Channel, the ocean channel separating Wales from Ireland. It is about 100 m. in length and 55-80 m. in width.

St. Germain-en-Laye, town of France, 13 m. W. of Paris. It has a fine terrace overlooking the valley of the Seine, and a splendid forest over 20 m. in circumference. Pop. 22,000. Here in Sept., 1919, was signed the Treaty of St. Germain-en-Laye, terminating the state of war between Austria and the Allies and establishing the independence of Hungary, Czechoslovakia and Yugoslavia, former Austrian possessions.

St. Gotthard, a pass in the Lepontine Alps between Switzerland and Italy. There is a famous zigzag carriage-road over the pass, while the electric railway from Lucerne to Milan passes through a series of spiral tunnels below it, the main tunnel being 9½ m. long and reaching an altitude of 3,786 ft.

St. Helena, island of the S. Atlantic, lying 1,500 m. NW. of Walvis Bay (on the W. coast of Africa) and constituting a British crown colony; the vegetation is largely exotic, but crops are few, apart from potatoes and flax; Jamestown, a port, is the only settlement, and near by is Longwood House, home of the exiled Napoleon Bonaparte from 1815 till his death in 1821; the island has since been repeatedly used as a place of banishment, notably for refractory Zulu chiefs and oriental potentates, while Boer prisoners were interned there in 1899-1902. Ascension I., 700 m. NW., is a dependency. Pop. 4,300.

St. Helens, town of Lancashire, England, of modern growth, 21 m. W. by S. of Manchester. It has an enormous glass industry, as well as copper-smelting works and foundries, and also manufactures chemicals and pottery. Pop. 106,800.

St. Helier, seaport, holiday resort, Channel Is., on St. Aubin's Bay. The old court-house is the meeting-place of the States of Jersey. Fishing and ship-building are important industries. Pop. 26,000.

St. Ives, town of Huntingdonshire, England, on the Great Ouse, 5 m. E. of Huntingdon, noted for its agricultural fair. Pop. 2,700.

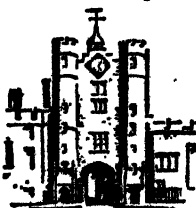
St. Ives, a quaint old fishing town and holiday resort on St. Ives Bay, on the N. coast of Cornwall, England, 8 m. NE. of Penzance. It is a favourite haunt of artists, being remarkable for its tortuous streets and huddled fishermen's cottages, and for its magnificent open bay and wide sandy beaches. Pop. 6,700.

St. James's Palace, an old, brick palace

in Pall Mall, London, built by Henry VIII. It was a royal residence from 1897 to 1837, but is now only used for occasional State functions, though the British Court is still officially the "Court of St. James's."

Saint-Jean-de-Luz, seaport and fa-

vourite holiday resort of France, at the mouth of the Nivelle, 14 m. SW. of Bayonne; it has an old Basque church, a château and



ST. JAMES'S PALACE

a hydrotherapeutic establishment, and there are golf and sea-bathing. Pop. 8,000.

St. John, city of New Brunswick, Canada, on the estuary of the St. John R., 277 m. NW. of Halifax, incorporated with the adjacent towns of Portland and Carleton. It has an excellent ice-free harbour. Shipbuilding, fishing, and the export of timber, fish and agricultural produce are the chief industries while textiles and engineering products are made. Pop. 47,500.

St. John of Jerusalem, British order of chivalry, being a revival, in 1837, of the Order of the Hospital of St. John of Jerusalem, founded in the 11th Century, during the First Crusade. The modern order was incorporated by chs in 1888, the British sovereign being its supreme head, while the heir to the throne is its grand prior. It is concerned with Red Cross hospital work, especially with the St. Jo Ambulance Association.

St. John's, seaport and capital of Newfoundland, situated on a splendid harbour on the E. coast, the centre of the fishing industry. It has oil-refineries, foundries, tanneries and rope-works. Pop. 42,000.

St. John's Wort, a bright-yellow blossoming plant

which, with its glittering stamens, is very well known by its generic name of *Hypericum*; but, as the floral symbol of superstition, its old English appellation of St. John's wort is most appropriate. In Scotland it was long carried about as a charm against witchcraft.



St. Kilda, a lonely island

in the Atlantic, 60 m. W. of Harris, 3 m. long by 2 m. broad, with a precipitous coast. It was inhabited for a thousand years by settlers who lived by fishing and fowling but was abandoned in 1930 on account of its inaccessibility and the exhaustion of the soil.

St. Kitts, or St. Christopher's. See Christopher's, St.

St. Lawrence, a great river of N. America which issues from Lake Ontario (previous to which, as the St. Louis, it has passed through Lakes Superior, Huron, Erie and Ontario) and flowing NE., discharges into the Gulf of St. Lawrence, forming a broad estuary. It is 750 m. long and from 1 to 4 m. broad. It is navigable for largesteamers as far as Montreal; the Ottawa is its chief tributary; in winter, ice prohibits navigation.

St. Leonards-on-Sea, parish of Sussex, England, forming part of the borough of Hastings. It is a popular seaside resort, with a pier, promenade, bathing-pool, etc.

St. Louis, capital of Missouri, U.S.A., (here spanned by two fine bridges), 18 m. below its confluence with the Missouri; a handsomely built city, it has spacious parks, two universities, and public libraries; it has a huge tobacco industry, and also carries on meat-packing, smelting and printing and the manufacture of motor-cars, shoes, drugs and hardware. Pop. 882,000.

St. Lucia, a rocky, forest-clothed island in the British West Indies; the largest of the Windward group. It exports sugar, cocoa, logwood and spices. The capital is Castries, a port on the NW. coast. Area, 233 sq. m. Pop. 66,200.

St. Malo, seaport of France, on the Brittany coast (dept. of Ille-et-Vilaine), at the mouth of the Rance; the old town is built on an islet connected with the mainland by a causeway 215 yds. long. There is a good harbour, and a considerable amount of shipping is done, especially in fruit, potatoes and dairy-produce; there is a regular passenger service with Southampton. Pop. 13,000.

St. Mary's, the largest island of the Scilly Is., 30 m. W. of Cornwall. Hugh Town, on the W. coast, is the capital of the island and the group. Star Castle is an Elizabethan fortress. There is an important meteorological station. Pop. 1,400.

St. Mary's, river of Canada, an outflow from Lake Superior to Lake Huron, it forms part of the boundary between Ontario and Michigan, U.S.A., and is about 45 m. long. At Sault Ste. Marie, on the U.S.A. side, is the St. Mary's Falls Ship Canal, the largest of its kind in existence, and there is another large canal on the Canadian side.

St. Michael and St. George, the Most Distinguished Order of, instituted 1818 and, later, reserved for those who have served the Crown in, or on behalf of, the overseas parts of the Empire; Grand Master, the Earl of Athlone; ribbon, saxon blue with crimson centre; motto, "Aspiculum melioris sevi"; G.C.M.G., Knight Grand Cross; K.C.M.G., Knight Commander; C.M.G., Companion. The Chancery of the Order is in the Colonial Office.



ORDER OF
ST. MICHAEL
AND ST. GEORGE

St. Michael's Mount. See Mount's Bay.

St. Mihiel, town of France, on the R. Meuse, 23 m. S. by E. of Verdun. It has a famous Benedictine Abbey, founded in 709, and a splendid Gothic church. In the World War, in Sept., 1918, American and French troops won a celebrated victory over the Germans at the St. Mihiel salient. Pop. 4,500.

St. Moritz, a celebrated Alpine resort and watering-place in the Upper Engadine, Switzerland, 27 m. S.E. of Coire, situated at an altitude of over 6,000 ft. It has chalybeate springs and winter sport facilities, including the famous Cresta Run. Pop. 2,600.

St. Nazaire, seaport of France, on the Loire, 40 m. W. of Nantes; it has a modern harbour, with graving and floating docks, and has a large naval and mercantile shipbuilding industry, as well as foundries, sawmills and steelworks. Pop. 40,000.

St. Omer, town of France, on the R. Aa, 26 m. S.E. of Calais; has a fine old Gothic cathedral, a ruined Benedictine abbey church and a Catholic college. From Oct., 1914, until March, 1916, it was the British G.H.Q. during the World War. Pop. 18,900.

St. Pancras, a parish and a Parliamentary borough of NW. London. It contains University College, the North London Hospital and the railway termini St. Pancras, King's Cross and Euston. Pop. 198,100.

St. Paul, capital of Minnesota, U.S.A., on the Mississippi, opposite Minneapolis, with which it is closely linked. The state capitol is a magnificent building, and its public library contains celebrated works of art; there are two universities, and a notable cathedral. It is a leading trading

centre, particularly in horses, cattle and foodstuffs, and manufactures motor-cars, rolling-stock, shoes, clothing, etc. There is a large meat-packing industry. Pop. 271,800.

St. Paul's, cathedral church of the city of London, England, on the summit of Ludgate Hill. A Saxon church stood on the site till destroyed by fire in 1086, and a Norman cathedral subsequently erected perished in the Great Fire of 1666. The present building, designed by Sir Christopher Wren, was finished in 1710. Classic in design, it cost nearly £1,000,000, and is noted for its massive dome, surmounted by a cross 365 ft. above ground level; extensive repair work was completed in 1930.

St. Paul's School, an English public school for boys, founded by John Colet, Dean of St. Paul's Cathedral, at the beginning of the 16th Century, in the cathedral precincts; now at Hammersmith, W. London.

St. Peter Port, seaport, holiday resort and capital of Guernsey, Channel Is. It has daily steamer services with England and France. Trade is chiefly in flowers, fruit and tomatoes. The former residence of Victor Hugo is now a museum. Pop. 16,200.

St. Peter's, cathedral of Rome, the focal point of Roman Catholicism. The foundations were laid in 1452 by Pope Nicholas V., on the site of a medieval church built by Constantine, and the building was erected by Bramante, Sangallo and many other architects in succession. Michelangelo was responsible for the dome, and Bernini completed the building about 1660 and added the colonnades.

St. Petersburg, former name for U.S.S.R. now called Leningrad (q.v.).

Saint-Pierre, Bernardin de, French novelist, born at Havre, an engineer by profession. He became in 1768 a government official in Mauritius and wrote a celebrated journal of the voyage thither (1773); but his chief work is the sentimental novel *Paul and Virginia*, which had a huge success. (1737-1814).

St. Quentin, town of France, on the Somme, 95 m. N.E. of Paris; manufactures all kinds of cotton and woollen goods, machinery and paper; has a fine old Gothic church and town hall. Here the French were defeated by the Spaniards in 1557, and by the Germans in 1871. Almost throughout the World War the town was held by the Germans, who in March, 1918, severely defeated the British; in the following October the Allies' offensive here was victorious. Pop. 49,000.

Saint-Saëns, Charles Camille, French composer, born in Paris; for 16 years organist of the Madeleine; composer of a number of operas—indifferently successful, with the notable exception of *Samson and Delilah* (1877)—several oratorios and cantatas, such as the *Christmas Oratorio*, *The Wedding of Prometheus*, *The Deluge*, and orchestral and chamber music. (1835-1921).

Saintsbury, George Edward Barnard, English man of letters, born at Southampton; professor of rhetoric at Edinburgh from 1895 to 1915. His works are concerned with the criticism and history of both English and French literature, and include *The English Novel*, *A History of Criticism*, and *A History of the French Novel*. (1845-1933).

Saint-Simon, Claude Henri, Comte de, French socialist, born in Paris, a descendant of the Duc de Saint Simon, memoir writer, fought for the colonists in the American War of Independence, but during the French Revolution was

imprisoned; of his Socialistic writings the chief is *The New Christianity*, 1825. His doctrine, in essence, was a reconstruction of society by the abolition of the hereditary principle, and the vesting of the instruments of production in the state for the welfare of all its members. (1760-1835).

Saint-Simon, Louis de Rouvroy, Duc de, French courtier and diplomatist in the reign of Louis XIV.; fought in the Netherlands and attached himself to the Duke of Orleans, afterwards Regent. His life was spent at Court, largely in quarrels over social precedence; and in his immortal *Memoirs* he has left a valuable record of the times, depicting with remarkable insight the manners of the Court and the characters of the courtiers. (1675-1755).

St. Stephen's, a name given to the Parliament, derived from an old chapel in the former building.

St. Thomas, volcanic island in the Gulf of Guinea, belonging to Portugal, lying 166 m. from the Gabon coast. The chief town is St. Thomas, or São Tomé, on the N.E. coast; cocoa, coffee, coconuts and cinchona are produced. Area 400 sq. m. Pop. 51,000.

St. Thomas, island of the West Indies, one of the Virgin Is., 37 m. E. of Porto Rico; the productions are unimportant, but the capital, St. Thomas, on the S. coast, is an important coaling-station; formerly Danish, the island was purchased by the U.S.A. in 1817. Pop. 9,000.

St. Vincent, one of the Windward Is., in the British West Indies, lying 105 m. W. of Barbados; mountainous and volcanic, with a warm but healthy climate. It exports copra, arrowroot, molasses, Sea I. cotton and copra. The chief town is Kingstown, a port on the SW. coast. Mt. Soufrière erupted disastrously in 1902. Area 150 sq. m. Pop. 48,900 (2,000 whites).

St. Vincent, Cape, a lofty and rugged headland in the extreme SW. of Portugal, off which have been fought several naval battles, the most memorable being the great victory of Jervis and Nelson over the Franco-Spanish fleet, Feb. 14, 1797.

St. Vincent, John Jervis, Earl of, in Staffordshire; ran away to sea when a boy, and by conspicuous gallantry at Quebec in 1759, and otherwise, rose rapidly in the service; commanded the naval attack upon the French West Indies (1793), and four years later, with Nelson, defeated the Franco-Spanish fleet off Cape St. Vincent; during 1801-1803 was a successful First Lord of the Admiralty. (1735-1823).

St. Vitus's Dance. See Chorea.

Sakai, seaport of Japan, on the island of S. of Osaka. Cotton and steel goods are manufactured. Pop. 141,800.

Saké, a kind of strong beer made from rice, the national beverage of Japan; yellow in colour, and tasting like sherry, it is drunk hot as meals.

Saki, the common name of several species of S. American monkeys of the genus *Pithecia*. They have long, non-prehensile tails, well-developed thumbs, and a thick coat, with a crown of hair on the head; they are found in the forests of the Amazon.

Sakyamuni, the name given to the Buddha, who belonged to the tribe of the Sakyes in Northern India.

Salaam, an Oriental term of salutation, meaning "Peace," especially used by Mohammedans.

Saladin, sultan of Egypt and Syria, leader of the Saracens in the third crusade; of Kurdish origin, he fought under Nureddin, and rose to be vizier of Egypt, and ultimately sultan in 1176; captured Damascus and Aleppo, and entering the Holy Land defeated the Christians at Tiberias, thereafter taking Jerusalem and laying siege to Tyre; finding in Richard of England a formidable foe, he concluded a truce in 1192. (1138-1193).

Salado Rio (Salt River), a river of the Argentine Republic. It rises in the Andes and flows SE. through the Gran Chaco, joining the Paraná R. at Paraná, after a course of 1,000 m.

Salamanca, city of Spain, on a Roman bridge, 172 m. by rail NW. of M. long famous for its university, it has fine old cathedral, colleges, and other buildings; it is an important railway junction and manufactures leather, pottery and textiles; here Wellington won a great victory over the French on July 22, 1812, and in 1938, in the Civil War, it was for a time the headquarters of the rebels. Pop. 54,300.

Salamander, a reptile of the genus *Salamandra*, allied to

the newt, but differing from it in its less compressed tail and terrestrial habits. Salamanders are viviparous, the young being deposited in fresh water, where they live until metamorphosis is complete. There are several species, confined to Central and S. Europe, N. Africa, SW. Asia, and Asia Minor. The medieval salamander was a creature believed to live and delight in fire.



SPOTTED SALAMANDER

Salamis, a mountainous island of Attica, the strait between which and the mainland was the scene of a naval victory over Xerxes by the combined fleets of Athens, Sparta and Corinth in 480 B.C. On the island is the chief naval station of Greece, with an arsenal. Pop. 12,000.

Sal Ammoniac, common name for Ammonium Chloride, a salt obtained as a by-product in the manufacture of coal-gas. It is used in industry, especially in the composition of electric batteries, and in medicine as an expectorant and stomachic.

Salcombe, seaport of Devonshire, England, land, 11 m. SW. of Dartmouth. It affords safe anchorage for small vessels; fishing is carried on. Nearby is Bolt Head. Pop. 2,400.

Sale. The law governing the sale of goods is to be found in the Sale of Goods Act, 1893. "Goods" includes all personal chattels except money. An actual sale often transfers the ownership in the goods at once, but an agreement for sale only becomes a sale when the conditions are fulfilled subject to which the ownership is to be transferred. An agreement to sell relates chiefly to goods which have not come into existence, or have not been acquired by the seller, at the date of the contract.

The price in a contract of sale must consist of money, otherwise the contract is one of exchange. If the price is not fixed, a reasonable price is to be presumed to have been intended. Usually only the owner can sell and give a good title, but this is subject to exceptions in the case of goods sold in market overt, sales by pawnbrokers, by authorized agents, by the possessors of documents of title to goods, the sale of negotiable instruments, etc.

A contract of sale may be in any form, but if the value of the goods is \$10 or more, it may be unenforceable unless evidenced by writing or part-performed (as by part-payment of the price, or receipt of the goods). The buyer is entitled to delivery and to have any conditions and warranties observed. The seller is entitled to be paid and to have the goods accepted, provided the buyer has had an opportunity of examining them. Usually a seller cannot compel the buyer to return rejected goods—he is entitled only to notice of rejection; but if the contract is broken by the buyer, the seller has the right to sue the buyer and, in some cases, rights against the goods, e.g., the right of stoppage in transit against an insolvent buyer.

Sale, town of Cheshire, England, situated on the R. Mersey, 5 m. SW. of Manchester, of which it is a residential suburb; it has market-gardens. In 1930 the urban districts of Sale and Ashton-upon-Mersey were amalgamated, and in 1935 the district was created a borough. Pop. 28,000.

Salé, seaport of Morocco, known to the natives as *Slâ*. It is situated on the Atlantic coast, opposite Rabat. It has mosques and Muslim sanctuaries and manufactures carpets, but is remembered chiefly as the lair of the "Salée rovers," corsairs who in the 18th Century and long afterwards terrorized the Mediterranean. Pop. 32,000.

Salem, city of British India, in the Salem district of Madras, 120 m. NE. of Palghat. Textiles, carpets and cutlery are manufactured. Pop. 102,200.

Salem, city and seaport of the U.S.A., on a peninsula in Massachusetts Bay, 15 m. NE. of Boston; famous for its witchcraft trials in 1692, and as the birthplace of Nathaniel Hawthorne; it manufactures cotton. Pop. 43,400.

Salem, capital of Oregon, U.S.A., on the Willamette R., 52 m. SW. of Portland. An agricultural centre, it carries on canning, sawmilling and paper-making. Pop. 36,000.

Salerno, seaport of S. Italy, on the gulf of Salerno, 33 m. SE. of Naples; has some fine Gothic buildings, notably the cathedral of St. Matthew; in the Middle Ages its medical school and university were celebrated; cotton-spinning is the chief industry; in the neighbourhood are the ruins of Paestum and an old Lombard castle. Pop. 67,000.

Saley, a group of islands in the Netherlands East Indies. The chief island, Saley, about 50 m. long, is separated from Celebes by the Strait of Saley. The products include tobacco, indigo and cotton. Pop. 63,000.

Salford, city of Lancashire, England, adjoining Manchester W. of the Irwell. It is an important industrial centre, with large docks on the Manchester Ship Canal, manufacturing cotton, iron goods, chemicals, clothing, etc. Pop. 223,400.

Salicin, a bitter crystalline substance obtained from the bark of the willow and poplar, and used in medicine, especially in the treatment of rheumatism and neuralgia.

Salic Law, a code of laws among the Salian Franks, which *inter alia* excluded females from succession to land; the popular belief that it barred them specifically from the French throne is erroneous.

Salicylic Acid, or *Ortho-hydroxybenzoic Acid*, a white crystalline solid, melting at 155° C., and practically insoluble in cold water, though it dissolves readily on heating. It was formerly obtained from willow-bark and other natural sources, but is now manu-

factured from phenol (carbolic acid). Its chief use is in the preparation of dyestuffs; it is also a strong antiseptic (though its use as a food preservative is now prohibited in several countries), and is used in medicine as an analgesic and anti-rheumatic, though generally in the form of its less irritating acetyl derivative, aspirin or acetylsalicylic acid.

Salisbury, also known as New Sarum, county town of Wiltshire, England, 84 m. WSW. of London. It contains many fine old buildings including the cathedral, built 1220-1236, one of the finest specimens of early English architecture. The neighbourhood is rich in megalithic remains, 2 m. to the N. being the half-obliterated site of Old Sarum (a prehistoric fortress), where the city stood till the 13th Century. Excavations in 1936-1938 revealed important remains of Clarendon Palace, a country seat of the Plantagenet kings, where the Constitutions of Clarendon were enacted in Henry II's reign. Pop. 28,500.

Salisbury, capital of S. Rhodesia, in Mashonaland, standing at an altitude of nearly 9,000 ft., 1,600 m. NE. of Cape Town by rail. It has a cathedral and a government laboratory and experimental farm. There are goldfields in the district. A railway connects it with Beira, 374 m. distant, in Portuguese East Africa. Pop. 33,000 (11,000 whites).

Salisbury, Robert Arthur Gascoyne Cecil, third Marquis of,

English statesman, born at Hatfield; as Lord Cecil, entered Parliament in 1853, and as Lord Cranborne became Secretary for India in 1886; entered the House of Lords as Lord Salisbury in 1888, and distinguished himself in debate; again Secretary for India under Disraeli in 1874, and Foreign Secretary and leader of the Conservatives



LORD SALISBURY

in 1881; premier in 1885, he was ousted by Gladstone, but returned to power next year, remaining premier till 1892; again in office, 1895, he finally retired after the Boer War, in 1902. (1830-1903).

Salisbury Plain, an expanse of downland in Wiltshire, England, commencing just N. of the town of Salisbury and extending to the centre of the county. It is about 20 m. in length and 15 m. in breadth. There are a number of villages on the Plain, which is used as a military training-ground, with permanent barracks and artillery and rifle ranges. There is an R.A.F. station at Upavon. The Plain is rich in archaeological remains, including the megalithic group of Stonehenge, 6 m. N. of Salisbury.

Saliva, a watery fluid, secreted by the salivary glands. It serves to moisten the inside of the mouth and throat, while the ptyalin and other enzymes which it contains help to predigest food, especially starches, before it passes into the stomach.

Salix, a genus of deciduous trees of the Salicaceae family, Salicaceae, with erect catkins, including the willow and osier.

Sallow, or Goat Willow (*Salix caprea*), a tree of the willow family, which reaches a height of 40 ft. The bark at first smooth, later shows a network of shallow fissures; the leaves are wrinkled, smooth and dull green; it produces the handsome catkins used for "Palm" at Easter.

Sallust, Roman historian, born at Amiternum, in Sabine territory; became quaestor and tribune (52 B.C.), though a plebeian; for a misdemeanour was expelled the Senate; joined Caesar's party in the

Civil War, and became governor of Numidia, enriched himself by extortions and returned to Rome to devote himself to literature. His works, often inaccurate though written in a tense and forcible style, include histories of Rome (largely lost), the Catiline conspiracy and the Jugurthine war. (86-34 B.C.).

Salmon, a silver-scaled fish (*Salmo salar*), with orange-pink flesh, being the typical fish of the family Salmonidae, much esteemed for its rich, delicious flavour; it is widely distributed in N. Europe and N. America. Upon leaving the egg, the young salmon is in the form of a larva, or "alevin," and is nourished by an attached yolk-sac; at the end of about two months it measures 1½ in. or so in length, and is olive brown in colour, with dark bars along the sides, and is then known as a "parr." It begins to feed actively and at the age of 15 months reaches the "smolt" stage, having by now gained a silvery appearance; at this stage it enters the sea, to return again (as "grilse") after some months, or even several years, to the river, generally to spawn. The salmon is lean and out of condition after breeding and is then termed a "kelt." It usually returns to the sea to regain its condition, but may return repeatedly to fresh water to breed.

Salmonidae, a family of sea- and fresh-water fishes of the order Teleostei, of which the salmon (q.v.) is typical; other members are the trout, grayling, and smelt.

Salome, the name of two women mentioned in the New Testament. Of these, one followed Jesus from Galilee and witnessed his crucifixion from afar (Mark xv. 40), and afterwards visited the sepulchre (Mark xvi. 1). The other Salome (Matt. xiv. 6) is presumed to have been the daughter of Herod Philip by his wife Herodias who had deserted him for his brother Herod Antipas; Herodias instigated her to ask, as a reward for her dancing, the head of John the Baptist (Mark vi. 22).

Salonica, city and seaport of Greece, the capital of Macedonia, situated 370 m. SW. of Istanbul, the Thessalonica of the Bible. It is surrounded by walls and has many fine antiquities, Greek, Roman, Byzantine and Turkish, including the 6th Century cathedral, afterwards a mosque. It is one of the largest seaports of S. Europe, and has a modern harbour, exporting grain, silk, manganese, iron, wool, tobacco and livestock. Yugoslavia has had a free zone in the port since 1924, and there is also a fiscal free zone; there was a disastrous fire in 1917. An Allied force landed at Salonica in 1915 and was reinforced at the end of the year, taking part in severe fighting until Bulgaria surrendered in Sept., 1918, and the entire Balkan peninsula fell into Allied hands. In 1937 the name of the city was changed to Thessaloniki. Pop. 236,500.

Salsette, an island N. of the city of Bombay, India, with which it is connected by a causeway. It is mountainous and wooded, and produces much rice. There are numerous Buddhist cave temples of the 2nd Century A.D. Area 246 sq. m. Pop. 150,000.

Salsify, a biennial composite herb (*Tragopogon porrifolius*) with purple flowers and grass-shaped leaves; its root is used as a table vegetable.

Salt, a term used in chemistry for the compound formed when the hydrogen in an acid is partly or entirely replaced by a metal or by a group of elements taking the place of a metal and known as a base. The prototype of the whole class of salts is common salt, chemically known as sodium chloride, NaCl. This is formed, together with water, when hydrochloric acid, HCl, neutralizes sodium hydroxide, or caustic soda, NaOH

(the requisite base). Salts derived from sulphuric acid are called sulphates, those from nitric acid nitrates, those from phosphoric acid phosphates, those from nitrous acid nitrites, and so on.

The famous mines of rock salt (common salt) at Wieliczka, near Cracow, in Poland, are perhaps the biggest in Europe. The most important deposits of rock salt in the British Isles are those in Cheshire, in the neighbourhood of Northwich, Middlewich, etc. Here, too, there are brine springs which furnish a large proportion of the salt of commerce, obtained by evaporation. The value of these springs for rheumatic ailments has made the reputation of such places as Droitwich, in Worcestershire. In S. Europe, India, California and other parts, salt is obtained from sea-water by evaporation, while elsewhere, notably in Australia and the U.S.A., it is got from saline lakes.

Saltire, town of Yorkshire, England, in the W. Riding, 3½ m. NW. of Bradford, on the R. Aire. It was established as a model village by Sir Titus Salt (1803-1876), who in 1853 set up works here for the production of alpaca goods. Pop. 13,500.

Saltcoats, seaport town of Ayrshire, Scotland, 30 m. SSW. of Glasgow. It is a popular watering-place, with good bathing facilities. Pop. 10,200.

Saltillo, city of Mexico, the capital of the state of Coahuila, situated at an altitude of 5,200 ft., 45 m. SW. of Monterey. It manufactures cottons, shawls and flour. The battle-field of Buena Vista (1847) is in the vicinity. Pop. 66,600.

Saltire, in heraldry, an "ordinary" consisting of an X, or St. Andrew's cross, dividing the field diagonally.

Salt Lake City,

city and capital of Utah, U.S.A., the stronghold of Mormonism; it stands on the R. Jordan, 780 m. NE. of San Francisco. Founded by Brigham Young, the Mormon leader, in 1847, it contains the great Mormon temple and tabernacle, the state capitol and other imposing buildings. The university of Utah is located here and there are numerous colleges and schools. Meat-packing, oil-refining and lead- and copper-smelting are carried on. In the Great Salt Lake, 11 m. to the W., it is impossible to sink, owing to the extreme salinity. Pop. 140,300.



SALTIRE.

Saltpetre, the common name for Nitrate or Potassium Nitrate, a white crystalline substance formed naturally during the decay of nitrogenous matter under particular conditions. It is used in the manufacture of glass, nitric acid and other substances and as a main constituent of gunpowder; it is also employed in medicine, the fumes being inhaled to relieve the spasm of asthma. Chile saltpetre, or sodium nitrate, which is used for making nitre, is a valuable fertilizer, as also is wall saltpetre, or calcium nitrate, found as an efflorescence on walls.

Salt Range, a tract of lofty tableland by mountain ranges 3,000 to 5,000 ft. high, and stretching across the Punjab R. and W., between the Jhelum and Indus R.s.; rich deposits of the rock salt are extensively worked.

Saltwort, a seashore plant (*Salsola kolk*), common in Gt. Britain; its ashes, like those of the glasswort, yield barilla, a crude carbonate of soda formerly much used for making glass and soap. The leaves are fleshy and end in a spine.

Salôt, *Îles du*, a group of three islands in French Guiana, consisting of Île Royale, Île de St. Joseph, and Île du Diable (Devil's I.), the notorious penal settlement, where Capt. Dreyfus was confined.

Salute, a form of greeting showing respect. The form of salute towards a person of rank varies according to the standing of the official. In the navy, distinguished personages are saluted by the firing of guns, e.g., 21 for Royalty, 19 for an ambassador, 7 for a consul, etc. In the army, officers of a rank above captain are saluted by troops on parade presenting arms. The colours of a regiment are saluted by all troops, and it is obligatory for a private or N.C.O. to salute an officer whether the latter be in or out of uniform—in the latter case, of course, only if the officer is recognised.

Salvador, republic of Central America, bordering the Pacific for about 170 m., between Guatemala, on the W., and Honduras, on the E. It is the smallest but most densely populated of the Central American states. The rich alluvial coastal lands slope up to high plateaux, which stretch, seamed and broken by rivers and volcanoes, to the Cordillera frontier of Honduras; the soil is extremely fertile and produces coffee (the chief export), maize, cacao, balsam, tobacco, indigo, sugar and rubber. The natives are chiefly Spanish-speaking Indians. The government is vested in a president and chamber of deputies. Salvador broke away from Spanish control in 1821 and joined the Central American Confederation, but since 1839 has enjoyed complete independence. The capital is San Salvador; other large towns are Santa Ana, San Miguel, and Santa Tecla. Area 13,176 sq. m. Pop. 1,500,000.

Salvage, the reward allowed to persons who save a ship and its cargo from shipwreck, capture or similar jeopardy. The salvor must show that he was under no contract to perform the work; that there was skill and peril and some enterprise involved in doing it; and that his services were beneficial. The salvor has a lien, extending to ship, freight and cargo, upon the property salvaged, which ranks before all other liens. The cargo-owners are liable for salvage in proportion to the value of the property salvaged.

Salvage Corps, London, an organisation for the purpose of saving property, as distinct from life, from fire; it is supported mainly by joint contributions from fire insurance companies, and supplements the work of the London Fire Brigade, under control of the London County Council.

Salvarsan, an arsenical compound in the form of a bright yellow powder, which is used as an injection in the treatment of syphilis and some other diseases. It is popularly called "606," because it was the 606th compound of a series of substances investigated for the purpose by its discoverer, Dr. Ehrlich, in 1909. A derivative, neo-salvarsan, or "914," is, however, more commonly employed.

Salvation Army, an international religious organisation which developed out of revivalist services conducted in Whitechapel, London. The name Salvation Army was officially adopted in 1878, when the movement was re-organised upon semi-military lines, with a distinctive uniform and military degrees of rank and such accessories as brass bands and banners. There are now branches in every part of the world, where, bound up with religious propaganda, the Salvation Army conducts an enormous amount of social amelioration, including rescue work, the care of the sick, education, overseas settlement, aid for "down-and-outs," and emergency assistance in national disasters, such as fires,

earthquakes and floods. As an essential part of this work, it controls homes of rest, hostels, workshops, farms, schools, hospitals, leper colonies and other institutions all over the globe. Its chief official publication is *The War Cry*. William Booth, the first general, was succeeded in 1912 by his son William Bramwell Booth, who in 1920 was superseded in favour of E. J. Higgins, upon whose death Evangeline Booth, daughter of the founder, was elected general, 1934.

Salvini, Tommaso, Italian tragedian, born in Milan; was trained to the stage, and joined Ristori's company in 1847; served with distinction in the revolutionary war of 1849, and, returning to the stage, won an international reputation, his greatest successes being in Shakespeare's *Othello*, *King Lear*, and *Macbeth*, and in dramas by Alfieri and others. (1829-1915).

Sal Volatile, Spirit of, a mixture of oil of nutmeg, oil of lemon and alcohol; it is a favourite remedy for faintness.

Salween, river of Asia, which rises in Tibet, S. of the Kunlun range, and flowing due E. turns S. in Chwanben and traverses Yunnan and the Shan States, afterwards forming part of the boundary between Siam and Lower Burma. It eventually enters the gulf of Martaban by two mouths, after a course of about 1,800 m. Owing to reefs and rapids, it is mostly unnavigable, except by native boats, but is valuable for floating teak down to the port of Moulmein at the mouth.

Salzburg, city of Austria, the capital of the province of Salzburg, situated on the hill-girt banks of the Salzach, 80 m. SE. of Munich; it is a handsome and historical city, with many fine old buildings, including a cathedral, archbishop's palace, imperial palace, monasteries, etc., but is chiefly memorable as the birth-place of Mozart; the annual summer musical festival is attended by visitors from all over the world. Pop. 63,200.

Salzburg, a western province of Austria, bordering on Bavaria, between Tyrol and Upper Austria; woody and mountainous, especially in the S., where there is fine lake and river scenery among the Alps. Excellent meadow-land favours the rearing of cattle and horses, and there is an important timber industry; salt, copper, iron and marble are found; there is an important tourist traffic. The capital and only large town is Salzburg. Area, 2,762 sq. m. Pop. 245,800.

Salzkammergut, a mountain district of Austria, between Salzburg, on the W., and Styria, on the E.; salt-mines and springs give a rich yield of salt, but the district is chiefly celebrated for its beautiful scenery and has become a tourist resort. Here are Lakes Atter, Traunsee, Hallstätter and others, while among numerous superb mountain peaks is Dachstein, rising to 9,330 ft. Gmunden, Ischl and Hallstätter are among the most popular resorts.

Samar, one of the Philippine Is., forming, with outlying islands, the province of Samar. The area of Samar I. is 5,124 sq. m.; it produces sugar, rice, cereals, coffee, cacao and tobacco. Pop. 380,000.

Samara, district in SE. European area, mainly occupied in agriculture and horse-breeding, but now being rapidly industrialised. Pop. c. 3,500,000. Area, 58,000 sq. m. The capital, Samara, on the Volga, has a pop. of c. 250,000.

Samarcand, city of the U.S.S.R., in the Uzbek Republic, situated at the W. base of the Tian-Shan Mts.,

150 m. SE. of Bokhara. It was sacked by Genghis Khan in the 13th Century, became Timur's capital in the 14th; and was captured in 1868 by the Russians, who have improved and enlarged it. It manufactures silk, cotton, and paper, and has a large trade in fruit and corn. Pop. 154,600.

Samaria, an ancient city of a district of between Judea and Galilee. It became the capital of the North Kingdom of Israel; was desolated by the hosts of Assyria in 720 B.C., but repopulated afterwards by Assyrian settlers, who were converted to the Jewish faith. When the Jews rebuilt the Temple of Jerusalem, the Samaritans' offer of assistance was rejected, and this led to a bitter and permanent hostility. The site, now occupied by the small village of Sebastiyeh, has yielded remains and inscriptions.

Samarium, a metallic chemical element, belonging to the rare-earth group; it was discovered in 1878. Symbol, Sm; atomic number, 62; atomic weight, 150.43.

Samaveda, the section of the Veda chants, intended for singers.

Sambar, the name of a kind of deer (*Cervus unicolor*) native to India and Ceylon. The antlers are long and three-pronged, and the animal has a well-developed mane.

Sambre, river of Europe, which rises in the dept. of Alsace, France, and flows ENE. to Belgium, joining the Meuse at Namur, after a course of 112 m. Here was fought, on Nov. 4, 1918, the last engagement of the World War, the three British armies involved capturing many thousands of prisoners and the battle ending at the armistice with the Germans in full retreat.

Samnites, a warlike people of ancient Italy whose territory lay SE. of Rome. They gave the Romans much trouble till, after wars commencing in 343 B.C. (in which, in 321, the Roman army suffered the catastrophe of the Caudine Forks), they were subdued in 290 B.C. A revolt in 90 B.C. led to their extermination as a nation.

Samoa, a group of 14 volcanic islands mountainous and richly wooded; climate is moist and warm; copra is the chief export, and cotton, coffee, tobacco, etc., are also grown. The islands are divided into two groups: (1) the territory of W. Samoa, previously a German possession; captured by New Zealand forces in 1914, it is now administered by the New Zealand government under mandate. This group includes the larger islands of Savaii and Upolu; Apia (in Upolu) is the chief place. Pop. 58,000. (2) the Samoan Is., belonging to the U.S.A.; they include the larger islands of Tutuila, Fua and Manu'a. Pago Pago, in Tutuila, is an important coaling-station. Pop. 10,000.

Samos, island in the Aegean Sea, belonging to Greece, about 80 m. long and 8 m. wide. It is separated from the mainland by a narrow strait. It played an important role in ancient history, became subject to Turkey in the 16th Century, but was restored to Greece after the World War. Wine, oil, raisins, tobacco and cotton are produced. The capital is Limen Vathos. Pop. 70,500.

Samothrace, a mountainous, bleak sea, NW. of the mouth of the Dardanelles, belonging to Greece. Sponge-fishing is the main occupation. The famous "Winged Victory," now in the Louvre, was found here in 1863. Pop. 5,000.

Samoyedes, a people of the Mon- golian race, occupying the N. shores of Russia and Siberia from the

White Sea to the Yenisei; live by hunting and fishing, and practice shamanism.

Sampan, a Chinese river vessel, used, especially on the Canton R. as a dwelling for a boatman and his family, and propelled generally by a scull at the stern and an oar at the bow, and sometimes by sails.



SAMPAN

Samphire, an um- berous perennial herb (*Crithmum Maritimum*), which grows wild along the coast in Europe, including Great Britain; the glaucous, salty-flavoured leaves are often pickled.

Sampler, a sheet of canvas on which Biblical texts, etc., are worked in wool or simple embroidery; the making of sampler was a part of girls' education in Victorian days.

Samson, a hero of the Old Testament, one of the judges of Israel (Judges xiv.-xvi.). He was a Nazirite of the tribe of Dan and a man of prodigious strength. At the time of his birth the Israelites, or at least a part of them, were subject to the Philistines, and in a series of single-handed exploits he did much to discomfit them, his most notable feat being the killing of a thousand of them with the jawbone of an ass. He fell a victim to the wiles of a Philistine woman, Delilah, revealed to her the secret of his strength, the preservation of his vow as a Nazirite to remain unshaved, and was delivered to his enemies, who blinded and imprisoned him. His strength returned, however, and he dragged down on the lords of the Philistines the roof of the building where he was brought to make sport for them, the killed numbering 3,000.

Samuel, a Jewish prophet, born of the tribe of Levi. Consecrated by his mother to the service of the Lord, he became a judge when he was 40; anointed first Saul and then David to be king over the, till then, disunited tribes of Israel, and thus became the founder of the Jewish monarchy.

Samuel, Books of, two books of the Old Testament, originally forming one book, but afterwards divided in the Septuagint. The narrative embraces a period of 125 years, and extends from the time of the Judges to the close of the reign of David, including the intermediate judgeship of Samuel and the reign of Saul, with a view to exalting the prophetic office on the one hand and the kingly office on the other.

Samuel, Herbert Louis, first Viscount, British politician. Entering the House of Commons in 1902, he served from 1905 in the Liberal Governments, successively as under-secretary to the Home Office, chancellor of the duchy of Lancaster, postmaster-general, and president of the Local Government Board, and in the 1916 coalition he became Home Secretary. From 1920 to 1925 he was High Commissioner for Palestine, in 1926 presided over the Royal Commission on the coal trade, being instrumental in drawing up the Samuel Report, and in 1927 he became chief organizer of the Liberal party. Elected for the Darwin division, 1929, he was Home Secretary in the National Government (1931-32). A member of the Privy Council, 1908, he was knighted in 1926 and made a viscount in 1927. He has written on politics and ethics. (1870-).

Sana, or Sana'a, the capital of Yemen, Arabia, situated in a well-cultivated valley at an altitude of 7,200 ft. It is enclosed by walls, and has several decorated mosques. The chief trade is in coffee; arms, jewellery, and silks are made. Pop. about 80,000.

San Antonio, city of Texas, U.S.A., on the San Antonio R., 80 m. SW. of Austin; has a Catholic college, cathedral and arsenal and many fine old Spanish buildings, and is a military post and airport. Iron and steel, textiles, leather and tobacco are manufactured. There are oil-wells and medicinal sulphur-springs near by. Pop. 231,500.

Sanatorium, in a general sense, an institution where patients are cared for during convalescence, but specifically a home for the treatment of those suffering from tuberculosis. Insured persons who have contracted tuberculosis may apply to enter a sanatorium for treatment, under the terms of the National Health Insurance Act. A feature of such treatment is exposure to open-air, both by day and night, and the buildings are specially designed to this end. Suitable diet is prescribed, and specially graded exercises follow a period of complete rest.

San Bernardino, city of California, U.S.A., the capital of San Bernardino county, situated 60 m. E. of Los Angeles. It is surrounded with orange-groves, vineyards and orchards. There are large railway repair-shops, foundries and aeroplane works. Pop. 57,500.

Sanction, in jurisprudence, that which is done to enforce obedience to a law; specifically, a penalty incurred by the infringement of a covenant. The word has become current in connection with the measures taken to enforce compliance with the Covenant of the League of Nations, notably in 1935, when Italy unlawfully invaded Abyssinia; the sanctions, which took the form of restrictions on imports and exports (especially restrictions on the import to Italy of war material), stoppage of credits, &c., were generally admitted to have failed in achieving the result expected, and were eventually withdrawn.

Sanctuary, a sacred place where formerly one who had committed a crime had the right of safe refuge and was secure from arrest or punishment. In England, this immunity was intended for 40 days, and applied to all crimes save sacrilege; the fugitive had to confess his guilt, clad in sack-cloth, before the coroner, and take an oath to leave the kingdom. There were over 20 prescribed sanctuaries in England, generally religious edifices but also including several whole cities and the precincts of royal palaces. The right was abolished in 1823 so far as concerned felons, though debtors were able to take refuge in Whitefriars, the Savoy and other places in London and elsewhere until the end of the 17th Century.

Sanctus, a hymn sung in the Roman Catholic Church during the prayer of consecration at the celebration of the Eucharist, when also the Sanctus bell is rung.

Sand, the grains of mineral matter formed by the disintegration of rocks. They consist chiefly of small fragments of quartz (silica), and may be coloured, e.g., yellow, red or brown by varying amounts of iron oxide, or green by grains of glauconite. All sands, however, contain grains of other rocks, such as mica, felspar, garnet, topaz, etc., in a greater or less degree. Sand of high purity is widely employed for the manufacture of glass, pottery, concrete, mortar, and for use in such forms as filter-beds and abrasives.

Sand, river of the Orange Free State, S. Africa, a tributary of the Vet R., which it joins 10 m. above Vergelegen; gave name to a convention, signed on its banks in 1852, granting recognition by the British Government to settlers on the other side of the Vaal.

Sand, George, the assumed name of Armandine Lucile Aurore Dupin, French novelist, born in Paris; in 1822 married Baron Dudevant, but after nine years separated from him and went to Paris to make her way in literature; formed a connection with Jules Sandeau, from whose name she derived her *nom de plume*; afterwards became involved in a number of liaisons, notably with Alfred de Musset, Chopin and Franz Liszt; one of the finest modern novelists, her works include *Consuelo*, *Spiridion*, *Elle et Lui* and *Lucretia Floriani*, the two latter being inspired by her relations with Musset and Chopin, also *La Petite Fadette*, *Françoise de Champs*, and other studies of rustic life. The last two are considered among her best. (1804-1876).

Sandal, a simple foot-covering usually consisting of a flat sole secured by strings or straps passing round the ankle and between the toes. It was the normal footwear of the classical Greeks.

Sandalwood, a fragrant wood obtained from *Santalum album*, an Indian tree, or from several related species, and extensively used in the East for making ornamental boxes, etc.; it is also employed as incense, while its essential oil is a powerful perfume.

first intrigue, he wrote with her *Rose et Blanche*, 1831, and independently many novels and plays; was elected to the Academy (1858), and was librarian of the Mazarin Library and St. Cloud. (1811-1883).

Sanderling (*Calidris arenaria*), a bird of the plover family, about 8 in. in length, with a chestnut brown back, chestnut breast with darker spots, white underparts, and a long straight, black beak; in winter it assumes a distinctive plumage of pale grey above and white underparts. It feeds on small molluscs and crustaceans, and visits Great Britain about August, staying until April.

Sandgate, watering-place of Kent, England, land, situated 1½ m. W. of Folkestone. Near by is Shorncliffe camp. Pop. 2,600.

Sand Grouse, the common name of the 16 species of birds belonging to the family Pteroclididae, native to the warm parts of Asia. The tail and wings are pointed, and the legs are longer than those of ordinary grouse, which the bird in general resembles. It frequents arid plains and deserts, where its dull plumage renders it inconspicuous.

Sand Hopper (*Talitrus saltator*), a small, segmented,

laterally-flattened crustacean of the order Amphipoda, common along most sea-shores, where it burrows in the sand above high-water mark and is a useful scavenger. It is closely related to the shorehopper (*Orchestoidea gammarinus*), which is found among rocks.

Sandhurst, towns of Berkshire, England, 4 m. N. of Aldershot. Pop. 3,800. The Royal Military College, originally established at Great Marlow in 1802, was removed to a site 2 m. SE. of Sandhurst in 1812. It has accommodation for 700 cadets, who are trained as infantry and cavalry officers. In the neighbourhood are Wellington College, the famous public school, and Broadmoor criminal lunatic asylum.



SAND HOPPER

Sander, or *Sandra*, (*Lucioperca lucioperca*), a species of pike-perch, common in the rivers and lakes of E. Europe, W. Asia and also found in N. America. It is the largest of the pike-perches and can reach 4 ft. in length.

Sanderling, a small wading bird wintering in Britain, grey and white in winter, mottled chestnut or light brown in summer.

San Diego, city and seaport of California, U.S.A., situated 124 m. SE. of Los Angeles, an important military, naval and air station, with a splendid harbour and modern facilities. Aeroplanes, parachutes, cotton-seed products, etc., are manufactured, and fishing and fish-canning are leading industries. Pop. 148,000.

Sand Lizard (*Laecerta agilis*), a lizard found on sandy heaths in Great Britain and Central Europe. It is about 7 in. long; the male is green in colour, the female a sandy brown.

Sandown, watering-place of the I. of Wight, England, 6 m. S. of Ryde. It has fine sands, golf-links, and sea-bathing. Pop. 6,200.

Sandown Park, racecourse in Surrey, England, near Esher railway station, about 15 m. SW. of London. The Eclipse Stakes is run here annually, in July.

Sandpiper, a group of small birds belonging to the plover family. They haunt the sea-shore and banks of rivers and feed on worms, small molluscs, insects, etc. The common sandpiper (*Tringa hypoleucos*) has brown upper parts, with a greenish iridescence; the breast is light brown, with darker streaks, while the belly and flanks are white; it is a summer visitor to Great Britain. The green sandpiper (*Tringa ochropus*), an autumn and spring visitor, has dark brown upper parts spotted with white and showing a green gloss, a greyish-brown throat and breast and a white tail. There are several other species.

Sandringham, a small village of Norfolk, England, 7½ m. NE. of King's Lynn. In the neighbourhood are the two royal residences, Sandringham House, a splendid mansion in Elizabethan style, purchased by Edward VII in 1861, and York Cottage: the surrounding estate of 7,000 acres includes a fine royal park.

Sandstone, a rock consisting of grains of sand cemented together into a compact mass. The sand is chiefly quartz, but may include felspar, mica and clay. Sandstone varies from grey to reddish-brown in colour according to the type of cementing substance—glaucconite, clay, calcite, iron oxide, etc.—and usually is distinctly stratified. It is employed extensively as building stone and for making grindstones.

Sandwich, town of Kent, England, on the Stour, 12 m. E. of Canterbury. Formerly one of the leading Cinque Ports, it is now 2 m. from the coast, owing to the receding of the sea. It is a popular holiday resort and has noted golf-links. Pop. 3,300.

Sandwich, Edward Montagu, first Earl of Sandwich, of English admiral; fought for the parliament during the Civil War, and in 1658 was appointed "general-at-sea." Although he had been intimate with Cromwell, he helped to restore Charles II. to the throne, fetching him from Holland, and in reward was made Earl of Sandwich, 1660. Later, fought successfully against the Dutch at sea, but fell into disgrace and was dismissed. Again given a command in 1672, he perished during the action in Southwold Bay. (1625-1672).

Sandwich Islands. See Hawaiian Islands.

Sandwort (*Arenaria*), a genus of plants of the natural order Caryo-

phyllaceae, comprising low herbs, usually with oval-shaped leaves and small white flowers. Several species are found in Great Britain, chiefly on sandy shores, especially *A. peploides*, the sea-purslane. A number of species native to Alpine regions, the Balearics and Spain are grown in rock-gardens in England.



Sandy Hook, SEA-PURSLANE

a narrow peninsula of New Jersey, U.S.A., forming part of the boundary of New York Lower Bay. The America's Cup yacht race is held off its coast.

San Francisco, city of California, U.S.A.,

premier port of the Pacific coast, occupies N.E. corner of a tongue of land stretching between the Pacific and San Francisco Bay, which forms a sheet of water 65 m. long, communicating with the ocean by the Golden Gate. The rise of San Francisco began with the discovery of gold in 1848, and it is now one of the world's finest cities, with splendid buildings, parks, and other amenities, and numerous educational establishments, including three universities. As the western terminus of the great continental railroads and outlet for the produce of a rich wheat district, it has an enormous shipping trade. Important industries are shipbuilding, meat-packing, sugar-refining and the manufacture of metal goods and clothing. The city was almost entirely destroyed by earthquake and fire in 1906. Pop. 634,000.

Sanger, George, English showman (popularly known as "Lord" George Sanger), born at Newbury, Berks., son of a showman who had fought at Trafalgar; began as a conjurer with his brother John, with whom he leased the Agricultural Hall and later, in 1871, Astley's Amphitheatre; afterwards travelled on his own with circuses over most of Europe; he was murdered by an employee. (1825-1911).

Sangrail. See Grail, Holy.

Sanhedrin, a council of the Jews, 71 sittings in Jerusalem, and claimed authority and jurisdiction over the whole Jewish people; it was presided over by the high-priest. Its authority was seriously curtailed about the time that Jesus was arraigned before it as a false prophet (John xi., 47).

Sanitation, a department of public health. It comprises the arrangements for water supply, the disposal of sewage and refuse, etc. The relative laws are administered by the local sanitary authority, who maintain sanitary inspectors to see that building by-laws as regards internal sanitation, drains, etc., are observed, and that no nuisance is allowed to arise in respect of the disposal of refuse. Other duties included in the responsibilities of the sanitary authority are the maintenance of satisfactory ventilation in buildings, the notification of infectious diseases and steps to apply the proper disinfection of the premises, inspection of meat and animals, dairies, cowsheds and milkshops, examination of canal boats and common lodging-houses, and the supervision of the carrying out of the various Shops and Factory Acts.

San José, city of California, U.S.A., on the Guadalupe R., 50 m. SE. of San Francisco; there is a large fruit-canning industry, and near by is a quicksilver mine and sulphur springs. Pop. 57,600.

San José, capital of Costa Rica, situated on a fertile and elevated plain between the Caribbean Sea and the Pacific. Grain, the vine, and many fruits are grown in the neighbourhood; coffee exporting, flour-milling and distilling are the principal industries. Pop. 63,000.

San Juan, a mountainous province of the Argentine Republic, on the Chilean border; rich in minerals but, excepting gold and copper, these are not worked, and agriculture is the chief industry. The town of San Juan (pop. 20,000), 95 m. N. of Mendoza, is the capital. Area, 34,432 sq. m. Pop. 202,500.

Sankey, *Ira David*, American religious revivalist and hymn-writer, born at Edinburgh, Pennsylvania. He made a great impression by his preaching and solo singing during his visits to England in 1873 and 1883 with D. L. Moody, with whom he collaborated in composing the popular *Sacred Songs and Solos*. (1840-1908).

Sankey of Moreton, *John*, first Viscount, English judge. Called to the bar in 1892, he became a K.C. in 1909 and a judge in 1914. In 1928 he was appointed a Lord Justice of Appeal and in 1929 Lord Chancellor, retiring in 1935. He was chairman of the Coal Industry Commission, 1919, and also of committees convened during the Imperial Conference and the Indian Round Table Conference, 1930. He was created a viscount in 1932. (1866-).

San Luis, province of the Argentine Republic, with an area of 29,700 sq. m. It produces cereals, potatoes, grapes and alfalfa, and cattle are reared, but lack of water hinders development. The mineral wealth comprises copper, gold and graphite. The capital (pop. 18,000) is San Luis. Pop. 186,600.

San Luis Potosí, a state of Mexico, with an area of 24,415 sq. m., most of which forms a portion of the Central Plateau, where cattle are raised. The lower ground is very fertile, and there is much mineral wealth, especially silver. The principal rivers are the Verde, Tampico and Pánuco. Pop. 580,000. The capital of the state is a city of the same name, 327 m. N. of Mexico City. It has textile factories and silver-smelting works. Pop. 91,800.

San Marino, a little republic of Europe, 12 m. SW. of Rimini, and totally enclosed by Italian territory. It has maintained its independence since the 4th Century, and claims to be the oldest state in Europe. It comprises the small town of San Marino and several villages perched on the eastern slopes of the Apennines; agriculture and cattle-rearing are carried on, and building stone is quarried; the state is ruled by a grand council; there is a treaty of friendship with Italy. Area 38 sq. m. Pop. 13,900.

San Remo, town of the Italian Riviera, on a bay in the Gulf of Genoa, 26 m. NE. of Nice. It is sheltered by a semicircle of hills, and owing to its mild climate is a favourite winter resort; flowers, olives, palms and lemons are grown for export. Pop. 24,700.

San Salvador, capital of the republic situated at the base of an extinct volcano, 25 m. NE. of La Libertad, its port. It manufactures soap, candles, silks and cigars. There is a cathedral and a university. It has suffered frequently and severely from earthquakes, notably in 1854 and 1873. Pop. 99,800.

Sansculottes (i.e. "without breeches"), a term of contempt applied by the aristocratic party in France to U.E.

the Revolutionists, who generally wore long trousers instead of the "culottes," or knee-breeches, fashionable in the society; the "sansculottes" accepted the name as a designation of good patriots.

San Sebastian, seaport and watering-place of Spain, on a small peninsula jutting into the Bay of Biscay, 10 m. from the French frontier. Since its bombardment by Wellington in 1813 it has been spaciouly rebuilt. In 1938, during the Spanish Civil War, it was captured by the insurgents, being severely damaged. Pop. 56,300.

Sanskrit, the ancient language of the Aryan family of languages, among the known members of which it is the closest to the lost "mother-language." Highly inflected and subject to complex and artificial phonetic laws, it has long been a dead language, having been superseded by its simpler descendants, the modern Aryan tongues of N. India, but is still assiduously cultivated in India as the sacred language of Brahmanism and for the sake of its rich and varied literature.

Vedic Sanskrit, the oldest known form of the language, in which the Vedic hymns and other Brahman scriptures were composed, is more primitive in structure and vocabulary, with a greater wealth of inflexions than are found in classical Sanskrit which succeeded it and in which the secular literature is composed. Paramount among the latter are the two vast Indian epics, the *Mahabharata*, which in general dates from several centuries B.C. and is seven times as extensive as the *Odyssey* and *Iliad* combined; and the *Ramayana*, ascribed to the poet Valmiki. There are a number of other epics of less extent and known, some being the work of Kalidasa (c. 450 A.D.), the greatest Indian poet and dramatist, who is chiefly known for his poetical dramas, especially *Sakuntala*, or *The Lost Ring*. Sanskrit literature is rich in fables, stories and didactic verse, as well as in scientific and technical works, embracing philosophy, religion, law, history, medicine, prosody, grammar, rhetoric, music, astronomy, mathematics and almost every other branch of intellectual activity.

Sansovino, *Andrea Contucci del Monte*, Italian sculptor, born at Monte San Savino, Arezzo, from which he took his name; studied in Florence under Antonio Pollaiuolo, and in 1490 became sculptor and architect to the king of Portugal, for whom he designed a palace. Most of his best work consists of statues and monuments in churches in Florence, Geneva and Rome—especially, in the last-named, the monuments to Cardinal Sforza and Bishop Basso in Santa Maria del Popolo. (1460-1529).

San Stefano, town and seaside resort of Turkey, 7 m. SW. of Istanbul, on the Sea of Marmara. Here, in 1878, was signed the Treaty of San Stefano, terminating the Russo-Turkish War, which had broken out in the previous year.

Santa Ana, town of Salvador, the capital of the inland dept. of the same name, bordering on Guatemala. The town is situated about 45 m. NW. of San Salvador, at a height of 2,100 ft. It has railway communication with San Salvador and the port of Acajutla, on the Pacific; exports coffee and sugar; cigars, textiles, spirits, sugar and pottery are manufactured. Pop. 79,760.

Santa Barbara, city of California, U.S.A., on the Pacific coast, 90 m. NW. of Los Angeles, beautifully situated on a fine bay. It has quaint Spanish colonial architecture, and is a leading holiday resort; in the district is the Painted Caves, with prehistoric paintings. Pop. 33,600.

Santa Catharina, a state of Brazil, bordered E. by the Atlantic Ocean, N. and S. by the states of Paraná and Rio Grande do Sul, and W. by Argentina. Much of the interior is wooded and mountainous. The coast is low-lying. The state is chiefly agricultural and has an area of 20,785 sq. m. The capital is Florianópolis. Pop. 986,900.

Santa Clara, town of Cuba, capital of the province of Santa Clara, situated 185 m. SE. of Havana. It is the centre of a district producing sugar and coffee. Pop. 97,800.

Santa Claus, contraction of St. Nicholas (q.v.).

Santa Cruz (de Tenerife), seaport and capital of the Canary Is., on the NE. coast of the island of Tenerife. It is an important coaling-port for ocean steamers, and exports cochineal, wine and garden produce. Pop. 60,000.

Santa Fé, city of the Argentine republic, the capital of the province of Santa Fé, situated on a branch of the Paraná R., 300 m. NW. of Buenos Aires. It is an old settlement with several fine buildings, including a cathedral, bishop's palace, university and government buildings. Pop. 145,000.

Santa Fé, capital of the state of New Mexico, U.S.A., situated at an altitude of 7,000 ft., about 60 m. NE. of Albuquerque; notable for its Spanish colonial and Indian "pueblo" architecture. It has an old governor's palace (now a museum), a cathedral and several old churches; the original Spanish plaza is in the centre of the city. Near by are hot springs, turquoise mines, Indian cliff-dwellings and a petrified forest. Pop. 11,200.

Santa Maria, a town of Brazil, in the state of Rio Grande do Sul, about 80 m. NW. of Porto Alegre. It is an important railway junction and has a busy trade in agricultural products and livestock. Pop. about 59,000.

Santander, seaport of Spain, situated on a fine bay facing the Bay of Biscay, 316 m. N. of Madrid. The numerous light industries include cigar-making, brewing, cotton-spinning and flour-milling; flour, wine and cereals are exported. Pop. 86,000.

Santayana, George, philosopher of Spain, Spanish extraction, born in Madrid but settled in the U.S.A. from the age of 11; became Professor of Philosophy at Harvard, 1889-1912; published a book of sonnets, 1894. He is the author of *The Sense of Beauty* and *Interpretation of Poetry and Religion* and *The Life of Reason*, his greatest work. (1863-).

Santiago, capital of Chile, situated 90 m. SE. of Valparaíso, on an elevated plain overhanging the N. and E. by the snow-clad peaks of the Andes. The city has spacious plazas, well-paved streets and many fine public buildings, including a cathedral, a university, art, agricultural and military schools and zoological gardens. Cloth, flour, machinery, leather, beer and ice are made. Pop. 696,200.

Santiago (de Compostella), city of Spain, in the province of Coruña, of which it was formerly the capital, 96 m. NE. of Carril, its port; has an interesting old Romanesque cathedral containing the shrine of St. James, (a noted place of pilgrimage in the Middle Ages) with magnificent cloisters, a university, and several ruined monasteries. Pop. 26,000.

Santiago (de Cuba), city and seaport of Cuba, on a beautiful head-locked bay on the S. coast; the city is the see of an archbishop, and has an old Spanish cathedral. There are foundries, tan-

yards, soap-works and cigar factories. An historical city, it was until 1589 the capital of Cuba. Pop. 104,000.

Santiago (del Estero), province of Argentina, in the NW., situated S. and W. of the Chaco; it has an area of 53,450 sq. m., much of which is wooded. Agriculture is largely carried on, the main products being wheat, maize and lucerne. The chief rivers are the Salado and the Dulce; the town of Santiago del Estero (pop. 65,700) is the capital. Pop. 454,200.

Santley, Sir Charles, English baritone singer, born in Liverpool; studied in Milan, made his debut in 1857, and became a favourite with the public in both oratorio and opera; he was knighted in 1907, and in 1909 published *Reminiscences*. (1834-1922).

Santo Domingo, capital of the Dominican Republic, a fortified port on the S. coast of the island of Haiti, at the mouth of the R. Ozama, a typical, quaint old Spanish colonial town, with a 16th Century cathedral. It was laid waste by a hurricane in 1930, but has been re-built and re-named Ciudad Trujillo; coffee and sugar are exported. Pop. 71,000.

Santo Domingo, See Dominican Republic.

Santos, city and seaport of Brazil, in the state of São Paulo, situated on a beautiful bay 230 m. SW. of Rio de Janeiro. It has a splendidly equipped harbour and is the leading coffee-exporting port of the world. Formerly swampy and unhealthy, it has now become a holiday resort. Pop. 103,000.

São Francisco, river of Brazil; for the most part navigable. It rises in the SW., near the source of the Paraná, and flows N., NE., and SE., reaching the S. Atlantic after a course of 1,800 m. and forming in its lower part the boundary between the maritime provinces of Sergipe and Alagoas. Higher up it divides Bahia and Pernambuco.

Saône, river of E. France, a tributary of the Rhône, 301 m. long. It rises among the Faucilles Mts. in Vosges, and flows SW. and S. to join the Rhône at Lyons. Châlon and Mâcon stand on its banks.

Saône-et-Loire, dept. of France in the east-central part of the country. It is bounded by the Saône on the SE. and by the Loire on the W., and has an area of 3,330 sq. m. It is fertile and is noted for its cattle and wine. Iron and coal are mined, and the manufacture of cotton goods, pottery and machinery is carried on. Mâcon is the chief town, and others include Châlon, Autun, Le Creusot and Cluny. Pop. 525,700.

São Paulo, a large state of Brazil, engaged in the production of coffee, sugar, tobacco, coconuts, cotton. It is one of the principal sources of the world's coffee. Area 91,300 sq. m. Pop. 6,800,000. The capital of the state is a city of the same name, situated on a plain 310 m. SW. of Rio de Janeiro. It is the chief centre of the Brazilian coffee export, and has manufactures of cotton, tobacco and spirits. Pop. 1,120,000.

Sap, the juice or fluid transported through the tissues of plants, and corresponding in its functions to blood in animals. It consists of water in which are dissolved mineral salts derived from the soil, and essential to the life and growth of the plant. The fluid enters the roots by osmosis and runs up the stem by some such power as capillary attraction or the cohesive force of water, assisted by the pull exerted by evaporation from the leaves. It is mainly in the leaves, by photo-chemical action, that the crude sap is converted into food substances suitable for cell-building.

Saponification, the decomposition of a fat by an alkali, with the formation of a soap or glycerine. The word is used as practically equivalent to hydrolysis, e.g., when stearin treated with caustic potash yields potassium stearate and glycerol.

Sapper, name for a private in the Royal Engineers; originally a sapper was a soldier employed in digging saps, or ditches. The Royal Corps of Sappers and Miners was formed in 1813, during the Peninsular War, and existed until 1856, when it was merged in the newly-formed Corps of Royal Engineers. There are still three corps of sappers and miners in the Indian Army.

Sapphire, a precious stone of the corundum class, differing from the ruby only in colour, which is a blue of various shades. The finest specimens are found in Ceylon, while Siam, Madagascar, Australia and parts of the U.S.A., especially Montana, are important sources of sapphires.

Sappho, a lyric poetess of Greece, of the 7th Century B.C., whose poems were among the masterpieces of antiquity, though only two of her odes and some short fragments of others remain; numerous papyrus texts, badly mutilated, were found in Egypt in the late 19th Century. The story of Sappho's death-leap from a rock owing to a disappointment in love is regarded as a myth.



SAPPHO

Saracens, the name given in medieval times to the Arabs or Mohammedans, and extended to all the non-Christian races with whom the Crusaders or Christian peoples came in contact. The word seems to have originated among the Greeks and Romans and was probably derived from Sarakene, a place in the Sinaitic peninsula.

Saragossa (Spanish, *Zaragoza*), city of Spain and capital of the province of the same name, on the Ebro, 212 m. N.E. of Madrid; one of the most ancient towns of Spain, with a stirring history, which includes the memorable defence against the French in 1808. It has many notable buildings, including two cathedrals, a university, citadel, and archiepiscopal palace. It is an important railway junction. Pop. 189,000.

Sarajevo, a city of Yugoslavia, formerly the capital of Bosnia, on the Miljacka; now chief town of the banovina or province of Drinska. The town is noted chiefly for the assassination of Francis Ferdinand of Austria on June 28, 1914, a crime which led to the Great War. (See *Prinsep*). Pop. 78,200.

Sarasate, Pablo Martin Meliton de, Spanish violinist, born at Pamplona; studied at the Paris conservatoire and made his debut at the age of 16; next year played in London, which he afterwards visited repeatedly; became world-famous for his polished and expressive playing; composed celebrated *Spanish Dances* for the violin. (1844-1908).

Saratoga Springs, one of the watering-places of the U.S.A., in New York State, 38 m. N. of Albany; plentifully supplied with mineral springs; 12 m. to the E. is the scene of Burgoyne's surrender to Gates, Oct. 17, 1777. Pop. 13,500.

Saratov, city of Russia, on the Volga, 500 m. S.E. of Moscow. Its industrial activities include distilling, oil and tobacco, and it trades in corn, salt textiles. Pop. 327,600.

Sarawak, an independent state under British protection in NW. Borneo, fronting the China Sea on the NW.; was granted as an independent rajahship to Sir James Brooke by the Sultan of Borneo in 1842, and is still ruled by his descendants as rajahs; is very fertile, and grows sugar, coconuts, rice, sago, rubber and tea; is rich in minerals and oil is produced; capital Kuching, on the Sarawak R. Area, 50,000 sq. m. Pop. 475,000.

Sarcoma, a malignant tumour made up of cells of imperfectly developed connective tissue, which may occur in any part of the body; it frequently contains a numerous supply of blood-vessels.

Sarcophagus, a stone coffin or receptacle for a dead body; the oldest known sarcophagi are Egyptian; they were also used by the Phenicians, Etruscans, Persians and Romans, and were frequently elaborately carved.

Sard, a rare variety of carnelian which displays on its surface a rich reddish-brown hue, but, when held between the eyes and the light, appears of a deep blood-red.

Sardanapalus, Greek name of the last king of Assyria, and conqueror of Babylon. According to a Greek legend, surprised when at his ease by a large army of invaders, he suddenly developed into a hero, till hard pressed at length and shut up in Nineveh, and after 3 years' defence, finding resistance hopeless, he reared a funeral pile, and, setting fire to it, perished in the flames. (c. 669-622 B.C.).

Sardine, a small fish of the herring family, especially the pilchard

(*Clupea pilchardus*), in its young stage salted and preserved in oil. The Norwegian brisling, so prepared, is frequently sold under the name.



SARDINE

Sardinia, an island of the Mediterranean, 170 m. long and 75 m. broad, situated to the S. of Corsica; since 1859 part of the kingdom of Italy. It has a fruitful soil, and presents a diversified surface of hill and valley. It produces many minerals, timber and wine; there are important fisheries. The capital is Cagliari in the S. Area, 9,300 sq. m. Pop. 1,034,000.

Sardis, capital of ancient Lydia, in Asia Minor, at the foot of Mt. Tmolus, celebrated in olden time for its wealth, its trade, and luxury. In the 4th Century it was taken by the Greeks, who were succeeded by the Romans; was sacked and destroyed by Tamerlane in the 15th Century.

Sardonix, a beautiful and rare variety of onyx consisting of alternate layers of sard and white chalcedony.

Sardou, Victorien, French playwright, born in Paris; gave up medicine for literature, his first successes being *Monsieur Garat* and *Les Prés Saint-Gervais*, both in 1860. From that date his popularity grew and wealth flowed in upon him. His work was taken up by Sarah Bernhardt, for whom he wrote *Fédora*, *Théodora* and *La Tosca* (1887). His plays are characterized by clever dialogue and stage effects. (1831-1908).

Sargasso Sea, an area of the N. Atlantic Ocean which is largely covered with sea-weed (chiefly *Sargassum bacciferum*). It is of changing dimensions, but lies approximately between 36° and 76° W. longitude and 20° and 40° N. latitude, and is free from ocean currents.

Sargent, John Singer, British painter. Born at Florence, of American parentage, he studied there and in Paris before settling in Chelsea to paint portraits, and later landscapes. He was made an A.R.A. in 1894, and an R.A. in 1897. (1856-1925).

Sargon II., the assumed title of a who seized the throne in 722 B.C., on the death of Salmanser IV. He carried off over 27,000 captives from Samaria to Mesopotamia and Media, reconquered many revolted provinces, and besieged Jerusalem.

Sark, one of the Channel Is., 3½ m. in length and 1½ m. broad, 6 m. E. of Guernsey, and 24 m. from the French coast. It has steep cliffs 100 to 320 ft. high. Adjoining the island is Little Sark, connected with it by a narrow isthmus. Creux harbour is on the E. coast. Pop. 579. Sark is a dependency of Guernsey.

Sarpedon, the "Nestor," and king of the Lycians, son of Zeus and Europa, one of the heroes of the *Iliad*; assisted the Trojans in their war against the Greeks, and was slain by Patroclus.

Sarpi, Paolo, an Italian historian born at Venice; was the champion of the Republic against the Pope; was summoned to Rome and, on his refusal to obey, excommunicated. His life being in peril, he retired into his monastery, and wrote the *History of the Council of Trent*, with which his name has ever since been associated. He was held in high esteem by the Venetians, and was honoured at his death with a public funeral. (1552-1623).

Sarrail, Maurice Paul Emmanuel, French general. After seeing service in Algeria and Tunis and holding various staff appointments he took charge of the 3rd Army at the battle of the Marne in 1914. He was in Salonica in 1915 and 1916 and retired in 1917. From 1924 to 1925 he was High Commissioner in Syria. (1856-1929).

Sarsaparilla, the name of several plants of the genus *Smilax*, which yields the medicinal sarsaparilla used in the treatment of rheumatism and skin diseases, and as a beverage.

Sarthe, a river of France rising in the dept. Orne, and flowing SW. towards the Mayenne, which it joins near Angers. It gives its name to a dept. whose capital is Le Mans; cereals and apples are grown, and there are hemp and pottery manufactures and distilleries. Area, 2,410 sq. m. Pop. 388,600.

Sarto, Andrea del, more properly Andrea d'Agnolo, a Florentine artist; painted in oil and fresco numerous works; died of the plague at Florence. His work displays accuracy of drawing and delicacy of feeling, as exemplified in his "Charity" in the Louvre, Paris, and his frescoes in Florence. (1486-1531).

Sarum, an ancient and now deserted borough in Wiltshire, England, 2 m. N. of Salisbury, to which the name New Sarum is given. It was once a considerable city. The bishop had a castle there, but the see was removed to Salisbury in 1219. The site is now national property and has been excavated. It was famous as a "pocket borough" before 1832.

Saskatchewan, (1) a province of the former territories of Athabasca, Assiniboia and Saskatchewan; one of the world's

finest grain-growing areas. Capital, Regina. Area, 251,700 sq. m. Pop. 931,000. (2) one of the great navigable rivers of Canada, rises among the Rockies in two great branches, called respectively the N. and S. Saskatchewan, 770 and 810 m. long, which, flowing generally E., unite and after a course of 282 m., pass into Lake Winnipeg, whence the river issues as the Nelson, and flows 400 m. NE. to Hudson Bay.

Saskatoon, second city of Saskatchewan, on the Saskatchewan R. The university of the province is situated here. It trades in wood and wheat. Pop. 41,600.

Sassafras, a genus of plants of the order Lauraceae, the best known being the sassafras laurel (*S. officinale*), a small tree or bush found in the woods of N. America. The root, or an essential oil prepared from it, is used in medicine as a stimulant.

Sassanids, a dynasty of Persian monarchs, founded by Ardashir I. in A.D. 226, after a revolt against the Parthian rulers. Continually at war with the Roman, and later the Eastern (Byzantine) emperors, the line fell before the Moslem invaders in 637.

Sassari, the second city of Sardinia, in the NW., prettily situated amid olive and orange groves, 12 m. from the Gulf of Asinara; has an old cathedral, castle, and university, and does a good trade in olive-oil and grain. Pop. 52,000.

Sassoon, Siegfried, English poet and critic, became a pacifist during the World War. His *War Poems*, 1919, were a forcible expression of the disillusion of the time. *Memoirs of a Fox-hunting Man*, 1928, and *Memoirs of an Infantry Officer*, 1930, established his reputation as prose writer. In 1938 he published a new volume, *The Old Century*; and *Seven Years After*. (1886-).

Satan, an archangel who, according to Jewish and Christian belief, revolted against the Most High, particularly when required to do homage to Adam; for his disobedience he was, with all his following, cast into the abyss of hell. The only Scriptural information concerning him is that given in the books of Job and the Revelation of St. John, apart from the story of Jesus' temptation by him in the wilderness.

Satellites (*Hi. attendantes*), name given to the secondary bodies which revolve round the planets of the solar system, of which the Earth has 1, Mars 2, Jupiter 11, Saturn 10, Uranus 4, and Neptune 1; Venus and Mercury have none.

Satinwood, the wood of the tree *Chloroxylon Swietenia*, native to the mountainous parts of the East Indies and Ceylon. The wood is deep yellow in colour, and, when cut, shows a very smooth, ornamental surface; this quality makes it valuable for veneers, cabinet and furniture making. A similar wood is imported from the West Indies.

Satire, a species of poetry or prose writing in which the vice or folly of the times is held up to ridicule, a medium in which Horace and Juvenal excelled among the Romans, Dryden, Pope and Swift among English writers, and Voltaire, Molière and Cervantes among those of the Continent.

Satrap, a governor of a province under the ancient Persian monarchy, with large military and civil powers; when the central authority began to wane, some of them set up as independent rulers.

Satsuma Ware, a kind of pottery manufactured in Satsuma, the southern portion of Kyushu, Japan. It is buff in colour, and is



SARSAPARILLA
(*Smilax*
medica)

glazed to give a creamy, cracked effect. Modern Satsuma has little value. Genuine old Satsuma faience pieces are rather small, with minute crackle, decorated with enamel colours and matt gold, of delicate design slightly raised.

Saturated Solution, in chemistry, a solution which, when placed in contact with excess of the dissolved substance, undergoes no change. It is contrasted with (a) an unsaturated solution, which, under similar conditions, will dissolve more of the substance, and (b) a supersaturated solution, which will give up some of the substance it has already dissolved.

Saturday, the seventh day of the week, so named in honour of Saturn. As the Sabbath it is the weekly rest days of members of the Jewish faith, and is also kept as such by certain Christian bodies, including the Seventh-day Adventists.

Saturn, in Roman mythology, a primitive god of agriculture in Italy, corresponding roughly to the Greek Kronos, the father of Zeus, and sovereign of the Golden Age; was represented as an old man bearing a sickle.

Saturn, the planet of the solar system whose orbit is outside that of Jupiter; is 886 millions of m. from the sun, round which it takes 10,759 days or nearly 30 years to revolve, rotating on its own axis in a little over 10½ hrs. Its diameter is 9 times greater than that of the earth; it is surrounded by bright rings that appear as 3, and is accompanied by 10 moons; the rings are thin, and are supposed to consist of former satellites that have exploded.

Saturnalia, a festival in ancient Rome in honour of Saturn, in which all classes enjoyed and indulged in all kinds of merriment without restraint. The festivities associated with Christmas probably in part descend from it.

Satyr, in Greek mythology, semi-animal woodland deities who roamed the hills generally in the train of Dionysus or Pan (q.v.), dancing to rustic music; represented with long pointed ears, flat noses, short horns, and a hair-clad man's body, with the legs and hoofs of a goat; they were of lustful nature, and fond of sensual pleasure.

Sa'ud, Abdul-Aziz ibn, King of Saudi Arabia, including the Hejaz, Nejd and dependencies. At one time Sultan under Turkish rule, he first threw off the foreign yoke in 1913, and in 1917 became independent Sultan of Nejd. From 1917 to 1923 the British Government subsidised him to the extent of £500,000. In 1926 he was proclaimed King of the Hejaz, and in 1932 unified his possessions under their present name. (1882-).

Sauerkraut, a favourite article of food in Germany and elsewhere in N. Europe; formed of thinly sliced young cabbage laid in layers, with salt and spice-seeds, pressed in caaks and allowed to ferment.

Saul, a Benjamite, the son of Kish, who was anointed by Samuel to be the first king of Israel. He distinguished himself in the field against the enemies of his people, but fell at the hands of the Philistines after a reign of 40 years, and after several attempts on the life of David, who had been elected to succeed him.

Sault Sainte-Marie, (1) a lake port of Ontario, Canada, on the Sault Ste.-Marie ship canal and the St. Mary's R., which connects lakes Huron and Superior. It is a mining centre for various ores. Pop. 23,100. (2) city in Michigan, U.S.A., on the St. Mary's R.,

by bridge over which it is connected with Sault Sainte-Marie, Ontario. The river rapids, which are by-passed by ship canal, provide water power for the town's industrial works. Boat-building, lumbering and paper manufacture are carried on. Pop. 13,800.

Saumur, town of France, in the dept. of Maine-et-Loire, situated on the Loire and partly on an island in the river, 32 m. S.E. of Angers; once famous for its Protestant theological seminary, and till the Edict of Nantes a stronghold of the Huguenots; has trade in grain, dried fruits, and rosaries; is the site of an important military school. Pop. c. 14,000.

Sauterne, a village of dept. Gironde, France, which gives its name to a well-known white wine.

Savage, Richard, English poet and dramatist, who alleged that he was the illegitimate child of Lord Rivers, and gained the regard of Johnson. His chief poem, *The Wanderer*, has no poetic merit. (1697-1743).

Savannah, a name used chiefly in states to designate the wide, treeless plains of those parts; is practically an equivalent for "pampa," "prairie," and "steppe."

Savannah, a city and port of Georgia, U.S.A., on the Savannah R., 18 m. from its mouth; an important naval stores station and second cotton port of the U.S.A.; it has foundries, railway and machine shops, and lumber and paper-mills. Pop. 85,000.

Save (Sava), a river in Yugoslavia, a tributary of the Danube, which it joins at Belgrade after a course of 550 m. from its source in the Julian Alps.

Savernake Forest, large stretch of woodland, largely beech-clad, 3 m. S.E. of Marlborough, Wilts, England. It covers about 4,000 acres, and is rich in deer and game. In 1936 it was taken over by the Forestry Commission for preservation and development.

Savings Banks, banks for the receipt and accumulation of small savings. The Post Office Savings Bank in Great Britain, under State management, permits the deposit of any sum from 1s. to £500, paying interest at 2½ per cent. per annum. A depositor may have more than one account; there is no limit to the amount which may stand to his credit, but he may not deposit more than £500 in the aggregate in any one calendar year. There are some 10½ million active accounts in the P.O. Savings Bank, and holders' deposits, represented by Government Stock, aggregate over £170,000,000. Trustee Savings Banks are directed by local voluntary Trustees and Managers whose duties are defined by Statute and in rules certified by the Registrar of Friendly Societies, and are subject to government supervision. The total assets of these banks are over £260,000,000, representing nearly 2½ million active accounts.

Savings Certificates, National, first issued in February, 1916, to raise money for the World War, since which year there have been five later issues and one conversion issue. The first issue was at the cost price of 16s. 6d. each certificate with a maturity value of 36s. after 10 years and interest at 1d. a month after the tenth year; the price of the other issues was 16s., excepting the sixth, which was 15s., and the period 10 years for the 2nd, 3rd, Conversion, and 6th issues, 11 years for the 4th, and 12 years for the 5th issue. The total number of certificates, other than those of the Conversion issue, sold from 1916 to 1937 was over 1,362,000,000, representing a cash investment of close on £1,033,000,000.

Savoie, dept. of SE. France, mountainous and watered by the R. Isère, on the frontier of Italy; the capital is Chambéry. There are mineral springs at Aix-les-Bains and elsewhere. Area, 2,390 sq. m. Pop. 239,000.

Savona, seaport of Italy, on the Gulf of Genoa, on the Riviera, 26 m. SW. of Genoa, in the midst of orange groves; has a 16th-Century cathedral; exports pottery and has important ironworks, glassworks, tanneries, and a silk industry. Pop. 64,000.

Savonarola, **Girolamo**, Italian reformer, born at Ferrara, became at 24 a Dominican monk, was fired with zeal for the purity of the Church, and issued forth to denounce the vices that everywhere prevailed under her sanction, with threats of divine judgment on her head. The impression his denunciations made was especially marked in Florence, where for three years the reformer's influence became supreme, till a combination of enemies headed by the Pope succeeded in subverting it, and securing his ejection from the Church, his imprisonment, and final execution. (1452-1498).

Savory, the common name for plants of the genus *Saturia* of the order Labiatae, especially the common savory, an annual with large white or purple flowers grown in kitchen-gardens the leaves and young shoots of which are used as flavouring. *S. hortensis* is the summer savory, *S. montana* the winter savory. They were introduced into English gardens from S. Europe about 1575.



SUMMER SAVORY

Savoy, a hardy variety of cabbage (q.v.). It has curled and crinkly leaves.

Savoy, a former duchy, in the SE. of France, on the Italian frontier, comprising the two departments of Haute-Savoie and Savoie; was ceded by the kingdom of Sardinia to France in 1860; the Lake of Geneva bounds it on the N. and the lofty Graian Alps flank it on the E., forming part of the Alpine highlands; it is picturesque, with mountain, forest, and river (numerous tributaries of the Rhone); has excellent grazing lands; grows the vine abundantly, besides the usual cereals; Aix-les-Bains, Evian, and Challes are popular watering-places. Capitals (Haute-Savoie), Annecy; (Savoie) Chambéry. Area (Haute-Savoie), 1,775 sq. m.; (Savoie) 2,390 sq. m. Pop. (Haute-Savoie) 260,000; (Savoie) 239,000.

Savoy, **House of**, an ancient royal house of Europe (represented now by the king of Italy), whose territorial possessions were constituted a county of the Empire in the 12th Century under the name Savoy; was created a duchy in the 15th Century. By the treaty of Utrecht (1713) the island of Sicily was ceded to Savoy and the title of king bestowed upon the duke; in 1720 Victor Amadeus II. was forced to cede Sicily to Austria in exchange for Sardinia, which with Savoy and Piedmont, etc., constituted the kingdom of Sardinia till its dissolution in 1860, when Savoy was ceded to France and the remainder merged in the Italian kingdom under Victor Emmanuel.

Savoy, The, a district of the Strand, London, in which a palace was built in 1245 called the Savoy, in which John of France was confined after his capture at Poitiers. It was burnt at the time of the Wat Tyler insurrection, but rebuilt in 1506 as a hospital; it included a chapel, which was damaged by fire in 1864, but restored by Queen Victoria.

Saw, general name for various forms of hand or mechanical tool used for cutting wood, stone, or metals. The handsaw used by carpenters consists of a toothed blade set in a wooden handle; for woodcutting a long saw with a handle at each end is often used. A mechanical circular saw is in the form of a circular blade revolved at a high speed by machinery. Other forms in use for special purposes include the keyhole saw and mortise- and-tenon saw.

Sawfish, a family (Pristidae) of tropical fish, sometimes attaining 15 or 20 ft. in length, whose snout is extended into a long flat toothed beak with which it attacks and burrows in mud for its prey. They are included in the Ray order of fishes.



SAWFISH

Saw Fly, name for various hymenopterous insects which are familiar plant pests. The ovipositor of the female is composed of two broad plates, with serrated edges, by means of which they cut into the stems of plants and deposit their eggs in the slits thus formed. There is a large number of species, some of which are particularly destructive to rose trees, pine plantations, etc.

Saxe, **Maurice de**, marshal of France, natural son of Augustus II., king of Poland; distinguished himself under Marlborough and Prince Eugène, and eventually entered the service of France. Commanding in the War of the Austrian Succession, he took Prague and Eger, was made a marshal, and appointed to the command of the army of Flanders, in which he gained victories and captured fortresses, and was thereafter loaded with honours by Louis XV.; was one of the strongest and most dissolute men of his age; died of dropsy, the result of his debaucheries. (1696-1750).

Saxe-Coburg-Gotha, a small duchy of Germany, now included with Saxe-Meiningen and Saxe-Weimar, in the state of Thuringia (q.v.). Albert, Prince Consort of Queen Victoria, was a member of the ducal house of Saxe-Coburg-Gotha, whence the British kings Edward VII. and George V. used the name as their dynastic title until it was changed to Windsor in 1917.

Saxhorn, a conical-tubed brass wind instrument, invented by Adolph Sax in 1842; and used in Continental brass bands.

Saxifragaceae, a natural order of 90 genera and some 750 species of world-wide distribution, though chiefly found in temperate regions. They are mostly perennial herbs. The typical genus is *Saxifraga* (see *Saxifrage*). Other important genera are *Hydrangea* (25 species) and *Ribes* (60 species, including the black and red currants and the gooseberry).

Saxifrage, a popular name of various plants, of the genus *Saxifraga* and the order Saxifragaceae. They are mostly inhabitants of alpine and sub-alpine regions of the northern zone. Most of them are true rock plants, with tufted foliage and panicles of white, yellow or red flowers. Varieties include meadow saxifrage, mossy saxifrage or ladies' cushion, and thick-leaved saxifrage. They are extensively cultivated in rock-gardens.

Saxo Grammaticus, a Danish chronicler who flourished in the 12th Century; wrote *Gesta Danorum*, a history of Denmark down to the year 1168.

Saxons, a people of the Teutonic stock who settled early on the estuary

of the Elbe and the adjoining islands, who in their piratical excursions infested and finally settled in Britain and part of Gaul, joining with the Angles to invade and conquer England in the 5th to the 7th Centuries.

Saxony, a state of Germany, within on the E., between Bavaria (S.) and Prussia (N.), the mountainous frontier of Bohemia; spurs of the Erzgebirge, Richtegebirge, and Riesengebirge diversify the surface; is a flourishing mining and manufacturing country; Dresden is the capital, and other important towns are Leipzig, Chemnitz, Meissen, Plauen, and Wickau. By the time of the Thirty Years' War the electorate of Saxony, which in its heyday had stretched to the North Sea, and from the Rhine to the Elbe, had sadly dwindled away. It suffered much at the hands of Frederick the Great during the Seven Years' War, and in 1815, having sided with Napoleon, a portion of its territory was, by the Congress of Vienna, ceded to Prussia; was defeated with Austria in 1866, and joined the N. German Confederation, to be incorporated afterwards in the German Empire. Area, 5,785 sq. m. Pop. 5,200,000.

Saxony, Prussian, a province of that part of Saxony (q.v.) added to Prussia in 1815; situated in the centre of Prussia, N. of Saxony; is watered by the Elbe and its numerous affluents and diversified by the Harz Mts. and Thuringian Forest; contains some of the finest cereal-growing land in Prussia; salt and lignite are valuable products, and copper is also mined. The capital is Magdeburg, and other notable towns are Halle (with its university) and Erfurt. Area, 9,860 sq. m. Pop. c. 3,400,000.

Saxophone, a musical instrument, named after Adolphe Sax, its inventor, and having a reed and clarinet mouthpiece. It was introduced from abroad when jazz (q.v.) became popular at the end of the World War, and in 1927 was introduced among the instruments of the band of the Grenadier Guards.

Sayers, Tom, pugilist and champion of England, who only suffered one defeat in his career; famous for his fight with Heenan, the American, in 1860. (1826-1865).

Scabious (*Scabiosa*), an extensive genus of annual and perennial herbs of the order Dipsacaceae. They have entire or divided leaves and heads of blue, white or yellowish flowers. Devil's-bit (*S. succisa*) is a common British variety. Sheep's-bit scabious is *Jasione montana*, a wild English flowering plant of the order Campanulaceae.

Scad. See Horse Mackerel.

Sca Fell, the highest of English mountains, with 2 peaks, one 3,210 ft. and the other, Sca Fell Pike, 3,161 ft. high; situated on the Cumberland-Westmorland border, 15 m. E. of Egremont.

Scald, the name given to the wandering Scandinavia.

Scale, in music, a succession of notes arranged in the order of pitch between a given note and its octave. The chromatic scale includes the 12 tones and semitones of a given octave; the diatonic scale, major or minor, neglects the semitones.

Scale, a bony or bony outgrowth from the skin of certain mammals such as the scaly anteater, reptiles such as snakes, and particularly fishes; they also occur on the legs of birds. The name is also used in

botany of the small rudimentary or vestigial leaf constituting the covering of buds, corms, etc.

Scaliger, Joseph Justus, French scholar, born in Agen; accepted the chair of *belles lettres* in the University of Leyden on condition that he should not be called upon to lecture, and gave himself up to a life of study, especially on matters philological and literary; was a man of universal knowledge, and the creator of modern chronology. (1540-1609).

Scaliger, Julius Caesar, surnamed the Elder, Italian classical scholar, became page to the Emperor Maximilian, and served him in war and peace for 17 years; at 40 left the army, and took to studying the learned languages among other subjects; wrote a treatise on poetics and a commentary on the physics and metaphysics of Aristotle, and became an authority on the Aristotelian philosophy. (1484-1558).

Scallop, a bivalve mollusc (genus *Pecten*) of the order Filibranchia, with a fan-shaped shell, of which there are numerous species, many of them beautifully coloured. They move through the water by opening and closing their valves, and are remarkable for the prominent eyes borne on the mantle. A number of species are found in British waters, two of which, the Great Scallop (*Pecten maximus*, growing up to 5 in. across the shell) and the Queen or Quin (*P. opercularis*, a pink shelled variety) are fished for food. The scallop-shell in the Middle Ages was an emblem of the pilgrim to the shrine of St. James at Compostella.

Scalp, the outer covering of the cranium. It is formed of several layers, the outermost being the skin bearing the sweat and sebaceous glands and hair follicles, next the fibrous layer, and finally a layer of loose areolar tissue.

Scalping, the removal of the skin of the skull with hair attached, as proof of a warrior's prowess. The practice was in vogue in early times among the Scythians and Celts and Teutons, but is chiefly associated with the N. American Indians, among whom it was attended with elaborate ritual.

Scanderbeg (i.e., Iskander Beg, Prince or Bey Alexander), Albanian national hero, who, in the 15th Century renounced Islam for Christianity, and by his military prowess and skill freed Albania from the Turkish yoke; throughout his lifetime maintained its independence, crushing again and again the Turkish armies; was known among the Christians as George Castriot. (c. 1407-1467).

Scandinavia, general name for the peninsula of Europa, which embraces Norway (q.v.) and Sweden (q.v.). It is often used to include Denmark, Iceland, and even Finland, countries (except the last) whose peoples and languages are closely allied.

Scandium, a metallic chemical element belonging to the group of the rare earths (q.v.). Symbol Sc.; atomic number 21; atomic weight 45.10. It was discovered by Sir William Crookes.

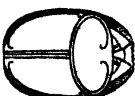
Scapa Flow, the basin of the Orkneys, islands of Pomona, Burray, South Ronaldshay, Walls, and Hoy. It is 8 m. wide and 15 m. long. In 1911 its pier was enlarged to accommodate destroyers; from 1914 to 1919 it was the headquarters of the Grand Fleet, and in June, 1919, Admiral Reuter here scattered the interned German fleet.

Scapula, or Shoulder blade, the flat, triangular bone which in most mammals forms the chief part of the shoulder girdle, and is the main support of the upper limbs on the trunk.



SAXOPHONE

Scarab, the Scarabeus, or sacred beetle of the Egyptians, of which steatite or stone representations, formerly worn as amulets, are often found in tombs.



Scarborough, sea-town and watering-place in Yorkshire, England; built on rising ground on the shores of a fine bay; is a place of great antiquity, with interesting ruins; has churches, harbour, piers, and a fine promenade. Pop. 41,400.



SCARAB
(Top and
side view)

Scarlatti, *Alessandro*, Italian composer, born at Trapani, Sicily. He produced an opera at Rome in 1679, and was patronised by Christina, Queen of Sweden. From 1684 he was Maestro di Capella to the viceroy of Naples, where most of his operas (numbering 115) were produced and where he died. His most noteworthy operas were *Laodicea e Berenice*, 1701; *Il Tigrane*, 1715. (1659-1725).

Scarlet Fever, an acute infectious disease, characterized by the appearance of a rash, and an inflammatory condition of the throat. It is found most frequently during the years from six to puberty. Greatest infectivity is during the eruption or rash, and the infection is carried by the discharges from the throat, nose and ears. "Peeling" is now regarded as innocuous unless contaminated by these discharges. The incubation period is usually two to three days. The onset is sudden, with vomiting, headache and sore throat. The temperature rises very quickly. The rash, usually of a diffuse, bright red colour with deeper spots, varies in intensity.

Scent, odour or perfume produced by essential or volatile oils in plants, and by certain secretions in animals. In plants oil-glands may occur in leaves, glandular hairs, or the petals of flowers, the scent serving as a protection against insects, or in flowers for the attraction of insects in pollination. Scent glands occur in many animals, and serve as a defence against enemies, a means of recognition of their own species, or for sex attraction. Scent is perceived by the olfactory nerves of the nose through irritation set up by minute particles of the substance, and not through "waves," as in sound and light.

Scepticism, in philosophy, an attitude of doubt regarding the possibility of real or ultimate knowledge. In religion it is generally applied to a doubt of, strong enough to amount to a practical disbelief in, the existence of the supernatural or of a god concerned with the welfare of the universe.

Sceptre, a symbol of royal power in the shape of a rod, usually of precious metal heavily ornamented, and having a knobbed head. It is used by the Sovereign at his coronation and on similar solemn occasions.

Schafer, *Sir Edward Sharpey*, British physician, professor of physiology at Edinburgh from 1899; inventor of the system of artificial respiration (q.v.) known by his name. (1850-1935).

Schaffhausen, canton in the extreme N.E. of Switzerland, surrounded N.E. and W. by Baden; the Rhine flanks it on the S.; is hilly, with fertile valleys sloping to the Rhine, and is chiefly given up to agriculture. Area, 115 sq. m. Pop. 51,200. The capital, Schaffhausen, occupies a picturesque site on the Rhine, 31 m. N.W. of Constance; has a 12th-Century cathedral and an interesting old castle. The famous falls, the finest on the Rhine, are 3 m. below the town. Pop. 21,000

Scharnhorst, *Gerhard von*, a Prussian general, born at Bordenau; distinguished as the organiser of the Prussian army, or the establishment of a national force instead of a mercenary; died of a wound in battle. (1755-1813).

Scheele, *Karl Wilhelm*, Swedish chemist, born in Pomerania; was an apothecary at Upsala and Köping; during his residence at the latter made numerous important discoveries, and published many chemical papers, his chief work *Experiments on Air and Fire*. He discovered oxygen independently of Priestley, as well as chlorine, tungsten, glycerine, and many organic acids; the mineral Scheelite, from which tungsten is obtained, is named after him. (1742-1786).

Scheele's Green, a brilliant green pigment prepared by adding copper sulphate solution to ammonium arsenite solution, and formerly popular as a colouring-matter for wall-paper; but since, when damp, paper so coloured is liable to evolve poisonous arsenical vapours, it is no longer used for this purpose.

Scheelite, a mineral from which tungsten is obtained; named after K. W. Scheele (q.v.).

Scheer, *Reinhold von*, German admiral; entered the navy in 1909; after a creditable naval career he was given command of the High Sea Fleet in 1915, and led the German forces at Jutland, becoming Chief of the Naval Staff in 1918. (1863-1928).

Scheldt, an important river of Belgium and Holland, rises in the French dept. of Aisne, and flows northwards past Cambrai (its highest navigable point) and Valenciennes, entering Belgium a little S. of Tournai and continuing northward, with Oudenarde, Ghent, and Antwerp on its banks; enters Holland, and splits into the Wester Scheldt and the Ooster Scheldt, which enter the North Sea, the former at Flushing, the latter at Bergen-op-Zoom; length 267 m., much the greater part being in Belgium.

Schelling, *Friedrich Wilhelm Joseph von*, German philosopher, born in Württemberg; studied at Tübingen, where he became acquainted with Hegel; wrote first on theological subjects and then on philosophical; went to Jena and became a disciple and follower of Fichte; gradually abandoned Fichte's position and began to develop ideas of his own, and in conjunction with Hegel edited the *Critical Journal of Philosophy*; held afterwards a professorship at Munich and a lectureship at Berlin. His philosophy is no finished or completed system, but is essentially a history of the progressive stages through which he himself passed. (1775-1854).

Schenectady, a city of New York State, on the Mohawk R., 16 m. N.W. of Albany. The Union University, founded in 1795, is situated here. The city has engineering and electric works. It was burned by the French and Indians in 1690. Pop. 95,700.

Scherzo, a piece of music in a playful style, indulging in whimsical surprises and unexpected modulations. It is a development from the minuet of the early suites, and is sometimes used as a movement in symphonies, sonatas, etc.

Scheveningen, watering-place of the Netherlands, 1 m. N.W. from the Hague. It has important fishing industries. The English and French fleets defeated the Dutch here in 1653. Pop. 26,500.

Schiedam, a port of S. Holland, Netherlands, on the R. Schie. It is the centre of gin manufacture in Holland; other liquors are also made. Pop. 58,200.

Schiehallion, a mountain in Perthshire, Scotland, near Loch Rannoch, and 10 m. WNW. of Aberfeldy. Elevation, 3,547 ft.

Schiller, **Johann Christoph Friedrich**, German poet and dramatist, born at Marbach; trained for law and then for medicine, but took chief interest in philosophy and literature, to the cultivation of which he devoted his life; his first work, a play, *The Robbers*, which on its publication in 1782 produced quite a ferment, was followed in 1783 by two tragedies, *Piccolo* and *Kabale und Liebe*; but it was with *Don Carlos* in 1787 his mature authorship began, and this was followed by the *History of the Netherlands* and *History of the Thirty Years War*, to be succeeded by *Wallenstein* (1798), *Maria Stuart* (1800), *The Maid of Orleans* (1801), *The Bride of Messina* (1803), and *Wilhelm Tell* (1804). He wrote, in addition, a number of ballads and lyrics. In 1794 his friendship with Goethe began. (1759-1805.)

Schipperke, the name of a breed of small black dog with a foxy head, small brown eyes, short hair and a bristling ruff on the neck and only a rudimentary tail. It weighs about 12 lb., was bred in Belgium, and is common on Dutch and Belgian canal boats as a watch-dog and rat-catcher.

Schism, term applied to a rift in a religious body, resulting in the breaking off of a section to form a new body, such as the schism of 1054 which resulted in the breach between the eastern and western Churches. The Great Schism is the name given to the period between 1378 and 1409, when the allegiance of Catholic Christianity was divided between two rival claimants to the Papacy.

Schist, a geological term applied to crystalline metamorphic rocks which have a polished structure and split in thin irregular plates, as opposed to the regular cleavage of clay-slate, etc., and the laminae due to simple stratification, as in flagstones.

Schleiermacher, **Friedrich Ernst Daniel**, German theologian, born at Breslau; brought up among the Moravians. His philosophical studies turned him from their creed, and he addressed himself to the task of elaborating a theology in which justice should be done to the claims of the intellect and the emotions of the heart, and began by translating Plato. Soon he formed a school, which included men such as Neander, to which all the schools of theology in Germany since have been more or less affiliated. (1768-1834.)

Schleswig-Holstein, province of the connecting link between Germany and the peninsula of Jutland; Danish from 1773; it was annexed by Prussia after the Austro-Prussian War of 1866, but after the World War the northern portion of Schleswig was restored to Denmark, as a result of a plebiscite in 1920, and is officially known as "Sønderjydske Landdele" or South Jutland Provinces, popularly by the spelling Slesvig. The chief towns are Kiel, Schleswig and Flensburg. Area, 5,820 sq. m. Pop. 1,590,000.

Schliemann, **Heinrich**, German archaeologist, born in Mecklenburg-Schwerin; from 1870 excavated at his own cost the ruins, among others in Greece, of Hissarlik, in the Troad, believing them to be those of Troy; he later carried on excavations at Mycenae, Ithaca, Tiryns and elsewhere; died at Naples after publishing various treatises. (1822-1890.)

Schmalkaldic League, a league of the Protestant states of Germany, concluded in 1530 at Schmalkalden, Prussia, in

defence of their religious and civil liberties against the Emperor Charles V. and the Catholic states. Its formation was followed by a war in 1546-1547 in which the League was defeated, but in 1552 the Treaty of Passau secured freedom for the German Protestants.

Schneekoppe, a mountain of the highest point of the Riesengebirge. It is 10 m. from Hirschberg.

Schneider Trophy, an international aviation trophy for seaplanes, valued at £1,000, and presented in 1913 by Jacques Schneider, a French patron of aviation. France won the first contest at Monaco in 1913 at a speed of 451 m.p.h. The following year Britain won at 881 m.p.h.; there were no contests during the World War, but they were resumed in 1918, America and Italy both winning races, as well as Britain. After 1927 the race was held every two years, and Britain won the Trophy outright in 1931 by a third successive victory, a speed of 379 m.p.h. being attained.

Schnitzer, **Eduard**, physician, born at Breslau; went to Turkey, entered the Turkish medical service, adopted the name Emin Pasha, and was appointed by Gordon medical officer of the Equatorial Province of Egypt, and raised to the rank of Pasha; soon after the outbreak of the Mahdist insurrection he was cut off from civilization, but was discovered by Stanley in 1889 and brought to Zanzibar, after which he was murdered by Arabs. (1840-1893.)

Scholasticism, the philosophy that prevailed in Europe during the Middle Ages, particularly in the 12th and following centuries. It has been generally characterised as an attempt at conciliation between dogma and thought, faith and reason, and an attempt to form a scientific system on that basis, founded on the pre-supposition that the creed of the Church was absolutely true and capable of rationalisation. Its greatest exponents were St. Thomas Aquinas (d. 1274) and Duns Scotus (d. 1308).

Schönberg, **Arnold**, Austrian musical composer, born in Vienna; where after self-teaching, he was taught by Zemlinsky. His symphonic poem, *Pelleas and Melisande*, appeared in 1903; *Gurrelieder* in 1911. He conducted in London in 1914. Some of his music is written to accompany spoken poetry, as *Pierrot Lumiere*, 1914. An extreme musical theorist, he has devised new scales and other ultra-modern peculiarities. (1874-).

Schönbrunn, imperial palace near Vienna, built by Maria Theresa in 1744, until the World War the summer residence of the Austro-Hungarian rulers.

School Boards, local bodies set up by the Education Act of 1870 to administer compulsory elementary education. They were elected by ratepayers by a form of proportional representation, but in 1902 they were abolished, and their duties transferred to Education Committees of County and Borough Councils under the supervision of the Board of Education.

Schooner, small vessel with two masts, and the principal sails on both of the fore-and-aft type. They are of two chief types: the top-sail schooner and the fore-and-aft schooner, the former carrying a square top-sail and top gallant sail on the foremast, and the latter having fore-and-aft sails alone.



SCHOONER

Schopenhauer, Arthur, German philosopher, born at Danzig, of Dutch descent; developed his pessimistic system in his great work, *Die Welt als Will und Idee* ("The World as Will and Idea"), which he published in 1818; was deeply influenced by Indian philosophy, to which his own system is definitely akin in the main lines of its thought. (1788-1860).

Schottische, a dance resembling the polka, with two figures; the name sometimes also refers to the Scottish dance also known as the "Highland Fling."

Schreckhorn, one of the loftiest of the Swiss Alps, having an elevation of 13,386 ft. It is in the Bernese Oberland, between the Finsteraarhorn and the Wetterhorn. It was first ascended by Leslie Stephen in 1861.

Schreiner, Olive, South African authoress, daughter of a Lutheran clergyman at Cape Town; achieved a great success by *The Story of an African Farm* in 1883, which was followed in 1890 by *Dreams*, also later *Dream Life and Real Life*, and *Trooper Peter Halket*; wrote also on feminism. (1859-1920.)

Schreiner, William Philip, Premier of 1898 to 1900, brother of preceding; favoured arbitration in the South African difficulty, and threatened to keep the Cape neutral in the war between Great Britain and the Transvaal; in 1914 became High Commissioner of the Union of South Africa in London. (1857-1919).

Schubert, Franz Peter, Austrian musical composer, born at Vienna; at 11 was one of the leading choristers in the court-chapel, later on became leading violinist in the school band; his talent for competition in all modes soon revealed itself, and by the time he became an assistant in his father's school (1813) his supreme gift of lyric melody showed itself in the song *Erl King*, the *Mass in F*, etc.; his too brief life, spent chiefly in teaching, was harassed by pecuniary embarrassment, embittered by the slow recognition his work won, though he was cheered by the friendly encouragement of Beethoven; his output of work was remarkable for its variety and quantity, embracing some 500 songs, 9 symphonies, 6 masses, operas, sonatas, etc.; his abiding fame rests on his songs, which are infused, as none other are, by an intensity of poetic feeling. (1797-1828).

Schumann, Robert, German composer and musical critic, born at Zwickau, Saxony. Law, philosophy and travel occupied his early youth, but in 1831 he was allowed to follow his bent for music and settled to study at Leipzig; two years later started a musical paper which, for more than 10 years, was the vehicle of essays in musical criticism. During these years also appeared his greatest pianoforte works, songs, symphonies and varied chamber music. In 1841-1842, appeared his piano Quartet and Quintet for piano and strings. *Paradise and the Peri* and *Scenes from Faust* appeared in 1843. He withdrew to a quieter life at Dresden, where much of his operatic and other music was written. During 1850-1854 he acted as musical director at Düsseldorf, but insanity at last supervened, and he died in an asylum two years later. (1810-1856).

Schuylkill, a river of Pennsylvania, U.S.A., rises on the N. side of the Blue Mts. and flows SE. 130 m. to its junction with the Delaware R. at Philadelphia; is an important waterway for the coal-mining industry of Pennsylvania.

Schwarzenburg, Karl Philip, Prince born at Vienna; distinguished himself in the wars against the Turks, the French and Napoleon; fought at Auster-

litz and Wagram; negotiated the marriage of Napoleon with Marie Louise; commanded the Austrian contingent sent to aid France in 1812, but joined the allies against Napoleon at Dresden and Leipzig, and captured Paris in 1814, at the head of the army of the Rhine. (1771-1820).

Schwarzwald, the Black Forest (q.v.) in Germany.

Schweinfurth, Georg, German explorer, botanist and archaeologist, born at Riga. In 1863 and again in 1868 he went to Egypt, studying the flora of the Nile, and on the second expedition discovering the Uele R. and the pigmies of the Akka. He accompanied Rohlfs, in 1873-1874, through the Libyan desert; he lived at Cairo making further journeys at intervals, 1875-1888. His books include: *Heart of Africa*, 1873, and *Af Sketchbook*, 1925. (1836-1925).

Schwerin, former capital of Mecklenburg-Schwerin, Germany; has a pretty site on the Lake of Schwerin (14 m. by 3), 47 m. S.E. of Lübeck, a 14th Century cathedral and Renaissance castle, and manufactures of lacquered ware and machinery. Pop. 53,700.

Schwyz, one of the three original cantons of Switzerland, German-speaking and Catholic; Lake Zürich forms part of the N. border, and Lake Lucerne part of the S.; Zug with its lake is on the W.; is mountainous, but good pasturage favours cattle-breeding, sheep and goat rearing; important industries in cotton and silk are carried on; Einsiedeln, with its famous monastery, attracts thousands of pilgrims, and the Rigi is a favourite resort of summer visitors. Area, 350 sq. m. Pop. 62,300. The capital Schwyz, is prettily situated 26 m. E. of Lucerne. Pop. c. 8,000.

Scialoja, Vittorio, Italian jurist, born at Turin; as minister of Foreign Affairs assisted in framing the Covenant of the League of Nations. (1856-1933).

Sciatica, neuralgia of the sciatic nerve, running down the back of the leg; it is not uncommonly associated with lumbago. It is manifested in pains which occur in the region of the hip, varied sometimes by acute paroxysms of extreme stabbing pain along the back of the thigh.

Science, originally meaning "knowledge," in its broadest sense, is nowadays generally restricted to what were previously called the "physical sciences"—the study of the various departments of man's environment. Science in this sense is concerned with description, not with explanation; it attempts to say *how* things happen, not *why* they happen. It is based in the final event on measurement and classification; and, therefore, does not claim to deal with those things which are not susceptible to treatment by these means. The most remarkable and far-reaching development of science in the 20th Century has been the realization that no single science can be pursued purely independently of the others, and in consequence considerable effort has been spent on schemes for a philosophical correlation of the scientific results attained by experimentation and observation in various fields.

Scilly Islands, a rugged group of islands belonging to Cornwall, England, 27 m. SW. of Lands End; consists of 6 larger islands—St. Mary's (1,628 acres) the largest, Trecoo, St. Martin's, St. Agnes and Bryher also being inhabited—and some 30 smaller, besides numerous rock clusters; climate is damp and mild, the cultivation and export of flowers, and fishing, are the principal industries. The only town is Hugh Town, on St. Mary's. There are some interesting ecclesiastical ruins, etc., Area, 4,040 acres. Pop. 1,700.

Scimitar, a short, curved-bladed sword much used by cavalry and apparently introduced into Europe from the East about the time of the Crusades. The blade broadens from the handle, being curved at the back and with a cusp at the point.



SCIMITAR

Scintillation, the twinkling effect of light radiated from a star as seen by the naked eye through the earth's atmosphere, which produces an irregular refraction of the light. The phenomenon is mainly confined to the so-called "fixed" stars.

Scipio, Publius Cornelius, The Elder, surnamed Africanus Major, Roman general, was present at the engagement near the Ticinus and at Cannae; was appointed proconsul of Spain at the age of 24, and made himself master of nearly the whole of it against the Carthaginians; on his return to Rome was made consul; transferred the seat of war against Carthage to Africa, and landed at Utica; met Hannibal on the field of Zama, totally defeated him, and ended the Second Punic War in 202 B.C. In 190 B.C. he overthrew Antiochus at Magnesia. He was accused two years before his death of malpractices in connection with the war against Antiochus, but, by a powerful speech induced the people to drop the prosecution. (237-183 B.C.).

Scipio, Publius Cornelius, The Younger, surnamed Africanus Minor, adopted by the Scipio family, his proper name being Lucius Aemilius Paulus; after distinguishing himself in Spain proceeded to Africa to take part in the Third Punic War; laid siege to Carthage, took it by storm, and levelled it with the ground in 146 B.C.; he was afterwards sent to Spain, where he captured Numantia after a stubborn resistance; an upright and magnanimous man, he died by the hand of an assassin. (c. 185-129 B.C.).

Sclerosis, a term in medicine applied to the hardening of an organ as a result of an excessive growth of connective tissue, with special reference to "disseminated sclerosis," in which hard patches appear on the brain and spinal column, resulting in paralysis, and to arteriosclerosis, or the hardening of the middle coat of the arteries. Cirrhosis of the liver is a form of sclerosis.

Scone, a village in Perthshire, Scotland, on the left bank of the Tay, 2 m. N. of Perth; once the capital of the Pictish kingdom, and the place of the coronation of the Scottish kings. The British "Coronation Stone," now placed in the Coronation Chair at Westminster Abbey, was at Scone until removed by Edward I.

Scopolamine, also called Hyoscyamine, a white crystalline alkaloid obtained from various plants of the natural order Solanaceae, e.g., deadly nightshade and henbane. It is excessively poisonous, but, in extremely small doses, is used in medicine as a hypnotic.

Score, an arrangement of the different parts of a musical composition on the page so that each bar may be read in all parts simultaneously. The arrangement generally followed is that established by Beethoven, in which the order from above to below is woodwind, brass, percussion, strings.

Scoresby, William, British explorer and physicist, born at Whitby; in 1822 undertook surveying work in Greenland; later entered the Church, but continued his scientific researches in terrestrial magnetism, oceanography and other subjects. The Royal Research Ship "William Scoresby," which is used by the "Discovery

Committee" of the British Government for whaling research, is named after him. (1789-1857).

Scorpio, the eighth sign of the zodiac, which the sun enters on Oct. 20.

Scorpion, an order (Scorpiones) of the class Arachnida (q.v.), consisting

of small animals varying considerably in size and shape of tail, claws, etc., and black or yellow in colour. The head and thorax are fused together into one single mass called the Cephalothorax.



SCORPION

The jointed tail usually bent back over the body bears a venomous sting, and there are four pairs of legs. They are found in most countries of the world except New Zealand, live mostly in forest and deserts, are nocturnal and prey upon spiders and other insects which they catch with their claws and sting to death with the poison injected from the needle-sharp sting in the tail.

Scorpion Fly (Panorpidae), a family of neuropterous (nerve-winged) insects, about $\frac{1}{2}$ -in. long, with a beak-like head and in the male a slender black body turning up at the extremity like a scorpion's tail.

Scot, Reginald, author of a famous work, *The Discoverie of Witchcraft* (1581), one of the earliest exposures of the absurdities of witchcraft and kindred superstitions, which provoked King James's defence *Demonology*; educated at Oxford, and spent a peaceful life gardening and studying; wrote also *The Hoppe Garden*. (c. 1538-1595).

Scot and Lot, parish funds by householders formerly assessed in certain boroughs, and based upon their ability to pay. The payment entitled the payer to vote, a right which continued after the Reform Act of 1832.

Scoter Duck (*Eidemia*), genus of wild ducks, marine in habit, some species of which are found round the British coasts. The male of the Common Scoter (*Eidemia nigra*) has glossy black, and the female dark brown plumage.

Scotland, the northern portion of the island of Great Britain, separated from England by the Solway, Cheviots, and Tweed, and bounded N. and W. by the Atlantic and E. by the North Sea; inclusive of 788 islands (600 uninhabited), it is divided into 33 counties, and has a coastline longer than England's by 700 m.; greatest length from Dunnet Head (most northerly point) to Mull of Galloway (most southerly) is 288 m., while the breadth varies from 32 to 175 m., Buchan Ness being the most easterly point and Ardnamurchan Point the most westerly.

From rich pastoral uplands in the S.—Cheviots, Moffat Hills, Lowthers, Moorfoots, and Lammermoors—the country slopes down to the wide, fertile Lowland plain—growing fine crops of oats, barley, wheat, etc.—which stretches, with a varying breadth of from 30 to 60 m., up to the Grampians (highest peak, Ben Nevis, 4,406 ft.), whence the country sweeps northwards, a wild and beautiful tract of mountain, valley, and moorland, diversified by some of the finest lochs and river scenery in the world. The east and west coasts present remarkable contrasts, the latter rugged, irregular, and often precipitous, penetrated by long sea-lochs and fringed with numerous islands, and mild and humid in climate; the former low and regular, with few islands or inlets, and cold, dry and

braeing; of rivers the Tweed, Forth, Tay, Dee and Clyde are the principal, and the Orkneys, Shetlands and Hebrides the chief island groups.

Coal and iron abound in the Lowlands, more especially in the plain of the Forth and Clyde, and granite in the Grampians; staple industries are the manufacture of cottons, woollens, linen, jute, machinery, hardware, paper, and shipbuilding. Glasgow is the largest city and chief industrial centre, while Edinburgh (capital) is the chief seat of law, education, etc. The established church (the Church of Scotland) is Presbyterian in organisation; there are four Universities (Edinburgh, St. Andrews, Glasgow and Aberdeen). The Lowlanders and Highlanders still retain distinctive characteristics of their Teutonic and Celtic progenitors, the latter speaking in many parts of the Highlands their native Gaelic.

Originally the home of the Picts (q.v.), and by them called Alban or Albain, the country, already occupied as far as the Forth and Clyde by the Romans was in the 5th Century successfully invaded by the Scots, a Celtic tribe from Ireland. In 843 their king Kenneth was crowned king of Picts and Scots, and by the 10th Century the country (known to the Romans as Caledonia) began to be called Scotia or Scotland. Government and power gradually centred in the richer Lowlands, which, through contact with England, and from the number of English immigrants, became distinctively Anglo-Saxon. Since the Union with England in 1704, the country has been governed as an integral part of Great Britain, but in the 20th Century there has been a gradual revival of national Scottish institutions, and there is a flourishing Nationalist Movement which aims at "Home Rule." Area, 30,400 sq. m. Pop. 4,843,000.

Scotland, Church of. The established church of Scotland is a Presbyterian body, governed by a General Assembly which meets annually under the presidency of a Moderator in the presence of a Lord High Commissioner representing the King. Its doctrinal basis is the Westminster Confession of 1646. From time to time various secessions from it have occurred, but in 1899 the largest seceding body, the United Free Church of Scotland, reunited with it, save for a small number of dissenting ministers and congregations. Its present membership is about 1,250,000.

Scotland Yard, New, the headquarters of the London Metropolitan police, including the Criminal Investigation Department; popularly thought of as the central national institution for crime investigation, though in fact it has no concern with crimes committed outside the Metropolitan area unless its services are specially requested by the local police of the district concerned.

Scots, The, a tribe of Celts from Ireland who settled in Argyllshire and the neighbouring parts of North Britain, and who, having gained ascendancy over the Picts in the E., gave to the whole country the name of Scotland.

Scots Pine, or Scots Fir (*Pinus sylvestris*), a fine North Scottish coniferous tree which attains a height of 150 ft. The bark is brown and fissured; the needles are twisted and borne in pairs on dwarf shoots, which fall after three years; the winged seeds are liberated after 18 months. The wood (yellow deal) is used for packing-cases and mine-props.

Scott, Charles Freestwich, British journalist, for 57 years editor of the *Manchester Guardian*; born at Beth. He entered the office of the *Manchester Guardian*, 1871, becoming editor in the following year, and made it the second paper in the kingdom. From 1895 to 1906 he was in Parliament as a

Liberal. His paper opposed the British war policy in 1899 and 1914. (1846-1932).

Scott, Charles W. A., British airman, born in London; in 1931 flew 10,450 m. in 109 hours 50 min. from England to Port Darwin, Australia; in 1932 he reached Australia in 8 days, 20 hrs. 44 min., a new record which was beaten by Kingsford-Smith in 1933. With C. Black he won the MacRobertson trophy, a prize in the race to Melbourne, Oct. 1934, his time being just under 3 days. In 1936 he won the London-Johannesburg air race in connection with the Johannesburg Exhibition. (1903-).

Scott, Sir George Gilbert, English architect, born in Buckinghamshire; was the builder or restorer of buildings both in England and on the Continent in Gothic, and wrote several works on tecture. Among his works are the Memorial, London, and several of London Government offices. (1811-1878)

Scott, Sir Giles Gilbert, British architect, born in London; was the builder or restorer of buildings both in England and on the Continent in Gothic, and wrote several works on tecture. Among his works are the Memorial, London, and several of London Government offices. (1811-1878)

Scott, Robert Falcon, British naval officer and explorer. Born at Devonport, he early joined the navy, and in 1900 took the ship *Discovery* to the Antarctic, returning in 1904 after making important discoveries. Promoted to captain, he left England again in 1910 in the *Terra Nova*, and with Wilson, Oates, Evans, and Bowers succeeded in reaching the Pole on January 18, 1912, to find Amundsen (q.v.) had preceded him by three weeks. On the return journey he and his colleagues perished. (1868-1912).

Scott, Sir Walter, Scottish novelist, born at Edinburgh, of Scottish Border blood; lost the use of his right leg when 18 months old, which determined, to a marked extent, the course of his life; spent much of his childhood in the country, where he acquired that affection for all natural objects which never left him. Professionally he was a lawyer, but though he received at length a sheriffship worth £300 a year, and a clerkship to the court worth £1,500, he early chose a literary career. His first success was the publication in 1802, of *The Minstrelsy of the Scottish Border*, followed the same year by *Cadwale Castle*, and by *The Lay of the Last Minstrel* in 1805, the first poem which gained him popular favour, by *Marmion* in 1808, and by *The Lord of the Isles* in 1814. On the rise of Byron to poetic fame Scott turned to novel-writing. The period of his productivity in this line extended over 18 years, commencing with the year 1814, by which time he had built his home at Abbotsford on the Tweed, near Galaahills. This was the year of the publication of *Waverley*, which was followed by that of *Guy Mannering*, *The Antiquary*, *Rob Roy*, *Old Mortality*, and *The Heart of Midlothian* in the year 1819, when he was struck down by an illness, the effects of which were seen in his after-work. *The Bride of Lammermoor*, *Ivanhoe*, *The Monastery*, *The Abbot*, *Kenilworth*, and *The Pirate* belong to the years that succeeded that illness, to which may be added *Redgauntlet* and *The Fortunes of Nigel*, together with *Quentin Durward* and *Woodstock*. His later years were clouded by a burden of debt, but he continued to write to the end. He was buried at Dryburgh Abbey. (1771-1832).

Scott, William Bell, Scottish painter and poet, born at Edinburgh; his paintings include series illustrating Northumbrian history and the battle of Chevy Chase at Wallington Hall; he published, besides verses, lectures on art and an autobiography. (1811-1890).

Scott, Winfield, American General, born at Laurel Branch, near Petersburg, Va. He left law for the army in 1808, and fought in the war with Britain in 1812, winning the battle of Chippewa in 1814. He prepared the first tactical manual for the U.S. Army, and in 1847 took command of the army in the Mexican War, occupying Mexico City. He was defeated as Whig candidate for the Presidency in 1852. (1786-1866).

Scottish Terrier, or **Aberdeen Terrier**, a rough

wire-haired dog, originally native to the Isle of Skye, used for fox-bolting. The size, shape and colour (black, white or brindle), vary; some breeds are prick-eared, some drop-eared. The West White Highlander, the Cairn, and the Skye are variations of the Scottish terrier.



SCOTTISH TERRIER

Scouting applied to the practice of North American Indians in tracking their foes. In the army scouting, or reconnaissance, as it is called, forms part of normal military training. In manoeuvres, scouts are sent out, in parties, in pairs, or singly, ahead of the main body of troops, to gain information on the topographical features of the country, or to ascertain the movements and disposition of the enemy.

Scranton, town in Pennsylvania, U.S.A., on the Lackawanna R., 144 m. NW. of New York; does a large trade in coal, and is the centre of a busy steel, iron, and machinery industry. Pop. 143,000.

Scrap of Paper, a famous phrase used by Bethmann Hollweg, Chancellor of Germany, in reference to the treaty (1839) guaranteeing the neutrality of Belgium when the British Ambassador presented his country's ultimatum on August 4, 1914, after Germany had violated Belgian neutrality.

Screen, in photo-engraving, the two sealed glass plates used in half-tone process work. Each plate is etched with diagonal lines, and the two plates are put together so that the diagonal lines form a crosswork pattern. For very fine work there may be as many as 200 lines to the inch, whereas coarser screens may have as few as 60. Placed in the camera between the lens and the sensitive plate, the screen by the action of light has the effect of breaking up the tones of the picture into fine dots.

Screen, a partition of stone, metal, or wood, serving to cut off one part of an ecclesiastical building from the rest. The sanctuary screen separates the sanctuary proper from the choir, and the chancel or choir screen the chancel or choir from the nave. The name "choir screen" is sometimes applied to the partitions separating the choir from aisles running on each side of it. See also **Mood**.

Screw Propeller, in a ship, a carrying two or more symmetrically arranged blades or flanges. While its general effect is to create a forward thrust of the ship by forcing a column of water in the opposite direction, the exact mechanics of the process is even yet not fully understood. It is, however, necessary to shape and adjust the flanges so that the thrust is equal over their whole surface, and not to run the propeller so fast that the required flow of water over the flanges is no longer attained.

Scriabin, Alexander Nicolas, Russian composer, born at Moscow, where from 1896 he was a professor at the

Conservatoire; for many years he toured Europe composing. *Prometheus* is probably his best-known composition; others include *The Divine Poem*, and *The Poem of Ecstasy*. (1871-1915).

Scribes (i.e., writers), a non-priestly class among the Jews devoted to the study and exposition of the Law, who rose to a position of importance and influence in the Jewish community, and were known in the days of Christ also by the name of Lawyers, and were addressed as Rabbis.

Scriptorium, the name given to a cloister in monasteries set apart for the use of scribes copying manuscripts.

Scrofula, a constitutional weakness produced in early life by lack of nourishment, often predisposing to tuberculosis; it is sometimes revealed by a disease of the neck glands, formerly known as "King's evil" (q.v.).

Scrophulariaceae, a family of dicotyledonous plants, mainly found in the temperate regions, of which various species are found or grown in Britain, including the toadflax, foxglove, antirrhinum, veronica and pentstemon. Some 200 genera and 2,600 species are recognised in the order.

Scrub, name given to a stunted growth strong transpiration (i.e., exhalation of watery vapour from the stomata of the plants), covering large areas in certain semi-desert parts of the world, as in much of central Australia.

Scullin, James Henry, Australian politician, born in Victoria, he earned his living as a journalist, and in 1910 he became a Labour member in the House of Representatives. In 1928 he was elected Leader of the Labour party, then in opposition, and in 1929 succeeded to the Premiership until his defeat by Joseph Lyons' United Australia Party in 1932. (1876-).

Sculling, the art of propelling a boat of 2 sculls or oars, both wielded by one person. Single-sculling or double-sculling skiffs are heavy boats with fixed seats and fixed rowlocks. Racing sculling-boats proper, known as "funnies" and "whiffs," are narrow clinker-built boats, coxswainless, single- or double-sculling, with sliding seats and outrigger rowlocks. The chief sculling events are the World's Championship, the Wingfield Sculls, and the Diamond Sculls (rowed at the Henley Regatta).

Sculpture, the art of three-dimensional representation whether in hard or plastic media, by means of carving or modelling; the name is often applied to bas-relief, where the forms and figures project from a flat background instead of being free. The method of working varies with the material used. Stone, ranging from Parian marble, Parbeck marble and granite to alabaster, may be carved direct from the block, or by the mechanical process of "pointing." Modellings in soft substances such as clay may be perpetuated by means of bronze castings, the best hollow casts being obtained by the cire-perdue method.

Many fine examples of sculpture exist from antiquity, notably the Egyptian granite and basalt statues of Pharaohs dating from 3000 B.C., Assyrian sculpture from Nineveh and other sites, and from the 7th Century B.C., a magnificent range of Greek sculpture, both religious and secular, culminating in the work of Phidias, the decorator of the Parthenon in the 5th Century B.C., and Praxiteles, the sculptor of the Olympian Hermes in the 4th. The "Winged Victory of Samothrace" and the Aphrodite from Melos are well-known examples of later work.

In ancient India and Central America also there were flourishing schools of sculpture in the last five centuries before Christ, marked by strong conventions of style and method. It was the Greek ideal of sculpture, however, that persisted in Europe and dominated the Renaissance schools in Italy, in particular the 14th Century Florentine school which produced Donatello, Luca della Robbia, Michelangelo and Cellini. The same tradition made its way with various modifications to France, Spain and later England, but at the close of the 19th Century, the powerful romanticism of Rodin in France heralded its abandonment.

In the 20th Century, fresh impetus was given to sculpture by the growth of interest in African sculpture and the rise of the abstract ideal in art, the creation of form for its own sake divorced from obvious connection with external nature. Epstein and Henry Moore are two sculptors of this century whose work exemplifies these tendencies.

Sculptured Stones, in a more certain commemorative monuments (usually rough-hewn slabs or boulders, and in a few cases well-shaped crosses) of early Christian date found in various parts of the British Isles, bearing rude lettered and symbolic inscriptions and ornamental designs resembling those found in Celtic MSS. Lettered inscriptions are in Latin, Ogham (*q.v.*), and Scandinavian runes, while some are uninscribed; usually found near ancient ecclesiastical sites, and their date is approximately fixed according to the character of the ornamentation. Some of these stones date as late as the 11th Century.

Scunthorpe, town and borough of Lincolnshire, England, 12 m. SE. of Goole; a rapidly growing centre of the iron and steel industry. Pop. 38,700.

Scurvy, a disease resulting from a diet deficient in fresh fruit and vegetables; caused by the lack of certain vitamins (*q.v.*) contained in these foods. The disease was at one time common among sailors who existed for long periods on salt meat.

Scutage, in feudal law, a tax on a knight's fee or holding paid in commutation of personal service to the overlord. It was frequently levied in England from the time of Henry II., and its gradual substitution for feudal military obligations was one of the chief causes contributory to the decay of feudalism.

Scutari (Shkoder or Skodra), Albania, at the S. end of the lake of the same name; manufactures arms and textiles; Pop. 29,000. Also name of a suburb of Istanbul, Turkey, on the Asiatic side of the Bosphorus; manufactures silk and muslin. Pop. c. 125,000.

Scylla and Charybdis, in Greek legend, two rocks opposite each other at a narrow pass of the strait between Italy and Sicily, in the cave of one of which dwelt Scylla, a fierce monster that barked like a dog, and under the cliff of the other of which dwelt Charybdis, a monster that sucked up everything that came near it, so that any ship passing between in avoiding the one became a prey to the other.

Scyros, Skiros, or Skyro, an island of the Northern Sporades group in the Aegean Sea, 24 m. NE. of Euboea. It is mountainous and has an area of about 80 sq. m. Sheep and goats are raised and fruit cultivated.

Scythians, a people whose various tribes, in classical times, occupied the steppes of SE. Europe, and the adjoining regions of Asia, and were of nomadic habit; kept herds of cattle and horses, and were mostly in a semi-savage state. The region they occupied is called Scythia.

Sea Anemone, a radiate animal of the order Anthozoa. Gelatinous and fleshy in substance, it consists of a short thick tube which attaches itself firmly to a rock by a cup-like disc at the base. Tentacles conceal the mouth and are used for catching prey. It is beautifully coloured, and reminiscent of a large flower.

Sea Bass (*Morone labrax*), a sea-fish of the family Percidae, the commonest of British sea-perches; it is found in the Mediterranean and round the British Isles; bluish grey in colour, edible but rather coarse.

Sea Cow (Sirenia), the order of sea mammals which includes the Manatees and Dugongs (*q.v.*).

Sea Elephant (*Moringa leonina*), a gigantic seal with a

trunk-like nasal projection. There are two species, a northern and an Antarctic, the latter sometimes reaching a length of 21 ft.



SEA ELEPHANT.

Seaford,

a town and watering-place of East Sussex, England, 60 m. from London. The Onse ran into the sea here until the storm of 1570 diverted it to Newhaven. There are remains of British and Roman camps at Seaford Height. Pop. 6,900.

Seagull. See Gull.

Seaham, town in Durham, on the coast, 5 m. from Sunderland. It has an important harbour, blast furnaces, factories and collieries. Pop. 27,000.

Sea Heath (*Frankenia laevis*), a perennial herb found in the Channel Islands and on salt-marshes of Southern England, with procumbent, wiry branches, and small rose-coloured flowers blooming from July to August.

Sea Holly (*Eryngium maritimum*), a plant with prickly leaves, a thistle-like blue flower and a large root formerly used for the manufacture of a sweetmeat. It belongs to the natural order Umbelliferae and is not uncommon on British shores.

Sea Horse (*Hippocampus*), a genus of small fishes of the family Syngnathidae, allied to the pipe-fish and the pipe-fish. One species, the *Hippocampus breviceps*, is found in British waters. It has a horse-like head, and swims with the body in a vertical position, motive power being supplied by the dorsal fin. The prehensile tail serves as an anchor.

Sea Kale or **Sea Cabbage** (*Crambe maritima*), a perennial plant of the family Cruciferae, with stout branching stems; grows on sandy shores. It is cultivated as a table vegetable, the young shoots and "blanched" stems being edible.

Seal, a family of marine carnivora of almost universal distribution. There are two main groups: the earless or true seals (Phocidae), and the eared seals (Otariidae). The true seals include those perfectly adapted for an aquatic existence, but their skin being covered with only coarse hairs and there being no soft underfur, they are for the most part of little commercial value. The common seal (*Phoca vitulina*) breeds in certain parts of the British shores. The grey seal also is found. They are destructive to fishing though they receive a certain measure of protection. The eared seals include several species yielding valuable fur, especially the fur seal (*Otaria ursina*) of the N. Pacific. The other species include the sea-lions. Unlike the earless true seals, they can use their hind feet for walking on land by doubling them under the body.

Seal, an impression made in wax or other soft medium with an incised stamp of metal or other material. The word is often used of the stamp itself. The earliest seals were probably those of Babylonia, Assyria, and Egypt, and were cylindrical in shape. The Greeks used wooden seals, and later carved gems. The first Great Seal of England was made during the reign of Edward the Confessor. Since the knowledge of writing and the possibility of holograph signatures has become general, the use of seals has degenerated into a mere formality, though they are still required by law to authenticate certain documents issued from corporate bodies.

Sea Lavender (*Statice limonium*), a perennial herb found on coasts and salt-marshes in temperate regions. The leaves are radical, and the bluish-purple flowers are borne on tall, branching stems.

Sealed Orders, orders given to the commanding officer of a ship or squadron which he is not allowed to open till he has proceeded a certain distance into the high seas; an arrangement in order to ensure secrecy in a time of war.

Sealing Wax, an artificial compound used for sealing letters and envelopes, composed of shellac and turpentine tinted with vermilion or other colouring matter.

Sea Lion, name given to several members of the eared seal family. The southern sea lion is about 7 to 8 ft. long. The male is reddish-brown, with a heavy mass of stiff curly hair on the neck and shoulders. Another species, the Californian sea lion, found off the western coasts of N. America, is frequently trained for menageries. See also Seal.

Seaman, Sir Owen, British poet and humorist who, in 1900, became editor of *Punch*; he was knighted in 1914; among other volumes he wrote *Horace at Cambridge* and *In Cap and Bells*. (1860-1936).

Seamew, an alternative name for the seagull. See Gull.

Sea Otter. See Otter.

Seaplane, a heavier-than-air flying machine so built as to be capable of alighting on or rising from the sea. It may be either a flying boat or float-plane. The former is better adapted to ocean travel and is in use for the British Empire Mail Services. There is also an "amphibian" type, fitted with terrestrial landing gear as well as floats. A float-plane is similar in construction to a land-plane, except that float gear takes the place of wheels; speedier than a flying boat, it is not capable of carrying so heavy a load.

Searchlights, an apparatus used for signalling and other purposes in warfare. It consists of a lamp with powerful reflectors and a projector so adjusted that a broad beam of light travels in a horizontal path. For signalling the searchlight waves long or short flashes in the sky in the Morse Code. The maximum intensity of a modern electric searchlight is anything up to 60,000,000 candle power in the projector beam. Searchlights are especially useful for tracking aircraft in flight. They are also used by merchantmen in navigating streams at night, and by warships to detect the approach of hostile craft, and on forts.

Search Warrant, a magistrate's permitting a search by the police of private premises. Various Acts of Parliament permit the issue of such warrants under certain conditions in cases of suspected theft, or to enable searches to take place for illicit stills, explosives, betting or gaming implements or documents, neglected children, etc.

Sea Serpent, a marine monster of which is generally accepted as mythical, though several seemingly authentic accounts of its appearance have been circulated. It is generally supposed that such serpent-like appearances are caused by enormous cuttlefish swimming on the surface of the water, with their 20 ft. long tentacles elongated fore and aft. Other fishes which might also be mistaken for the sea-serpent are the basking-shark, tape-fish, marine snake, and oar-fish, which reaches a length of 50 ft.

Sea-sickness, nausea and vomiting produced by a vessel at sea; the disturbance of the body in relation to its surroundings gives a shock to the nervous system, while the stomach also suffers displacement.

Sea Snake, a family (Hydrophiinae) of aquatic reptiles, brilliantly coloured, found in the Indian and Pacific Oceans. The sea snake differs from the land snake in its compressed and oar-like tail, which is used as a paddle. It is extremely venomous. Diet consists of fish and other marine creatures.

Seasons, the climatic and meteorological effects produced regularly each year in any given area by the changing position of the earth in relation to the sun. In temperate climates four are distinguished, spring, summer, autumn (or fall), and winter; in equatorial regions usually only two, the wet and dry seasons, are strongly marked. The winter of the southern hemisphere corresponds in time with the summer of the northern, one face of the earth being turned from the sun while the other is directly facing it.

Seathwaite, a village in Borrowdale, Cumberland, on the R. Derwent. Plumbago was formerly mined here. It is remarkable for its rainfall, varying from 120 to 140 inches annually, the heaviest in England.

Seaton, seaside resort on the S. coast of Devon, England; 10 m. S. of Honiton, at the mouth of the R. Axe. Garnet, beryl, quartz and other minerals are found in the parish. Pop. 2,350.

Seaton Valley, urban district of England, 7 m. N. of North Shields. Coal mining is carried on in the neighbourhood. Pop. 28,200.

Seattle, the largest city in the state of Washington, U.S.A., on Elliott Bay, 45 m. SE. of Port Townsend and 60 m. from Olympia. It is an important Pacific port, with direct steamer service to the East, and the trading port of the Alaska fisheries. The State University of Washington is situated here. The industries are varied and include ship-building yards and canning works. Pop. 365,500.

Sea Urchin (*Echinoidea*), a group of marine animals of the class Echinodermata. The body is, in most species, almost spherical, and is covered with spines like the quills of a hedgehog. There are both coastal and deep-sea species; they feed mostly on sea-weeds.

Sea Water. The amount of salts and other chemicals present in sea water averages about 3½ per cent. by weight, over three-quarters of this being common salt (sodium chloride). Other salts present include potassium and magnesium chlorides, magnesium, potassium and calcium sulphates, calcium carbonate, etc. The proportions vary considerably from sea to sea, the Dead Sea in Palestine having a salt content of about 25 per cent. owing to the evaporation of the water, and the Salt Lake also being very saline.

Sea Weeds (*Algae*), a large group of marine plants of the order Thallophyta. There are over 400 varieties, divided into three main groups: *Chlorophyceae*, green; *Phaeophyceae*, brown; and *Rhodophyceae*, red sea-weeds. The green variety is found fairly near the surface of the sea; the red lower; and the brown at all depths. Great use is made of sea-weed both medicinally and as manure for the cultivation of crops. It is also used in the manufacture of soaps, jellies, and paper varnish. In Roman times an alkaline dye was obtained from it.

Sebastian, St., a Roman soldier at Diocletian, when it was discovered that he was a Christian; a favourite subject with painters, by whom he is generally depicted bound naked to a tree and pierced with arrows. Feast, January 20. (255-288).

Sebastopol, or **Sevastopol**, seaport of the U.S.S.R., situated on a splendid natural harbour (4½ m. by 1 m.), on the S.W. of the Crimea; during the Crimean War was destroyed and captured by the French and English after a siege lasting from Oct. 9, 1854, to Sept. 18, 1855; has, since 1885, been restored, and was a Russian naval station before the World War. Pop. 78,300.

Second Advent, the belief in the coming of Christ (see Matt. xxiv.); specifically the belief shared by a sect, the Adventists, numbering some 150,000, founded in America about 1830, now divided into several groups, the largest being the Seventh Day Adventists.

Secondary Schools. See Education.

Second Chamber, the higher or revising body or House in a bicameral system of government. Its members are frequently not directly elected by the people, as are those of the "lower chamber," but are nominated or, as in the case of the House of Lords, are hereditary or life peers. In the United States and other federal countries, the Senate, as the Second Chamber is called, is composed of members chosen by the constituent States or Provinces of the Federation. In the British Dominions they are generally elected, except in Canada, where they are nominated. In those Crown Colonies which have a Second Chamber, it is usually nominated and is most often called the Executive Council. In Eire (Ireland) the members of the Senate are partly nominated, and partly elected on a vocational basis. The traditional role of a second chamber is to act as a check on rash legislation. Southern Rhodesia has only one Chamber (Legislative Assembly). In Barbados and the Bahamas the Legislative Council (nominated) is virtually a Second Chamber.

Second Empire, the government established in France in 1852, by Louis Napoleon, subsequent to the Revolution of 1848, and the *coup d'état* of 1851. Originally absolutist, it became liberalised by constitutional changes enforced by the opposition, while the surrender of Napoleon in the disastrous Franco-Prussian War of 1870, completed its downfall.

Second Lieutenant, the lowest commissioned officer in the British army, that in which cadets enter it after passing through the Royal Military colleges. The badge of rank is a single star.

Second Sight, supposed power of seeing things future or distant, particularly of obtaining knowledge of the time of deaths of persons at a distance, and embracing telepathy and clairvoyance; a power superstitiously ascribed to certain people in the Highlands of Scotland.

Secretary Bird, the common name of a family of birds (the Serpentariidae), the only one of its order and itself including only two species the *Serpentarius serpentarius* and the *S. gambiensis*. They are birds of prey found in South Africa and Senegambia respectively, mainly grey and white in colour, with a crest of feathers whose resemblance to a "pen behind the ear" has given the bird its name. It is protected in Africa because of its usefulness in destroying poisonous snakes.



SECRETARY BIRD

Secretary of State, name given to nine members of the British Cabinet, whose departments are respectively concerned with Home Affairs, Foreign Affairs, War, India, Burma, the Dominions, the Colonies, the Air, and Scotland. The office traces back to the reign of Elizabeth, when there were two such secretaries. There were sometimes two and sometimes three Secretaries of State during the 18th Century; in 1801, there was one for home affairs, one for foreign matters, and a third for war and colonial work. In America the Secretary of State is a member of the Cabinet; is in charge of foreign affairs, and enjoys, by tradition, pre-eminence over other ministers. He succeeds automatically to the Presidency in the event of the President and Vice-President dying during their term of office.

Secretin, discovered by Bayliss and Starling in 1902, is a hormone produced in the small intestine, which passes into the blood and causes the pancreas to secrete the digestive juices.

Secretion, a liquid excreted by a gland in the human or animal body and necessary to the chemical functioning of the whole. The physiology of the internal secretions of such glands as the thyroid, pituitary, suprarenals, etc., generally known as hormones (q.v.) is one of the most important branches of modern medicine.

Secret Service, an espionage or intelligence service, organized by most States for the purpose of acquiring information as to the naval and military concerns of other States. Such information is acquired by agents acting abroad, and is necessarily a hazardous undertaking, for if detected the agent receives no protection from his employers.

Secret Societies, societies formed generally for special purposes to which the members are bound by oath, being also sworn to secrecy; they are now forbidden in England by law, charitable societies and those having a quasi-religious basis (e.g., Freemasonry) being excepted. Noted secret societies were the Assassins (Mohammedan fanatics, 11th Century), the Vehmische Tribunal (religious society in Westphalia, 13th Century), the Rosicrucians (German mystical society, 14th Century), the Ribbon men (Irish anti-landlord society, founded 1820), the Carbonari (Italian society against French rule, founded 1808), the Fenians (Irish anti-English society, founded 1858), the Ku-Klux-Klan (American anti-negro society, founded 1865).

Sector, a portion of a circle enclosed by circumference, two radii and part of the circumference.

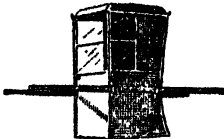
Secularist, one who, discarding as irrelevant all theories and observances bearing upon the other world and its interests, holds that we ought to confine our attention solely to the immediate problems and duties of this.

Secunderabad, town of Hyderabad, India, 6 m. N. of Hyderabad. It is an important military station. Pop. 56,000.

Sedan, a town of France, in dept. of Ardennes, on the Maas, 164 m. NE. of Paris; once a strong fortress, but dismantled in 1875, where in 1870 Napoleon III. and 86,000 men under Marshal MacMahon surrendered to the Germans; noted for its cloth manufactories. Previous to the Edict of Nantes was a celebrated centre of Huguenot industry and theological learning. Pop. c. 16,500.

Sedan Chair, a conveyance with one seat, carried on poles

by two men; first used in England in 1581, were in general use from 1650 to about 1750; the name is said to be derived from the town of Sedan, whence the chairs originally came.



SEDAN CHAIR

Seddon, Richard John, Premier of New Zealand from 1893; born at Eccleston Hill, St. Helens, Lancashire; emigrated to Victoria, 1863; and to New Zealand 1866. Becoming a miners' champion, he was elected to Parliament in 1879, joining the Liberal Cabinet in 1891, and succeeding to the Premiership in 1893, remaining in office till his death. (1845-1906).

Sedge (*Carex*), a genus of perennial grass-like herbs of the family Cyperaceae. The stems are usually leafy, with spikes of flowers. They are found in all climates, but more abundantly in cold regions and in marshy districts. The genus includes 900 species, some 60 of which are found in Britain, *Carex arenaria* being, like marram grass (*Ammophila arenaria*), valuable for binding sand-dunes.

Sedgemoor, district in central Somersetshire, England, 5 m. SE. of Bridgwater, scene of a famous battle between the troops of James II. and those of the Duke of Monmouth on July 6, 1685, in which the latter were completely routed.

Sedgley, a parish of Staffordshire, England, 3 m. N. of Dudley. Manufactures hardware, nails, etc., and has tube-drawing works. The district is agricultural and abounds in coal, lime, and ironstone. Pop. 19,300.

Sedimentary Rocks are those laid down as deposits, chiefly by water action. Most of them have been formed on the sea bottom of the material brought down by rivers, or, as in the case of some limestones, of the remains of animals. Some sedimentary rocks have been formed by the deposition of salts from solution in lakes; some by accumulations of volcanic ashes, and others by glacial action. Sedimentary rocks are classified as *arenaceous* (e.g., sandstones and grits), *argillaceous* (e.g., muds, clays, and shales), *calcareous* (e.g., chalk and limestones), and *pyroclastic* (e.g., volcanic ashes). Deposits such as peat and coal are formed of the remains of plants.

Sedition, conduct aimed at disturbing the peace of the realm or producing civil commotion or public disorder, whether by act, speech, or writing. It is punishable in various ways according to the gravity of the offence.

Seduction, consists in persuading a female to surrender her chastity. Formerly seduction gave rise to an action for damages, but, under present English law, apart from the possibility of obtaining damages against a co-respondent in a divorce petition, there is no civil remedy

for the mere debauchery of a man's wife or daughter or other female dependent; though damages may be obtained for the proved loss of actual services previously rendered by her.

Seed, a germ produced from the ovum of a plant after fertilization from which a new plant will, under favourable circumstances, develop. Plants are divided into two great classes according as their seeds are contained in a seed-vessel or fruit (*angiosperms*) or are naked (*gymnosperms*). Official seed-testing stations supervised by the Board of Agriculture test seeds for viability, dyeing and so forth.

Seeland. See Zealand.

Seeley, Sir John Robert, English author, born at London; became Professor of History at Cambridge in 1869; his *Ecce Homo* was published in 1865, which in its denial of the self-originated spirit of Christ offended orthodox belief and excited much adverse criticism; wrote, in 1882, a work entitled *Natural Religion*, in which he showed the same want of sympathy with supernatural ideas, as also several historical works. (1834-1895).

Segment, the part of a circle cut off by a chord; a segment greater than a semicircle is known as a *major segment*, one less than a semicircle as a *minor segment*.

Segou, a town of the French Sudan, on the Joliba, 400 m. SW. of Timbuktu; chiefly occupied by trading Arabs; once the capital of a now decayed native state. Pop. ... 7,000.

Segovia, Spanish city, capital of a province of the same name; crowns a rocky height looking down on the R. Eresma, 32 m. NW. of Madrid; its importance dates from Roman times; has a great aqueduct, built in Trajan's reign, and a fine Moorish castle and Gothic cathedral; cloth-weaving is the only important industry. Pop. of province, 177,000; of city, c. 17,000.

Segrave, Sir Henry, British racing motorist, born in America of British parents. During the World War he saw active service in the Royal Air Force. In 1927 he established a world's record at Daytona, Florida, of 203 miles an hour, and with another car set up a further record of 251 miles an hour in 1929 on the same track, for which he was knighted. While engaged on an attempt to beat the world record for motor boat racing in 1930 his boat capsized on Windermere and he was killed. (1896-1930).

Seidlitz Powder, an aperient consisting of two powders, one of sodium bicarbonate and tartaric acid, the other of Rochelle Salt, which are mixed together in water and consumed while the liquid effervesces.

Seigniorage, a charge made by mints for coining ingots of gold or silver into currency.

Seine, an important river of France, rises in the tableland of Langres, takes a winding course to the NW., passing many important towns, Troyes, Fontainebleau, Paris, St. Denis, and Rouen, and discharges into the English Channel by a broad estuary after a course of 482 m., of which 350 are navigable.

Seine, the smallest but most populous dept. of France, entirely surrounded by the dept. of Seine-et-Oise; Paris and its suburbs cover most of the area; presents a wooded, undulating surface, traversed by the



SEGMENTS :

- (a) *Minor*
- (b) *Major*

Seine in a NW. direction. Area, 185 sq. m. Pop. 4,963,000.

Seine-et-Marne, a north-midland dept. of France lying E. of Seine; the Marne crosses the N. and the Seine the S.; has a fertile soil, which grows cereals, vegetables, and fruits in abundance; many fine woods, including Fontainebleau Forest, diversify its undulating surface. Melun (capital) and Fontainebleau are among its important towns. Area, 3,275 sq. m. Pop. 409,000.

Seine-et-Oise, a dept. of NW. France, encloses the dept. of Seine; grain is grown in well-cultivated plains and the vine on pleasant hill slopes; is intersected by several tributaries of the Seine, and the N. is prettily wooded. Versailles is the capital; Sévres and St. Cloud are other interesting places. Area, 2,185 sq. m. Pop. 1,413,500.

Seine-Inferieure, a maritime dept. of NW. France, in Normandy, facing the English Channel; is for the most part a fertile plain, watered by the Seine and smaller streams, and diversified by fine woods and the hills of Caux; is a fruit and cider-producing district; has flourishing manufactures. Rouen is the capital, and Havre and Dieppe are important trading centres. Area, 2,450 sq. m. Pop. 915,600.

Seine-net, or *Sean*, an open bag-net for sea-fishing, weighted at the bottom and suspended from floats; the fish are scooped in as the net is dragged through the water by the seine-boat.

Seisin, in feudal law, a term for possession of landed or other property, the holder being said to be "seised" of the property in question.

Seismology, the study of earthquakes and their causes and effects. Earthquakes are recorded by the seismometer or seismograph, a delicate instrument by which the distance and intensity of the slightest earth tremors can be ascertained.

Selangor, one of the four states of the Federated Malay States. It came under the protection of Great Britain in 1874. The capital is Kuala Lumpur. The chief industries are rubber-growing and tin-mining. It has an area of 3,160 sq. m. Pop. 617,600.

Selborne, a village of Hampshire, England, SW. of Farnham, famous as the parish of which Gilbert White (*q.v.*) was curate, and to which his *Natural History of Selborne* relates. Pop. c. 2,000.

Selby, market town of Yorkshire, England, in the West Riding, on the Ouse, 15 m. S. of York; has a noted cruciform abbey church, founded in the 12th Century and exhibiting various styles of architecture; manufactures flax, ropes, leather and bricks. Pop. 10,000.

Selden, John, English jurist and author, born at Salvington, Sussex; published various works bearing on old English jurisprudence and antiquities generally; a *History of Tithes* (1618) got him into trouble with the Church; was imprisoned in 1621 for encouraging Parliament to repudiate James's absolutist claims; continued to play an important part throughout the troublous reign of Charles I.; he was one of the framers of the Petition of Right, and suffered imprisonment with Holles; sat in the Long Parliament, but disapproved of the execution of Charles; held various offices, *e.g.*, Keeper of the Rolls and Records in the Tower; is best

remembered for his *Mare Clausum*, an answer to the *Mare Liberum* of Grotius, in which he proved that sovereignty over the narrow seas had been exercised by England from the earliest times; and also for his charming *Table Talk*, in which occurs the famous passage likening equity to the length of the Chancellor's foot. (1584-1654).

Selection, the process by which, according to the evolutionary theory in biology, species originate. It was simultaneously propounded by Charles Darwin and Alfred Russel Wallace, and was founded on the fact that individuals vary from each other, though it affords no explanation of the origin of these variations. The selection is supposed to take place largely by the process known as the "survival of the fittest," which means that those individuals best adapted to their environment stand the best chance of living long enough to mate and breed, passing on their individual characteristics to their offspring.

Selene, in Greek mythology, the moon-goddess, the sister of Helios, and designated Phoebe as he was Phoebus. She became by Endymion the mother of fifty daughters.

Selenium, a non-metallic chemical element belonging to the same group as oxygen, sulphur and tellurium; discovered in 1817 by the Swedish chemist Berzelius. Symbol Se; atomic number 34; atomic weight 78.96. It occurs mostly in the form of selenides, *i.e.*, compounds of selenium with metals and also in certain kinds of iron pyrites (see *Pyrites*). Like sulphur, it exists in several different varieties, one of which, the so-called "metallic" selenium, is an iron-coloured hard substance with the striking property of altering its electrical resistance according to the intensity of the light falling on it; the greater the illumination, the less the resistance. This remarkable power of selenium is made use of in certain photo-electric cells. In its general chemical behaviour selenium closely resembles sulphur; it finds some commercial application in the manufacture of red glass.

Selenium Cell, an electrical apparatus utilising the sensitivity of selenium (*q.v.*) to light, and its decreased electrical resistance when exposed thereto, to operate burglar alarms, traffic signals, automatic lamp-lighting apparatus, etc.

Seleucia, name of several ancient cities founded by the Seleucid rulers of Syria, especially (1) Seleucia on the Tigris, N.E. of Babylon, destroyed by Trajan in 116; (2) Seleucia on the Orontes, in Syria, which for some time was the seaport of Antioch.

Seleucidæ, a dynasty of Asiatic rulers founded by Seleucus called Nicator, one of the generals of Alexander the Great, who on the latter's death secured the rule of Babylonia and Syria (c. 356-281 B.C.). For its most famous members see *Antiochus*.

Self-denying Ordinance, a resolution of the Long Parliament passed in 1644, whereby the members bound themselves not to accept certain executive offices, particularly commands in the army.

Self-determination, the conception of the right of subject peoples and national minorities to autonomous rule, formulated in 1916 by President Wilson and, in theory, the basis of the Treaty of Versailles and other post-World War settlements. It has been invoked repeatedly since 1918 by communities in various parts of Europe and elsewhere desirous of obtaining some degree of political independence, as by the Sudeten Germans (*q.v.*) in Czechoslovakia, the Flemings in Belgium, the Croats in Yugoslavia, etc.

Selfridge, Harry Gordon, British business magnate, born at Ripon, Wisconsin, U.S.A., was a member of the firm of Marshall Field & Co., Chicago, 1890-1903. In 1906 he emigrated to England, and in 1909 opened his department store on the N. side of Oxford Street, London; it has since been greatly enlarged. (1864-).

Seljuks, a Turkish people who in the 10th Century broke away from their allegiance to the khan of Kirghiz, adopted the Mohammedan faith, and conquered Bokhara, but were driven across the Oxus and settled in Khorassan. Under Toghril Beg, grandson of Seljuk, they in the 11th Century won for themselves a wide empire in Asia, including the provinces of Syria and Asia Minor. They were in part gradually absorbed by the advancing Mongol tribes, while numbers fled westward, where they were at length incorporated in the Ottoman Empire in the 14th Century.

Selkirk, county town of Selkirkshire, 40 m. SE. of Edinburgh; famed at one time for its "Souters" (shoemakers), who figured in Border conflicts; is a centre of the manufacture of tweeds. Pop. 5,700.

Selkirk, Alexander, shipwrecked sailor who was put ashore on the island of Juan Fernandez, South America, and whose experiences inspired Defoe to write his *Robinson Crusoe*. (1676-1721).

Selkirk Mountains, a range in British Columbia extending from the U.S.A. northward to the Columbia R. The highest peaks are St Donald, 10,645 ft., and Mt. Dawson, 10,800 ft.

Selkirkshire, a S. inland county of Scotland; extends S. from the corner of Midlothian to Dumfriesshire, between Peebles (W.) and Roxburgh (E.); the grassy slopes of its hills afford splendid pasturage, and sheep-farming is a flourishing industry; manufactures are mainly confined to Galashiels and Selkirk; is traversed by the Ettrick and the Yarrow, whose romantic valleys are associated with much of the finest ballad literature of Scotland. Area, 282 sq. m. Pop. 22,600.

Selle, river in France; rising near Le Cateau, it flows N. to join the Schelde. It was the scene of fighting in October, 1918, when British and American troops gained a victory over a German force superior in numbers; some 20,000 prisoners and 475 guns were captured.

Selous, Frederick Courtenay, British hunter and explorer, born in London. Between 1871 and 1881, as a big-game hunter and ivory-trader, he travelled in South Africa, doing much valuable work as a field naturalist; later he acted as guide to exploring and hunting parties in Mashonaland and elsewhere, and secured mineral rights there, and in Matabeleland, for the British South Africa Company. He fought in the Matabele Wars in 1893 and 1895, and was killed while fighting in the World War in Tanganyika. He wrote several accounts of his game-hunting expeditions. (1851-1917).

Selsey, village of W. Sussex, England, once an island, now on a peninsula, 8½ m. from Chichester, whither the former episcopal see was removed in 1072. The sea has encroached beyond the site of the old cathedral. Pop. 2,600.

Selwyn, George Augustus, English ecclesiastic; was appointed first bishop of New Zealand, in which capacity he worked so zealously that his diocese, by his extension of Episcopacy, was subdivided into seven. On his return to England he was made bishop of Lichfield. Selwyn College, Cambridge, was endowed in his memory. (1809-1878).

Semaphore, the mechanism employed prior to the discovery of the electric telegraph; invented in 1767 by Richard Edgeworth, but first extensively used by the French in 1794, and afterwards adopted by the Admiralty in England; consisted at first of six shutters set in two rotating circular frames, which, by opening and shutting in various ways, were capable of conveying 63 distinct signals; these were raised on the tops of wooden towers erected on hills; later a different form was adopted consisting of a mast and two arms worked by winches. The speed at which messages could be transmitted was very great; thus a message could be sent from London to Portsmouth and an answer received within 45 seconds. The railway signal now in use is a form of semaphore.

Semarang (Samarang), port near the N. coast of Java, Dutch East Indies, 250 m. E. of Batavia. It is situated on a canal and the R. Semarang, and is the capital of the district of the same name. The products of the district include coffee, spice, and timber. Pop. 150,000.

Semele, in Greek mythology, the mother of Dionysus by Zeus; was tempted by Hera to pray Zeus to show himself to her in his glory. He appeared before her as the god of thunder and consumed her by the lightning.

Seminole, a nomadic tribe of American Indians who from 1832 to 1839 offered a desperate resistance to the Americans before yielding up their territory SE. of the Mississippi (Florida, &c.).

Semiramis, legendary queen of Assyria, to whom tradition ascribes the founding of Babylon with its hanging gardens, and who is said to have surpassed in valour and glory her husband Ninus, the founder of Nineveh; she seems to have been in reality the Venus or Astarte of the Assyrian mythology. The story goes that when a child she was deserted by her mother and fed by doves.

Semites, a group of races, speaking allied languages, whose original habitat is in the neighbourhood of Arabia and Mesopotamia; they include the Jews, Arabs, Syrians, and the ancient Phœnicians, Carthaginians and Assyrians. They played a large part especially in Mesopotamia, in the development of civilisation; they have tended to be a trading and nomadic rather than an agricultural people. They have apparently acted rather as disseminators and hand-on of the knowledge of others, rather than makers of new contributions to knowledge or civilisation; the great monotheistic religions, Christianity, Judaism and Islam, are among their most important legacies to the world.

Semliki, a river in the Belgian Congo, flowing NE. from Lake Edward, and discharging into the southern end of Lake Albert.

Semolina, a granular material made from wheat, and used in the production of spaghetti, macaroni, and similar products, as well as for puddings.

Sempach, a small Swiss town, 9 m. N.W. of Lucerne, on the Lake of Sempach. Here on July 9, 1386, a body of 1,500 Swiss soldiers completely routed the Austrians, 4,000 strong, under Leopold, Duke of Austria.

Sempervivum. See Houseleek.

Senate (i.e., "an assembly of elders"), a name first bestowed by the Romans on their supreme legislative and administrative assembly; its formation is traditionally ascribed to Romulus; after the foundation of the Empire, its powers gradually diminished until membership became a mere honorary distinction; in modern times is used

to designate the "Upper House" in the legislature of various countries, e.g., France and the United States of America, and some of the British Dominions; is also the title of the governing body in many universities. See also **Second Chamber**.

Sendai, town in Japan, in the province of Miyagi, of which it is the capital; it is 225 m. from Tokio and is an important trading centre. Pop. 220,000.

Seneca, Lucius Annæus, Roman philosopher, son of Marcus Annæus, born at Cordova, and brought to Rome when a child; practised as a pleader at the bar, studied philosophy, and became the tutor of Nero; acquired great riches; was charged with conspiracy by Nero, as a pretext, it is believed, to procure his wealth, and ordered to kill himself, which he did by opening his veins till he bled to death; he was of the Stoic school in philosophy, and wrote a number of treatises bearing chiefly on morals; d. A.D. 65.

Senegal, an important river of French West Africa, formed by the junction, at Bafulabé, of two head-streams rising in the highlands of western Sudan; flows NW., W., and SW., a course of 700 m., and discharges into the Atlantic 10 m. below St. Louis. Navigation is somewhat impeded by a sand-bar at its mouth, and by cataracts and rapids in the upper reaches.

Senegal, a colony of French West Africa, lying S. of the Senegal R.; largely devoted to stock-rearing; ground-nuts (the chief export), maize, millet, gum and rice are grown, and there are weaving and jewellery industries. The capital is St. Louis (pop. 38,000); Dakar (pop. 93,000), the seat of government of the French West African territories, and an important naval station and seaport, is the largest town. Area, 74,000 sq. m. Pop. c. 1,698,000.

Seneschal, an important functionary princes, whose duty it was to superintend household feasts and ceremonies; the name was later applied in the Middle Ages to a similar official at the court or hall of any important feudal lord.

Senility, general name for the physical conditions accompanying old age in man; it is marked by such symptoms as hardening of the arteries, a lessening of nervous control and muscular power, weakness of memory, and generally slow reaction to external stimuli. In extreme cases it may involve the brain to such an extent as to produce the general mental breakdown known as senile dementia.

Senlis, town of France, on the Nonette, in the dept. of Oise, 28 m. N.E. of Paris, the headquarters of the French General Staff at the time of the Armistice in 1918. Pop. 7,300.

Senna, a valuable purgative drug, obtained from the dried leaves and pods of a number of shrubs and herbs of the genus *Cassia* (natural order Leguminosae). The most valuable species for this purpose are the Alexandrian (*Cassia acutifolia*), Italian (*C. obcordata*), Arabian (*C. angustifolia*) and Purgine Senna (*C. fistula*). The purgative known as "black draught" is a combination of senna with Epsom salts.



ALEXANDRIAN
SENNNA

Sennacherib, a king of Assyria, son of Sargon (q.v.), whose reign extended from 705 to 681 B.C., and was distinguished by the projection and execution of extensive public works; he endeavoured to push his conquests westward, but was

defeated in Judæa by the miraculous destruction of his army. See 2 Kings xix., 35.

Sensation, the effect produced on a sense-organ by an external stimulus, or the effect produced in the brain by the reception of a nerve-message from the sense-organ affected by the stimulus. Philosophically it denotes those forms of perception which are concerned with sense-objects or images.

Sensitive Plant, term applied to plants which are sensitive to the touch, in particular to the *Mimosa pudica*, whose leaves fold together and whose stalks droop at night, and which will assume this position at the slightest touch. Other species of mimosa also are sensitive, though not to the same degree.

Sensitizers are dyes added to photographic films to increase or adjust the sensitivity of the film to light of various colours. A film treated with the red dye eosin, for example, is much more sensitive to green light than an ordinary untreated one.

Senussi, a Mohammedan brotherhood in the Sudan, founded by Mohammed-es-Senussi from Mostaganem, in Algeria, who flourished between 1840 and 1900. They fought under a Turkish commander against the Allies in the World War, invading Egypt in 1915; but their headquarters at Sollum were occupied and their activities suppressed in the following year.

Seoul, now *Keijo-fu*, capital of Korea, a walled city and trading centre. Pop. 404,200.

Sepals, the small leaves which form the outer covering of a flower; collectively they are known as the calyx—that part which envelops the flower when it is in bud. Sometimes the sepals form distinct leaves, but in certain cases they are gamosepalous, i.e., joined at the edges. They are usually green or light brown in colour.

Sepia, a brown pigment obtained from the ink-bags of the cuttlefish or octopus, used by painters as a water-colour.

Sepoy, a native of India employed as a soldier in the British-Indian army.

September, the ninth month of the year, its name, meaning "seventh," being due to its position in the old Roman calendar.

September Massacres, an indiscriminate slaughter in Paris which began on Sunday afternoon, Sept. 2, 1792, when 30 priests on their way to prison were torn from the carriages that conveyed them, and massacred, after which a number of political prisoners in the Paris gaols were killed by the mob. It marked the height of the so-called "Reign of Terror."

Septicæmia, a condition in which the bloodstream is polluted by bacteria multiplying within the body; it is marked by an inflamed condition of the tissues surrounding the wound or abrasion through which the bacterial infection has been received, and general feverishness. It is a gravely serious condition which frequently results in death.

Septuagesima, the third Sunday before the beginning of Lent; so called because it is roughly 70 days before Easter. It marks the beginning of the Church's penitential season in commemoration of Christ's passion and death. In the Eastern Church the time between Septuagesima and the First Sunday of Lent is kept as a partial fast.

Septuagint, the oldest known complete version in Greek of the Hebrew Scriptures, executed at Alexandria, in Egypt, by different translators at

different periods, commencing with 280 B.C., for the use of Jews resident in Egypt; the name Septuagint, or Seventy (LXX) was given to it from the tradition that it was the work of 70, or rather 72, Jews, who were fabled to have executed the whole in as many days and, according to another, to have each done the whole apart from the rest, with the result that the version of each was found to correspond word for word with that of all the others. It was the version current everywhere at the time of the planting of the Christian Church, and the numerous quotations in the New Testament from the Old are, with few exceptions, taken from it; it is the version still used for public reading in the Greek-speaking sections of the Eastern Church.

Sepulchre, Holy. See *Holy Sepulchre*.

Sequestration, a writ of the Court directed to Commissioners called Sequestrators, authorizing them to enter on the lands and take the property of a person who has refused to obey a judgment or order of the Court. A writ of sequestration will not issue against the corporate property of any corporation without special leave. In Scots law, the seizing of a bankrupt's estate, by decree of Court, for the benefit of creditors, is so called.

Sequoia, a genus of large evergreen trees of a coniferous nature, native to California. The two recognized species attain great height; the largest specimen "mammoth tree," *S. gigantea*, having attained a height of 320 ft. and a girth of 35 ft. at an age of 1,500 years. The close-grained red timber of the other species, the redwood (*S. arborescens*), which grows even taller (340 ft. though it attains a girth of only 28 ft.) is much used in joinery.



SEQUOIA GIGANTEA
(Leaf and cone)

Seraglio, in its usual sense applied in the East to a harem or women's quarters in a royal household. The name was properly applied to the palace of the former Turkish sultans at Istanbul (Constantinople), on a projecting piece of land between the Golden Horn and the Sea of Marmora, enclosing within its 3 m. of wall government buildings, mosques, gardens, etc., the chief being the harem, occupying an inner enclosure.

Serajevo. See *Sarajevo*.

Serampur, (Saharanpur), a town of British India, on the Hooghly, 13 m. N. of Calcutta; purchased by Britain from Denmark in 1845; manufactures paper and mats. Pop. 78,700.

Seraphim, in Jewish and Christian angelology, the highest order of Angels, who stand continually in the presence of God awaiting His commands.

Serbia, a former kingdom of Europe occupying a central position in the Balkan Peninsula between Austria (N.) and Turkey (S. and W.), with Rumania and Bulgaria on the E.; it now forms part of Yugoslavia (q.v.). Austria's declaration of war on her in July, 1914, was the start of the World War, during which Serbia fought on the side of the Allies, and on the conclusion of which she decided to throw in her lot with the new nation of the Serbs, Croats, and Slovenes.

Originally emigrants in the 7th Century from districts round the Carpathians, the Serbs had by the 14th Century established a kingdom considerably larger than their present domain; were conquered by the Turks in 1389, and held in subjection till 1815, when a national rising won them Home Rule, but remained tributary to Turkey until 1877, when they proclaimed their independence, which was confirmed by the Treaty of Berlin in 1878.

Serenade, a musical composition intended originally for open-air performance; the name is often applied to piano and violin pieces of a light nature, or to sonata movements.

Sereth (Siret), river of Rumania, rising in the Bukovina Carpathians and and flowing SE. to within 6 m. W. of Galatz, where it joins the Danube. Length about 280 m.

Serfs, under feudalism a class of labourers, who were attached to the soil and could be transferred with it, being prohibited from transferring their services to another estate. They differed from slaves only inasmuch as they could not be sold from one person to another except with the estate on which they worked. They were sometimes able to obtain freedom by performing military service or escaping to a corporate borough and taking up residence there for a year. With the break-up of feudalism they gradually gained their emancipation. The system lasted in Russia until 1863, when serfs to the number of 20,000,000 were liberated by a decree of the Czar Alexander II.

Serge, a hard-wearing worsted, frequently dyed to a dark blue shade, used for wearing apparel. The name was formerly applied to some types of textiles woven from silk yarns.

Sergeant, in the army a non-commissioned officer, ranking above a corporal; his duty is to maintain discipline and assist the platoon commander. A sergeant-major is a senior non-commissioned officer who assists the company officer. Until 1875 the name was also given to certain English barristers practising in the Common Law courts who enjoyed certain privileges of precedence, and so forth, in relation to other barristers. The sergeant-at-arms is an officer of each House of Parliament in Great Britain who attends on the Speaker or Lord Chancellor, carries the mace, and executes orders of arrest, etc., made by Parliament.

Series. See *Progression*.

Seringapatam, city of S. India, Mysore State, situated on an island in the Kaveri, 10 m. NE. of Mysore city; in the latter part of the 18th Century was the stronghold of Tippoo Sahib, who was successfully besieged and slain by the British in 1799. Pop. c. 12,000.

Serpent, the alternative name for snake (q.v.), though it is generally used only in reference to the larger members of the order.

Serpentine, a crystalline green mineral composed of silicate of magnesia.

Serpent Worship, or *Ophiolatry*, was practised in ancient times by the Egyptians and has survived in India and Africa; the symbol of the snake is prevalent in early European art; in N. and western America this form of worship long obtained among aboriginal tribes. Symbolically the serpent represented regeneration, from the periodical shedding of its skin; its shape also suggested a connection with phallic symbolism.

Sertorius, *Quintus*, Roman statesman and general; joined the democratic party under Marius (q.v.) against

Sulla: retired to Spain on the return of Sulla to Rome, where he sought to introduce Roman civilization while opposing, at the head of native troops, the levies sent against him from Rome; was assassinated c. 73 B.C.

Serum, a pale yellow liquid, the residue of the plasma or liquid part of the blood after the fibrin yielded by the plasma has been removed. Inoculation and vaccination are performed by an injection of serum obtained from animals which have been rendered immune from a particular disease.

Service, Robert William, Canadian writer, but born at Preston, Lancashire. He went to Canada in 1895, and spent eight years in the Yukon Territory. Among his published volumes are *Songs of a Sourdough*, 1907; *Ballads of a Cheechako*, 1909, and several novels. During the World War he acted as War correspondent for a Toronto newspaper. (1874-).

Service Tree (*Sorbus* or *Pyrus domestica*), a small fruit-tree of the order Rosaceae, resembling the mountain ash (*q.v.*) and bearing an acid pear-shaped fruit eaten when over-ripe. It is native to Europe or temperate Asia but does not occur wild in Britain. The Wild Service (*Sorbus torminalis*), also known in various parts of England as "Shir," "Lezzory" and "Lizzory," grows to a height of 80 ft., and is widely distributed in Europe, including England. It is deciduous, has deeply-lobed leaves and bears masses of cream-white flowers in corymbs in May. The fruit, sometimes called "Chequers," on account of the corky warts on its surface, is acid but edible when retted (allowed to become over-ripe) like the medlar. It is sometimes sold as "Sorbus" berries.

Servius Tullius, the legendary sixth king of Rome, from 578 to 534 B.C., divided the Roman territory into 30 tribes, and the people into 5 classes, which were further divided into centuries.

Sesame (*Sesamum*), a genus of 15 plants of the order Podaliaceae, found in tropical Africa and Asia. One species, *Sesamum indicum*, is cultivated in India and other Eastern lands for the sake of the seeds, which are crushed and an oil extracted, used for making oil cake and soap, in cookery, and as a lubricant.

Sesostris, a legendary monarch of Egypt, alleged to have achieved universal empire in a very remote antiquity, and to have executed a variety of public works by means of the captives he brought home from his conquests, which extended to India; his story may be a reminiscence of Rameses II.

Session, Court of, the Supreme Civil Court of Scotland. It is composed of an Outer House in which sit eight Lords Ordinary of co-ordinate jurisdiction, and an Inner House comprising two divisions of four judges each. The President of the First Division is the Lord President; the Lord Justice Clerk presides over the Second Division. These two Divisions are mainly appellate tribunals, but have original jurisdiction in bankruptcy, lunacy cases, and Common lands. The Court has no criminal jurisdiction.

Sessions. See Justice of the Peace; Petty Sessions; Quarter Sessions.

Sestertius, a Roman coin, either bronze or silver, one-fourth of a denarius, originally worth 2½ asses but afterwards 4 asses; up to the time of Augustus was worth fully 2d., and subsequently one-eighth less. The *Sestertium*, a Roman "money of account," never a coin, equalled 1,000 sestertii, and was valued at about £8 15s.

Setter, a gun-dog of the spaniel family, trained to assist in the taking



SETTER

of game, being taught to crouch when game is perceived. Of the various types the English Setter is perhaps the best known; in colour it is usually black and white, or liver and white. It is easily trained and good-tempered. Other varieties include the Irish or Red Setter, the Russian Setter, Gordon or black-and-tan Setter.

Settle, Elkanah, English playwright, immortalized in the pages of Dryden's satire *Abraham and Achitophel*; enjoyed a brief season of popularity as author of *Cambyse* and *The Empress of Morocco*; degenerated into a "city poet" and a puppet-show keeper, and died in the Charterhouse; was the object of Dryden's and Pope's scathing sarcasms. He was the "Doeg" of John Dryden's poem *Abraham and Achitophel*. (1648-1724).

Settlement, in English law, a transfer of real or personal property to trustees to hold for the benefit of persons in succession. A settlement may be made either by deed *inter vivos* or by will. A marriage settlement provides not only for the intended spouses and their issue, but also for other members of the family in whom the property to be settled is also vested. A settlement may also be made by a separation deed, to provide for a spouse and children where the spouses have agreed to separate. Where the settler settles property of any description without receiving adequate consideration the settlement is a "voluntary settlement," and if the settler becomes bankrupt within two years of the date of the settlement it will be void and the property will be available for the settler's creditors.

Settlement, Act of, passed by Parliament in 1701, settled the crowns of England, Scotland, and Ireland on the Electress Sophia of Hanover and her heirs. The Act was designed to prevent the crown reverting to the Stuarts, and also stipulated that kings of England must be members of the established Church. The claim of the present Royal Family to the British throne traces back to this Act.

Seurat, Georges Pierre, French painter, born and died at Paris; one of the early "pointillistes," a style manifested in his "Une dimanche d'Été à la Grande Jatte," 1886. He also painted landscapes of Normandy and Asnières. (1859-1891).

Seven Champions of Christendom, are, traditionally, St. George, of England; St. Denis, of France; St. James, of Spain; St. Anthony, of Italy; St. Andrew, of Scotland; St. Patrick, of Ireland; and St. David, of Wales.

Seven Deadly Sins, Pride, Anger, Envy, Lust, Gluttony, Avarice, and Sloth.

Seven Dolours of the Virgin

the prediction of Simeon (Luke II., 35); the flight into Egypt; the loss of the child Jesus in Jerusalem; the sight of her Son bearing the cross; the sight of Him upon the cross; the descent from the cross; and the entombment.

Sevenoaks, town and urban district of Kent, England, 20 m. from London. Near the town is Knole Park, the seat of the Sackville-West family, one of England's most famous country houses. Pop. 12,400.

Seven Sages of Greece,

Solon of Athens, his motto "Know thyself"; Chilo of Sparta, his motto "Consider the end"; Thales of Miletus, his motto "Whoso hateth suretyship is sure"; Bias of Priene, his motto "Most men are bad"; Cleobulus of Lindos, his motto "Avoid extremes"; Pittacus of Mitylene, his motto "Seize Time by the forelock"; Pericles of Corinth, his motto "Nothing is impossible to industry."

Seven Weeks' War, the conflict in 1866 between Prussia and Austria, the former having Italy as ally, for the hegemony of the German Confederation. Its pretext was a quarrel over the possession of the Schleswig-Holstein duchies. The victory lay with Prussia. Out of this combat grew the reputations of Bismarck and von Moltke, as statesman and general, respectively. The Austrians were heavily defeated by Moltke at Sadowa, but the Italian fleet was severely beaten at Lissa by the Austrian Admiral Tegethoff. The Prussians won further battles at Kissingen and Falkenstein, after which an Armistice was signed. One result of the war was the union of Lombardy and Venetia, previously Austrian possessions, with Italy.

Seven Wonders of the World, according to the traditional enumeration, were the pyramids of Egypt, the hanging gardens of Babylon, the tomb of Mausolus, the temple of Diana at Ephesus, the Colossus of Rhodes, the statue of Jupiter by Phidias at Olympia, and the Pharos at Alexandria.

Seven Years' War, the name third and most terrible struggle between Frederick the Great of Prussia and Maria Theresa, Empress of Austria, for the possession of Silesia, which embroiled almost all Europe in war, and had far-reaching effects on the destinies of England and France as well as Prussia; began in 1756 by Frederick's successful advance on Dresden, anticipating Maria Theresa's intention of attempting the recovery of Silesia, lost to her in the previous two wars. With Austria were allied France, Sweden, Poland, and Russia, while Prussia was supported till 1761 by England. In 1762 Peter III. of Russia changed sides, and Frederick, sometimes victorious, often defeated, finally emerged successful in 1763, when the war was brought to a close by the Peace of Hubertsburg. Besides demonstrating the strength and genius of Frederick and raising immensely the prestige of Prussia, it enabled England to make complete her predominance in N. America and to establish herself securely in India, while at the same time it gave the death-blow to French hopes of a colonial empire in those lands.

Severn, the second river of England, rises on the E. side of Plinlimmon, in Montgomeryshire, and flows in a circuitous southerly direction through Montgomeryshire, Shropshire, Worcestershire, and Gloucestershire, falling into the Bristol Channel after a course of 210 m.; is navigable to Welshpool (180 m.); chief tributaries are the Wye and the Stratford Avon; there is a "bore" perceptible 180 m. from the mouth. Many important towns stand on its banks.

Severus, Lucius Septimius, Roman emperor, born, peror at Leptis Magna, in Africa; the only African to attain to the imperial throne; was in command in Pannonia, and elected emperor on the murder of Pertinax; and after conquering his rivals achieved victories in the East, especially against the Parthians; thereafter subdued a rebellion in Britain and secured S. Britain against invasions from the N. by a wall; died at York. (146-211).

Severus, (Marcus Aurelius) Alexander, Roman Emperor from A.D. 222; born at Arca Cesarea, Palestine; the cousin and adopted heir of Hellogabalus, whom he succeeded. He fought against Artaxerxes IV. of Persia in Mesopotamia, and claimed to have defeated him. He was killed with his mother near Mainz, by conspiracy of Maximinus, who succeeded him. (205-235).

Séville, (Seville), Spanish city and river port on the Guadalquivir, 62 m. NE. of Cadiz, capital of the province of the same name (Pop. 850,000). Many of the old picturesque Moorish buildings have given place to modern and more commodious structures. The great Gothic cathedral (15th Century), containing paintings by Murillo, is among the finest in Europe; the Moorish royal palace, the great Roman aqueduct (in use until 1883), the museum, with masterpieces of Murillo and Velazquez, the university, archbishop's palace, Giralda campanile, and the vast bull-ring, are noteworthy. Manufactures embrace cigars, machinery, pottery, and textiles; while lead, iron ore, quicksilver, wines, olive-oil, and fruits are exported. Pop. 238,700.

Sèvres, French town on the Seine, 10½ m. SW. of Paris, celebrated for its fine porcelain ware (especially vases), the manufacture of which has been a State industry since 1755; has a school of mosaic work and museums for pottery ware of all ages and countries. Pop. c. 15,000.

Sèvres, Deux-, a dept. of W. France; is watered by two rivers, and in the N. thickly wooded; a varied agriculture, cattle and mule breeding, and cloth manufacture are the principal industries; coal and granite are produced. Niort is the capital. Area, 2,340 sq. m. Pop. 308,800.

Sewage, Disposal of. An adequate sewage system must carry off all waste organic matter from populous areas as well as deleterious inorganic waste from factories; and the drains and sewers must be so arranged as to ensure an even flow from all points of the collecting area. Ventilation and the isolation of noxious gases need also to be provided for. Purification or deodorization is essential before town sewage can be discharged into streams or rivers. Before this process the sewage is "screened," i.e., passed through a rack and then into a detritus tank for the removal of heavy inorganic matter or grit. Purification may be effected by chemical precipitation, filtration, or bio-aeration. The application of chlorine is also usual. The disposal of sewage along a coast is often effected by leading out a channel to deep water well beyond low tide.

Seward, Anna, English poetess, born at Elyam, Derbyshire, but from the age of seven spent her life at Lichfield, where her father was residential canon; author of *Louisa*, a novel in poetry, *Sonnets*, and other poems. (1747-1809).

Seward, William Henry, American statesman, born at Florida, New York State; was called to the bar at Utica in 1822, and became one of the finest forensic orators of his country; engaged actively in the politics of his State, of which he was governor in 1838 and 1844; entered the U.S. Senate in 1849 as an abolitionist, becoming soon the recognized leader of the

Anti-Slavery party; served under Lincoln as Secretary of State, conducting the foreign affairs of the country during the Civil War and up to the accession of President Grant in 1869; spent his closing years in travel and retirement. (1801-1872).

Sewell, Anna, English authoress, remembered for a single children's book, *Black Beauty*, the life-story of a horse, published in 1877. (1820-1878).

Sewing Machine, an automatic device for sewing, invented in 1840 by an American, Elias Howe, though crude machines for the same purpose had been tried some years earlier in England. The Singer machine, with vertical needle, came in 1851. Machines of various patterns are now made for special operations, such as button-holing, carpet manufacture, shoe-making, glove manufacture and other kinds of leather sewing; and modern domestic machines frequently have attachments for quilting, pleating and other special operations.

Sex, the function by which most animal and plant species are perpetuated, as a result of the fusion of two nuclei from separate individuals. It is present in some form in all but the lowest organisms (see **Reproduction**). In lower plants (algae, etc.) the female ejects ova and the male sperms into the water; in most flowering plants the pollen from the male anther is carried to the pistil, whence it is conveyed to the female reproductive organs either by wind or by insects, methods which involve considerable waste. In the animal world there is gradual organization and adaptation both of the actual reproductive organs and of the whole organism, to eliminate waste and secure fertilization, thus giving rise to marked differences in the sexes, of both primary and secondary character. The study of sex as a human function has greatly developed in the late 19th and 20th Centuries, largely under the impulse given by the Freudian school of psycho-analysts, who see almost all forms of human activity as sublimations of the sexual instinct. It has been recognized in consequence of their work that the characters of both sexes are in some degree present in every individual, and that human beings may exhibit almost every shade of gradation between the perfect male and the perfect female.

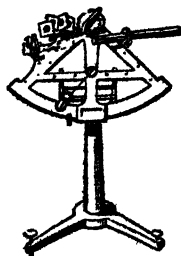
Sexagesima Sunday, the second Sunday before the beginning of Lent.

Sextant, an instrument used in navigation and in land-surveying for measuring the altitudes of celestial bodies and their angular distances; consists of a graduated brass sector, the sixth part of a circle, and an arrangement of two small mirrors and telescope; invented in 1730 by John Hadley.

Sexton, a church officer whose duties include the digging of graves and frequently the care, cleaning, etc., of the church building.

Seychelles,

a group of some 30 islands, largest Mahé (55 sq. m.), situated in the Indian Ocean, 900 m. N.E. of Madagascar; taken from the French by Britain in 1784, and until 1897 under the governor of Mauritius, but now a separate Crown colony; are mountainous and mostly surrounded by coral reefs; produce coconuts, essential oils and phosphates; Victoria, in Mahé, is the chief town. Pop. 30,600.



SEXTANT

Seymour, Jane, third queen of Henry VIII., married 1536, was daughter of Sir John Seymour, of Wolf Hall, Savernake, Wiltshire, and sister of the Protector Somerset. She was a lady-in-waiting to both Katherine of Aragon and Anne Boleyn, and deliberately contributed to the latter's downfall. She died soon after giving birth to the future Edward VI. (c. 1509-1537).

Sforza, an Italian family celebrated during the 15th and 16th Centuries, founded by a military adventurer, a peasant of the name of Muzia Attendolo, who received the name. They became dukes of Milan, and began by hiring their services in war, in which they were always victorious, to the highest bidder, the first of the number to attain that rank being Francesco Sforza, the son of the founder, in 1450 (1401-1466), the last of the series being another Francesco (1492-1535).

's Gravenhage. See Hague, The.

Shackleton, Sir Ernest Henry, British explorer; born in Ireland, he joined the mercantile marine, and in 1900 served under Scott in the *Discovery* Antarctic expedition. From 1907 to 1909 and from 1914 to 1917 he was again in the Antarctic, and in 1922 died at sea while in command of a third expedition on board the *Quest*. (1874-1922).

Shad, the common name of several species of sea-fish of the order Clupeidae. They are found in Atlantic waters, swim in small companies and ascend rivers at spawning time. Two British species are *Allis Shad* (*Alosa Alosa*) and *Twaite Shad* (*Alosa Finta*). They are reputed to thrash the surface of the sea with their tails, and it is claimed that under fair conditions the noise can be heard some distance away.

Shaddock. See Grapefruit.

Shadwell, Thomas, English dramatist, born in Norfolk; studied law and adopted literature, in which he made a successful start with the comedy *The Sullen Lovers* (1668); his numerous plays, chiefly comedies, are of little poetic value, but serve as useful commentaries on the Restoration period quarrelled with and satirized Dryden in the *Medal of John Bayes*, which drew forth the presentation of him as MacFlecknoe in Dryden's *Abraham and Achitophel*; succeeded Dryden as poet-laureate in 1688. (1640-1692).

Shaft, that part of a machine to which motion is communicated by torsion, as the screwshaft of a steam vessel or the crank-axle of a locomotive. In mining, a perpendicular or slightly inclined pit, sunk by blasting or digging, and in soft ground, lined by "cribbing." The shaft pipe of a ship is the pipe in the stern through which the propeller-shaft passes in-board. The "shafting" in a machine-shop is the system of shafts for transmitting power to the different machines, for which function it is provided with belts and drums. These shafts may be either horizontal or vertical.

Shaftesbury, town and borough of Wiltshire, Dorsetshire, England, on the Wiltshire border, 102 m. from London. The town is famous for its Benedictine nunnery founded by Alfred the Great A.D. 888. King Canute died here 1035. The chief trade of the town is in agricultural and dairy produce. Pop. 2,800.

Shaftesbury, Anthony Ashley Cooper, first Earl of, British politician, born in Dorsetshire; sat in the Short Parliament of 1640; changed from the Royalist to the Parliamentary side during the Civil War, and was a member of Cromwell's Council of State, but latterly attacked the

Protector's Government, and was one of the chief promoters of the Restoration; Chancellor of the Exchequer in 1661, and later a member of the "Cabal"; in 1672 he was created an earl and Lord Chancellor, but, hoodwinked by Charles in the secret treaty of Dover, went over to the Opposition, lost his chancellorship, supported an anti-Catholic policy, league himself with the Country Party, and intrigued with the Prince of Orange; came into power again, after the "Popish Plot," as the champion of toleration and Protestantism, became President of the Council, and passed the Habeas Corpus Act. His virulent attacks on James and espousal of Monmouth's cause brought about his arrest on a charge of high treason (1681), and although acquitted he deemed it expedient to flee to Holland, where he died. He is the *Achilles* of Dryden's great satire. (1621-1683).

Shaftesbury, Anthony Ashley Cooper, third Earl of, grandson of the preceding, English philosopher, born in London; entered Parliament in 1694, moving to the Upper House on the death of his father in 1699, where he gave steady support to William III.; withdrew from politics on the accession of Anne, and followed his bent for literature and philosophy. In 1711 his collected writings appeared under the title *Characteristicks*, in which he expounds a somewhat uncritical optimism, enunciating the doubtful maxim that ridicule is the test of truth. (1671-1713).

Shaftesbury, Anthony Ashley Cooper, seventh Earl of, Eng-

lish statesman and philanthropist, born in London; entered Parliament as a Conservative in 1826, took office under Wellington in 1828, and was a lord of the Admiralty in Peel's ministry of 1834; succeeded to the earldom in 1851. His reputation lives by reason of his life-long philanthropy, which took shape in numerous Acts of Parliament, such as the Mines and Collieries Act (1842), excluding women and boys under 13 from mine work; the Better Treatment of Lunatics Act (1845), called the *Magna Charta of the Insane*; the Factory Acts (1867); and the Workshop Regulation Act (1878); while outside Parliament he worked with rare devotion on behalf of benevolent and religious schemes of all sorts, notably the Ragged School movement and the better housing of the London poor. (1801-1885).

Shagreen, an untanned leather obtained from the skins of sharks and other fish: imitations are made from the skin of horses, camels, etc., in which the granulated appearance of real shagreen is imitated by pressing seeds into the wet skin. It is usually dyed green, and is used in the manufacture of luxury articles; it is also employed by cabinet-makers for polishing wood.

Shah (Pers. "King"); an abbreviation of *Shah-in-Shah* ("King of Kings"), the title by which the monarchs of Iran (Persia) are known; it has also been used in Afghanistan and other Asiatic countries and by the rulers of the Mogul empire in India. It was revived in Iran by Riza Khan Pahlavi in 1925.

Shah-Jehan ("King of the World"), fifth of the Mogul emperors of India; succeeded his father in 1627; a man of great administrative ability and a skilled warrior; conquered the Deccan and the kingdom of Golconda, and generally raised

the Mogul Empire to its zenith. The greatest monument of his reign is the famous Taj Mahal, erected by the emperor as a tomb for his favourite wife. (1592-1666).

Shakers, a fanatical sect founded in England in 1774 by one Ann Lee, so called from their extravagant gestures in worship; they were celibates and communists. They have disappeared in Gt. Britain, but still exist in the U.S.A.

Shakespeare, William, English poet and dramatist, born

at Stratford-on-Avon, Warwickshire; his father, John Shakespeare, a respected burgess of Stratford; his mother, Mary Arden, the daughter of a well-to-do farmer, through whom the family acquired some property; was at school at Stratford, married Anne Hathaway, a yeoman's daughter, at 18, she being eight years older, and had by her three daughters; left for



WILLIAM SHAKESPEARE

London somewhere between 1585 and 1587, in consequence, it is said, of a deer-stealing frolic on the estate of Sir Thomas Lucy of Charlecote; is said to have taken charge of horses at the theatre door, and later on to have become an actor. His first poetical work, *Venus and Adonis*, appeared in 1593, and *Lucrece* the year after; became connected with various theatres, in some of which he bought shares and acted, thus earning enough to buy a house in his native place, where he chiefly resided for ten years before his death.

Of the poet's further history we know but a few facts; there is record of his having bought land near Stratford in 1602; a year later he figured in Burbage's company at the Blackfriars Theatre, London; there is record, too, of actions brought by him against certain people, mostly for debts; in 1613 he was purchasing more property in London; in 1616 he appended his signature to his will, dying about a month later from, it is alleged, the results of over-indulgence at a convivial meeting with Ben Jonson and Drayton. He was buried in the church at Stratford.

As a poet Shakespeare's fame rests on his *Sonnets* (1609), and the many lyrics found in his plays, in addition to the poems mentioned above. Shakespeare's plays, with the order of their publication, are as follows: *Love's Labour's Lost*, 1590; *Comedy of Errors*, 1591; 1, 2, 3 *Henry VI.*, 1590-1592; *Two Gentlemen of Verona*, 1592-1593; *Midsummer-Night's Dream*, 1593-1594; *Richard III.*, 1593; *Romeo and Juliet*, 1591-1596 (?) ; *Richard II.*, 1594; *King John*, 1595; *Merchant of Venice*, 1596; 1 and 2 *Henry IV.*, 1597-1598; *Henry V.*, 1599; *Taming of the Shrew*, 1597 (?) ; *Merry Wives of Windsor*, 1598; *Much Ado about Nothing*, 1598; *As You Like It*, 1599; *Twelfth Night*, 1600-1601; *Julius Caesar*, 1601; *All's Well that Ends Well*, 1601-1602 (?) ; *Hamlet*, 1602; *Measure for Measure*, 1603; *Troilus and Cressida*, 1603-1607 (?) ; *Othello*, 1604; *Lear*, 1605; *Macbeth*, 1606; *Antony and Cleopatra*, 1607; *Coriolanus*, 1608; *Timon of Athens*, 1608; *Pericles*, 1608; *Cymbeline*, 1608; *Tempest*, 1610; *Winter's Tale*, 1610-1611; *Henry VIII.*, 1612-1613. (1564-1616).

Shale, name given by geologists to clay possesses a fissile structure.

Shallot, or Eschalot, (*Allium aced- lonicum*), a bulbous-rooted plant of the Liliaceae order, closely resembling garlic, native to Palestine. It is used as a seasoning in cookery and for pickling.



SEVENTH EARL OF SHAFTESBURY

Shamanism, a name given to the races of northern Central Asia, consisting essentially in a belief in spirits, both good and evil, who can be persuaded to bless or curse by the incantations of a priest called a Shaman.

Shamrock, a small trefoil plant, the national emblem of Ireland; the plant to which the name is now generally applied is either the *Trifolium repens*, the *Trifolium minus*, or the wood-sorrel.

Shanghai, the chief commercial city and port of China, on the Wu-Sung R., an affluent of the Yang-tse-kiang, 12 m. from the coast, and 160 m. S.E. of Nanking; large, densely peopled suburbs have grown round the closely packed and walled city, with its narrow, unclean streets; the so-called International Settlement occupies the area SHAMROCK N. of the Chinese city. The (T. minus) low-lying site exposes the city to great heat in the summer, and to frequent epidemics of cholera and fever. An extensive system of canals draws down a great part of the interior produce, and swells the export trade in tea, silk, cotton, rice and sugar. In 1927 a British force was sent to Shanghai to protect British interests during the Chinese civil hostilities then in progress, and troops have since remained there. In 1938 the Chinese city was in Japanese occupation. Pop. 3,490,000 (including International Settlement, 1,008,000, and the French concession, 497,000).



Shanklin, watering-place in the Isle NE. of Ventnor, with mineral springs and a famous chine. Pop. 25,000.

Shannon, the largest river of Ireland, rises in the Cullacagh Mountains, Co. Cavan; flows in a south-westerly direction through Loughs Allen, Ree and Derg, besides forming several lough expansions to Limerick, whence it turns due W., and opens out on the Atlantic in a wide estuary between Kerry (S.) and Clare (N.); has an entire course of 254 m. and is navigable to Lough Allen, a distance of 213 m. The dam at Ardacrusha, near Limerick, with the generating station attached, supplies electric power to almost the whole of Eire.

Shannon, Charles Hazlewood, English painter and etcher, born at Sleaford. He first exhibited 1885; in 1897 he exhibited "Man in Black Shirt" (himself) at Royal Society of Portrait Painters, and "Souvenirs of Van Dyck" at New English Art Club. "The Embroidered Shawl" is a well-known later picture. R.A., 1921. (1863-1937).

Shannon, Sir James Jebusa, painter, State; after settling in England in 1878 became famous for his portraits, of which those of the Marchioness of Granby and Lady Henry Bentinck are best known; his "Flower Girl" was purchased under the Chantrey bequest. He became a Royal Academician in 1908. (1842-1923).

Shans, or Laos, a Mongol people, descendants of aborigines of China, forming several large tribes scattered round the frontiers of Burma, Siam, and South China, whose territory, roughly speaking, extends N. as far as the Yunnan Plateau of South China; some are independent, but the bulk of the tribes are subject to Siam, China, and the British in Burma. The so-called Shan States are a portion of Burma (area, 62,340 sq. m.) but are subject to a special administration. Pop. 1,500,000.

Shan-si, inland province of northern China, extremely rich in coal and iron; wheat is grown. Capital Yangchu. Area, 80,500 sq. m. Pop. 11,600,000.

Shan-tung, mountainous coastal province of China, on the Yellow (Hwang-ho) R., to the N. of the Yellow Sea. Wheat and millet are grown; it is one of the most densely populated areas of the country. Capital Tsi-nan. Area, 69,200 sq. m. Pop. 38,000,000.

Shark, general name for the fishes of the order Pleurostomata, containing many species both extinct and still living. They are generally bluish-grey in colour, with a crescentic mouth placed on the under side of the head. The internal skeleton is cartilaginous. Their distribution is world-wide, among the found in British waters being the Corbeagle (*Lamna cornubica*) and the Thresher (*Alopias vulpes*). The Whale Shark (*Ischnodon*) is the largest existing shark. It is found in tropical waters, and may attain a length of 50 ft. The Basking Shark (q.v.) (*Cetorhinus maximus*) is another large species found on British shores. Shark fins are used by the Chinese in cooking, and the skin makes a leather of high quality. The Great Blue Shark or "Man-eater," which grows to a length of 40 ft. and which normally feeds chiefly on fish, is another visitor to British waters detested for the damage it does to fishing and to nets.



BLUE SHARK

Sharp, a musical sign (#) denoting the note to which it is prefixed is raised a semi-tone in pitch.

Sharp, Cecil James, English musician and expert in folksong and folk-dance, born in London. For a time he was Associate to the Chief Justice of South Australia. From 1899 he began the collection and preservation of folk melodies and dances, many of which he arranged and published. During the World War he was engaged on similar work in the Appalachians. (1859-1924).

Sharp, James, Scottish ecclesiastic, born in Banff Castle; in 1643 was appointed "regent" or professor of philosophy at St. Andrews, a post he resigned five years later to become minister of Crail. During the Protectorate he pleaded the cause of the Scottish moderate party before Cromwell in London; in 1660 intrigued with Charles at Breda, and with Clarendon and the magnates of the English Church to restore Prelacy in Scotland, he himself being appointed archbishop of St. Andrews. In 1668 his life was attempted in Edinburgh by a Covenanting preacher, and ultimately on Magnus Muir, May, 1679, he was mercilessly hacked to pieces by a band of Covenanters. (1613-1679.)

Sharp, William, Scottish poet and man of letters, born at Paisley; and under his own name wrote many volumes of verse, biography, and criticism; from 1894 published many stories, poems, and dramas under the pseudonym of "Fiona Macleod," among these being *Pharais*, *The Sin-eater*, *The Washer of the Ford*, *The Divine Adventure*, *The Immortal Hour*, afterwards used as the libretto for an opera by Rutland Boughton, and *Deirdre*. (1855-1905.)

Shaw, George Bernard, British author. The son of a civil servant, he was born at Dublin and educated there. At 16 he was placed in a land agent's office, but four years later he threw up his job and came to London, and after desultory attempts to enter business he began writing; by 1883 had written five novels, but had had none of them

published, and was earning money chiefly as a musician and critic. In 1892 *Widowers' Houses*, his first play, appeared. Meanwhile he had joined the Fabian Society, and thrown himself actively into Socialist work.

By the early years of this century he had produced *Arms and the Man*, *Mrs. Warren's Profession*, *The Doctor's Dilemma*, *John Bull's Other Island*, and a number of other plays, but his reputation for a long while rested with a small public. It was after the World War that *Saint Joan* established his popularity with the wider public and made his plays commercial successes. In 1929 came *The Apple Cart*, a political satire on democracy. Besides some 40 plays Shaw has produced novels, essays such as *The Quintessence of Ibsenism*, and political books like *The Common Sense of Municipal Trading*, and *The Intelligent Woman's Guide to Socialism*. His plays *Man and Superman* and *Back to Methuselah* contain most of his gospel, which is belief in a life-force working through creative evolution, from which it follows that man must aim at producing something better than the human race as we know it, and must be rid of all sentiment. (1856-).

Shaw, Thomas, English Labour politician, born at Colne, Lancashire. In his childhood he worked in a cotton mill, and in 1911 became Secretary to the International Congress of Textile Workers. From 1918 to 1931 he was M.P. for Preston, and served as Minister of Labour in 1924 and Secretary for War, 1929-1931. He was joint secretary of the Labour and Socialist International, 1923-1925. (1872-1938).

Shawm, a musical instrument of the wood-wind class, popular in Europe from the 12th to the 16th Century. Like the oboe, which superseded it, it had a double reed, but was of wider bore.

Shawnees, a tribe of American Indians of the Algonquin family, located originally in the eastern slopes of the Alleghanies, but now removed to Missouri, Kansas, and Oklahoma.

Shear, a term in mechanics for the strain upon a mass when pressure, called the stress, is so exerted on the surface that its component layers tend to slide sideways. The shear strain on a body is proportional to the stress, and can therefore be calculated.

Shearwater, the common name of the genus *Puffinus* of the petrel (Procellariidae) family, the name being derived from their manner of skimming over the water so as just to touch its surface. The Manx shearwater (*Puffinus puffinus*), the great shearwater (*Puffinus gravis*), and the sooty shearwater (*Puffinus griseus*) are all found at times off the British coasts; the first, a black bird with white underparts, breeds in the Scillies and other British islands.

Sheathbill (Chionidiidae), a family of S. American birds, including only three known species, having a horny sheath at the base of the bill, bare cheeks and wings armed with spurs. They are found on the islands of the south of the continent, the commonest of the three being the *Chionis alba* with white plumage and the *Chionarchus minor* with wattles on its cheeks, and in different ways resembling both the pigeon and the ptarmigan.

Sheba, probably a region in S. Arabia, along the shore of the Red Sea; the Queen of Sheba is recorded in the Old Testament as having visited King Solomon. The Imperial dynasty of Abyssinia claimed descent from her.

Shechem, ancient city of Palestine near Mount Gerizim. Its site is occupied by the modern city of Nablus. The city played a very prominent part in Biblical history.

Shee, Sir Martin Archer, P.R.A., British artist, born in Dublin, came to London in 1788, and, through a rich uncle, obtained footing in artistic circles. A trustworthy portrait painter, he also wrote two novels and a banned play. Elected to the Royal Academy in 1800, he succeeded Lawrence as its President. (1769-1850).

Sheep, of the family of Ungulates, or hoofed mammals. There are various closely-related species of wild sheep, mostly found in northern Europe and Asia, generally inhabiting open mountainous country, and distinguished by their massive horns, hairy coats and large size. Examples of these are the N. American "bighorn," the Mongolian argali, the wild sheep (*Ovis poli*) of Central Asia, and the mouflon, found chiefly in Sardinia and Corsica. The domestic sheep is of smaller size, has shorter horns, a woolly coat and longer tail than the wild breeds. Among British breeds are the Shetland, characterized by its very soft fleece intermixed with hair, the Welsh and Irish, which produce excellent meat, the Southdown, which has most flesh in proportion to its size, and the Leicester long-woolled breed.

Sheep-dog, a domestic dog trained and round up sheep. The breed known as the old English sheepdog is similar in build to a low greyhound, but with thick, shaggy hair, grey, black or brown in colour. The legs and feet are strongly built to withstand constant exercise. Other breeds used for sheep-tending are the Scotch and Welsh collies.



SHEEP DOG.

Sheepshead, a species of fish of the Sparidae (sea-bream) family, akin to perch and cod. It is found in N. American waters, and is one of the best salt-water fish of the U.S.A. Its name arises from a fancied resemblance to the sheep in the shape of the head and the dentition.

Sheerness, seaport, pleasure resort, and important garrison town with dockyards and naval arsenal in Kent, England, occupying the NW. corner of Sheppey Isle, where the Medway joins the Thames, 52 m. E. of London; the place of origin of the Mutiny of the Nore. The town is strongly fortified, and was attacked by German aircraft during the World War. Pop. 16,806.

Sheffield, city of Yorkshire, England, and chief centre of the English cutlery trade, built on hilly ground on the Don near its confluence with the Sheaf, whence its name, 41 m. E. of Manchester; is a well-built town, with notable churches, a fine modern City Hall, the well-known Mappin Art Gallery, and other public buildings; does a vast trade in all forms of steel, iron, and brass goods, as well as plated and britannia-metal articles; last century it greatly developed its manufactures of armour-plate, rails and other heavier goods. Its importance as a centre of cutlery dates from very early times, and the Cutlers' Company was founded there in 1634; it is the seat of a university, founded in 1805. Pop. 518,000.

Sheffield Plate, a type of silver-plated ware made first in 1743 at Sheffield by Thomas Boulsover, who discovered the method of plating by fusion; it was manufactured both in Sheffield and Birmingham till late in the 19th Century.

Sheikh, the chief of an Arab tribe; used often as a title of respect. Sheikh-ul-Islam being the ecclesiastical head of Mohammedans in Turkey, and the Sheikh-el-Gami of those in Egypt.

Shekel, among the ancient Hebrews originally a weight, and later the name of a gold or silver coin, its value varying with the price of the precious metals. Several kinds of shekel were in use; the average value may have been about 3s. (silver) and 2s. (gold).

Sheilburne, William Petty, Earl of, succeeded to his father's title in 1761, a few weeks after his election to the House of Commons; held office in the ministries of Grenville (1763), of Chatham (1766), and of Rockingham (1782). His acceptance of the Premiership in 1782, after Rockingham's death, led to the resignation of Fox and the entry of William Pitt, at the age of 23, into the Cabinet; his short ministry (July, 1782, to February, 1783) saw the close of the Continental and American wars, and the concession of independence to the American colonies, collapsing shortly afterwards before the powerful coalition of Fox and North; in 1784, on his retirement from politics, was created Marquis of Lansdowne. He was a Free Trader, and a supporter of Catholic emancipation. (1737-1805).

Sheldon, Gilbert, English ecclesiastic, born at Ellarton, Derbyshire. He was ejected from his fellowship of All Souls, Oxford, in 1634, and imprisoned, but on the Restoration became Bishop of London in 1660, and Archbishop of Canterbury in 1663. In 1677 he became Chancellor of Oxford University; he was the builder and endower of the Sheldonian Theatre (q.v.). (1598-1677).

Sheldonian Theatre, the "Senate House" of Oxford, built by Wren and endowed by Archbishop Sheldon (q.v.). It was completed in 1669 and is used for University ceremonies and the conferment of degrees.

Shelduck, or Sheld Duck, the common name of a number of species of sea ducks of the genera *Tadorna* and *Casarca*. The common Shelduck (*Tadorna cornuta*) in many ways resembles a goose, is found on sandy coasts of Europe, N. Africa and various parts of Asia; it is rather larger than the ordinary duck, and has a red bill, dark green head and white collar, with black bars on the body and green wings. It is frequently kept in Britain on ornamental waters. The Ruddy Shelduck (*Casarca rutila*) is also a visitor to British shores, occasionally in great numbers. Its upper parts are orange-brown and its head buff.

Shell, the hard outer covering of many animals, particularly molluscs, e.g., snails, oysters, etc. It is a cuticular structure, generally containing calcium carbonate. The shell of turtles, tortoises, etc., is a modification of the skeletal system. The name is also given to the outer covering of the eggs of birds, in which also it consists mainly of carbonate of lime.

Shell, a hollow steel container, filled with high explosive, and adapted for discharge from a mortar or field gun. Spherical shells of cast-iron, filled with gunpowder, and fitted with a slow-burning composition which acted as a fuse, were used as early as 1600. The shell is usually made to explode upon striking its objective, but shells with time-fuses are also in use. Modern shells are cylindrical in shape; during and since the World War many new types, including smoke shells and gas shells, have been evolved.

Shellac, the refined form of stick-lac, a resinous deposit secreted by insects on certain Eastern trees, especially the banyan. It is used in making spirit varnishes, sealing wax, etc.

Shelley, Mary Wollstonecraft, English writer, daughter of William Godwin and Mary Wollstonecraft; became the wife of the poet Shelley in 1816 after a two years' illicit relationship; besides *Frankenstein* (1818), wrote several romances, *The Last Man*, *Lodore*, and *Falkner*, also *Rambles in Germany and Italy*; edited with valuable notes her husband's works. (1797-1851).

Shelley, Percy Bysshe, English poet, born at Field Place, near Horsham, Sussex, eldest son of Sir Timothy Shelley, a wealthy landed proprietor; was educated at Eton, and in 1810 went to Oxford, where his impatience of control and violent heterodoxy of opinion, characteristic of him throughout, burst forth in a pamphlet, *The Necessity of Atheism*, which led to his expulsion in 1811; henceforth led a restless, wandering life; married at 19 Harriet Westbrook, a girl of 16, from whom he was separated within three years; under the influence of William Godwin (q.v.) his revolutionary ideas of politics and society developed apace; engaged in quixotic political enterprises in Dublin, Lynnmouth, and elsewhere, and above all put to practical test Godwin's heterodox views on marriage by eloping (1814) to the Continent with his daughter Mary, whom he married two years later after the unhappy suicide of Harriet.

In 1816, embittered by Lord Eldon's decision that he was unfit to be trusted with the care of Harriet's children, and with consumption threatening, he left England never to return; spent the few remaining years of his life in Italy, chiefly at Lucca, Florence, and Pisa, in friendly relations with Byron, Leigh Hunt, Trelawney, etc. During this time were written his greatest works, *Prometheus Unbound*, *The Cenci*, his noble lament on Keats, *Adonais*, besides other longer works, and most of his finest lyrics, *Ode to the West Wind*, *The Skylark*, etc.; was drowned while returning in an open sailing boat from Leghorn to his home on Spezia Bay. His ashes are interred at Rome. (1792-1822).

Shellfish, a term in common use to a hard external shell; it is incorrect, as such animals are not fishes, but mainly either crustaceans, such as the crab, lobster, shrimp and prawn, or molluscs, such as the "univalve" (single-shelled) whelk or the "bivalve" (double-shelled) oyster, mussel, etc.

Shell-shock, the name given to the symptoms found in many persons who have endured bombardment, etc., in war. These symptoms may be purely physical, but are more often nervous; among their very varied number are sleeplessness, loss of memory or speech, deafness, paralysis, etc. Psychotherapeutic treatment has been found successful in many cases.

Shenandoah, a river of Virginia, U.S.A., formed by two head-streams which unite 85 m. W. of Washington, and, flowing N.E. through the beautiful "Valley of Virginia," fall into the Potomac at Harper's Ferry, after a course of 170 m.; also the name of a town in Pennsylvania, 110 m. NW. of Philadelphia; centre of an important coal district. Pop. 22,000.

Shen-si, Chinese province lying S. of the Wei, and is mountainous in the S. It is rich in minerals, coal, iron, gold, etc., but they are little exploited. Chang-man is the capital. Area 72,380 sq. m. Pop. 9,718,000.



PERCY BYSSHE SHELLEY

Shenstone, William, English poet, born at Halesowen, Worcestershire; during the years 1737-1742 produced three vols. of poetry, the most noted being *The Schoolmistress*. After 1745 he turned to landscape-gardening, which won him in his day a wider reputation than his poetry. His *Essays* have considerable critical merit and originality, while his poetry—ballads, odes, songs, etc.—has music and grace despite its conventional diction. (1714-1763).

Sheol, the dark underworld of Hebrew belief, the dwelling place of departed spirits.

Shepherd Kings. See Hyksos.

Shepherd's Purse (*Capsella Bursa-pastoris*), a common English weed, self-fertilised, with two valved seed pouches and white flowers.

Sheppard, Hugh Richard Lawrie, English cleric, educated at Marlborough and Cambridge; became secretary to the Bishop of Stepney. In 1914 he served for a time as a chaplain in France, and the same year became vicar of St. Martin's-in-the-Fields, London, where he earned a nation-wide reputation for progressive methods. He resigned in 1927, was made a Companion of Honour, and in 1929 became dean of Canterbury. He was mainly responsible for the formation of the Peace Pledge Union, an organisation of pacifists pledged not to support or sanction future wars. (1883-1937).

Sheppard, Jack, English highwayman and criminal, born at Stepney, whose audacious robberies and daring escapes from Newgate Prison made him for a time the terror and talk of London; drew some 200,000 people to witness his execution at Tyburn; figures as the hero of a well-known novel by Harrison Ainsworth. (1702-1724).

Sheppey, Isle of, an islet in the estuary of the Thames, England, at the mouth of the Medway, belonging to Kent, from which it is separated by the Swale (spanned by a swing-bridge). Great clay cliffs rise on the N., and, like the rest of the island, are rich in interesting fossil remains. Corn is grown, and large flocks of sheep raised. Chief town is Sheerness (q.v.). The district is gradually diminishing before the encroaching sea.

Shepton Mallet, urban district and Somerset, England, 5 m. S.E. of Wells. It has an old church and grammar school, and manufactures rope and beer. Pop. 4,100.

Sheraton, Thomas, English furniture-maker, born at Stockton, who has given his name to a style of design which superseded the work of Hepplewhite (q.v.) in popularity. His work is on more severe lines than that of his predecessor. (1751-1806).

Sherborne, town of Dorsetshire, England, pleasantly situated on rising ground overlooking the Yeo, 118 m. SW. of London; has one of the finest Perpendicular minsters in S. England, ruins of an Elizabethan castle, and King Edward's School, re-founded in 1550 and ranking among the best of English public schools. Pop. 6,500.

Sherbrooke, city of Quebec, Canada, S. of the St. Lawrence. It is an important industrial centre with large machine shops, cotton and woollen factories and sawmills. Pop. 31,000.

Sherbrooke, Robert Lowe, Viscount, English statesman, born at Bingham, Notts; in 1842 emigrated to

Australia; made his mark at the Sydney bar, taking at the same time an active part in the politics of the country; returned to England in 1850, and entered Parliament, holding office under Lord Aberdeen (1853) and Lord Palmerston (1855). He was included in the Liberal ministry of 1868 as Chancellor of the Exchequer, a post he held till 1873, when he became Home Secretary. A man of great intellectual force and independence of judgment. He was created a viscount in 1880. (1811-1892).

Sheridan, Philip Henry, American general, born, of Irish parentage, at Albany, New York; obtained a cadetship at West Point Military Academy, and entered the army as a second-lieutenant in 1853; served in Texas and during the Civil War; won rapid promotion by his great dash and skill as commander of a cavalry regiment; gained wide repute by his daring raids into the S.; cleared the Confederates out of the Shenandoah Valley in 1864, and by his famous ride (Oct. 19, 1864) from Winchester to Cedar Creek snatched victory out of defeat, routing the conjoined forces of Early and Lee; received the thanks of Congress, and was created major-general; took an active part under Grant in compelling the surrender of Lee, and in bringing the war to a close; subsequently was promoted to lieutenant-general; visited Europe in 1870 to witness the Franco-Prussian War, and in 1883 succeeded Sherman as general-in-chief of the American army. (1831-1888).

Sheridan, Richard Brinsley Butler, Irish dramatist and politician, born at Dublin; in 1773 settled down in London with his gifted young wife, Elizabeth Linley, the singer, and scored his first success with *The Rivals* in 1775, following it up with the *Duenna*; aided by his father-in-law became owner of Drury Lane Theatre, where his most brilliant satirical comedy, *The School for Scandal* (1777), and the *Critic*, set flowing the tide of prosperity. Turning his attention to politics he entered Parliament under Fox's patronage in 1780, and two years later became Under-Secretary for Foreign Affairs in Rockingham's ministry. His great speech (1787) impeaching Hastings for his treatment of the Begums placed him in the front rank of orators, but although he sat for 32 years in Parliament, only once again did he reach the same height of eloquence, in a speech (1794) supporting the French Revolution, and generally failed to establish himself as a reliable statesman. Meanwhile his theatrical venture had ended disastrously, and financial troubles thickened around him until his death. He was buried in Westminster Abbey. (1751-1816).

Sherif, or **Shereef**, a title of dignity, among Mohammedans of either sex, bestowed upon descendants of the Prophet through his daughter Fatima and her husband Ali. As a distinguishing badge women wear a green veil, and men a green turban.

Sheriff, in England the chief officer of the Crown in every county, appointed annually, and entrusted with the execution of the laws and the maintenance of peace and order, with power to summon the *posse comitatus*. The office originated in Anglo-Saxon times, when it exercised wide judicial functions which have been gradually curtailed, and such duties as remain—the execution of writs, attendance at executions, the summoning of juries, etc.—are mostly delegated to an under-sheriff and bailiffs, while the sheriff himself, generally a person of wealth (the office being unalaried and compulsory, but not necessarily for more than one year), discharges merely honorary duties.

Sheriffmuir, a barren spot stretching N. of the Ochils, in Perthshire, Scotland, 5 m. N.E. of Stirling;



SHERATON CHAIR

was the scene of an indecisive conflict between 2,000 Jacobites under the Earl of Mar and 3,500 Royalists under the Duke of Argyll, Nov. 13, 1715.

Sheringham, urban district and sea-side resort of Norfolk, England, 4 m. W. of Cromer. There is a fishing industry, particularly for crabs. The coast in the neighbourhood is being steadily eroded by the sea. Pop. 4,200.

Sherman, William Tecumseh, American, can general, born at Lancaster, Ohio; first saw service as a lieutenant of artillery in the Indian frontier wars in Florida and California; resigned from the army in 1853, and set up as a banker in San Francisco, but at the outbreak of the Civil War accepted a colonelcy in the Federalist ranks; distinguished himself at the battles of Bull Run (1861) and Shiloh (1862); received promotion and, as second in command to Grant, rendered valuable service in reducing Vicksburg and Memphis; was present at the victory of Chattanooga, and during 1864 entered into command of the SW.; captured the stronghold of Atlanta, and after a famous march seaward with 65,000 men took Savannah, which he followed up with a series of victories in the Carolinas, receiving, on April 26, 1865, the surrender of General Johnston, which brought the war to a close; was created general and commander-in-chief of the army in 1869; published memoirs of his military life. (1820-1891).

Sheriff, Robert Cedric, English playwright, wright and novelist, born at Kingston-on-Thames. His service in the World War stood him in good stead in the construction of his very successful first play, *Journey's End*, produced in London in 1929, and followed the next year by *Badger's Green*. *Windfall* was produced in 1933. (1896-).

Sherrington, Sir Charles Scott, British physiologist, scientist; professor of physiology at Liverpool, Royal Institution and Oxford; his most important work has been on the human nervous system; was president of the Royal Society and of the British Association in 1922, and was awarded the Order of Merit in 1924; in 1932 he shared a Nobel Prize. (1861-).

Sherry, a Spanish wine from the region surrounding Jerez de la Frontera. The grape-juice is twice fermented, the first time with an addition of sulphate of lime, the second with brandy. Sherries are very carefully blended before shipment. The fine dry varieties are Amontillado and Vino de Pasito, the full-bodied Golden Sherry, and the intermediate Oloroso and Amoroso.

's Hertogenbosch (Bois-le-Duc), capital of N. Brabant, in the Netherlands, 45 m. SE. of Amsterdam, with a fine cathedral. Pop. 46,800.

Sherwood Forest, once an extensive forest, the scene of Robin Hood's exploits, in Nottinghamshire, England, stretching some 25 m. between Worksop and Nottingham, and originally joining the great wooded area of Barnsdale in Yorkshire; now a hilly, disafforested tract occupied by country houses and private parks, several villages, and the town of Mansfield.

Shetland, or **Zetland**, a group of over 100 islands, islets, and skerries, of which 29 are inhabited, forming the northernmost county of Scotland, lying out in the Atlantic, NNE. of the Orkneys; Mainland (378 sq. m.), Yell, and Unst are the largest. The coastline is boldly precipitous and indented, while the scenery all over the islands is very grand. The soil is peaty, ill adapted to cultivation, but there is considerable rearing of stock, and the little native pony is well known; fishing is the

chief industry. Originally a Norse settlement the islands came under British rule on the marriage of James III. of Scotland to Margaret, princess of Norway, in 1469, the Orkney and Shetland Isles forming part of her dowry. Lerwick (q.v.) is the capital. Area, 550 sq. m. Pop. 21,500.

Shetland Pony, a small shaggy-coated horse,

brown or black in colour, indigenous to the Shetland Isles. It possesses marked agility and intelligence and is specially favoured as a mount for children.



Shibboleth,

a word by which the Gileadites distinguished an Ephraimite, from his inability to sound the sh in the word, and so discovered whether he was friend or foe (see Judges xii. 6); hence it has come to denote, in a derogatory sense, a party cry or watchword.

Shield, in heraldry, the escutcheon or field on which are placed the bearings or charges in coats-of-arms. Shields are of various forms; those for widows or single women are lozenge-shaped. The form most commonly used is heart-shaped, but with a straight top, and sometimes placed at an angle (couché). The use of shields to protect the body in warfare ceased soon after the introduction of firearms, but a trace of it remains in the steel screen attached to field-guns to protect the men serving them.

Shields, North, seaport of Northumberland, land, England, on the Tyne, near its mouth, 8 m. NE. of Newcastle-upon-Tyne, and forming part of the municipal borough of Tynemouth; the docks cover 80 acres, and a large export trade in coal is carried on. Pop. (Tynemouth) 66,800.

Shields, South, busy seaport and county borough in Durham, England, with a frontage of 2 m. on the south bank of the Tyne, 9 m. NE. of Newcastle-upon-Tyne, a place of residence from ancient times, with Roman remains; exports immense quantities of coal and coke; there are manufactures of chemicals and machinery, and a shipbuilding industry. Pop. 112,000.

Shigatse, city of Tibet, standing at an altitude of about 12,000 ft. It is the seat of the great monastery of Tashilhumpo, the residence of the Tashi Lama. Pop. 9,000.

Shiites, a sect of the Mohammedans, who reject the "Sunna" or traditions, championed the claims of Ali, Mohammed's cousin and son-in-law, to succeed to the Caliphate, and maintain the divine right of his descendants to represent the prophet in the Mohammedan Church. Shiism is the national religion of Iran, and is followed by a majority of the Moslems of Iraq.

Shikarpur, capital of a district in N. Sind, India, situated on rich alluvial ground, 18 m. W. of the Indus, and 350 m. N. of Karachi; formerly an important commercial entrepôt between India and Khorassan; the vicinity produces excellent grain crops, and carpets and cottons are manufactured in the town. Pop. 62,800.

Shikoku, one of the main islands of Japan, between Kiushu and Honshu. Area, 7,250 sq. m. Pop. c. 3,500,000.

Shilling, a British silver coin equivalent in value to twelve pence, or one-twentieth of a pound; first became a current coin of the realm in the reign of Henry VII., and was the first English coin to bear the portrait of the sovereign. From

1825 onwards "lion" shillings were struck, bearing a lion crowned and standing on a crown. The coinage of George VI. in 1937 introduced for the first time two alternative designs for the coin, one bearing the Scottish royal monogram.

Shiloh, a village 20 m. N. of Jerusalem, the site of the resting-place of the Tabernacle on the settlement of the Jews in Canaan, and their religious centre before the establishment of the Temple at Jerusalem. The *Battle of Shiloh*, in the American Civil War, was fought near Pittsburg Landing, on the Tennessee R., in April, 1862, the Federal troops under Grant gaining a victory over the Confederates under Johnston.

Shimonoseki, seaport and commercial town of Japan, in Honshu, at the W. outlet of the Inland Sea. In 1864 it suffered bombardment by ships of the English, U.S., French and Dutch fleets. Pop. 133,000.

Shingles (*Herpes Zoster*), acute inflammation of the nerve ganglia in the spine; the symptoms are rise in temperature, pain in the side, and later a vesicular eruption in the region where the pain occurred. The disease has affinities with chicken-pox.

Shintoism, the native religion of Japan. It is a highly nationalistic creed, its chief outward manifestation being the payment of religious honour to the Mikado and the genius of the nation, combined with ancestor-worship. It has been considerably influenced by Confucianism and Buddhism, and is often held in conjunction with the latter. It is divided into about a dozen sects.

Shinty, an ancient Scottish game of hockey, Highland origin, similar to hockey, played by teams of twelve players. The ball has a cork core bound with worsted and covered with leather. A club similar to a hockey-stick is used.

Ship Canals. The Suez Canal is 100 m. long and 31 ft. deep, the Kiel Canal is 61 m. long and 45 ft. deep, the Panama Canal is 50 m. long and 45 ft. deep, the Elbe and Trave Canal is 41 m. long and 10 ft. deep, the Manchester Canal is 35½ m. long and 26 ft. deep, and the Welland Canal, since its reconstruction, is 26½ m. long and 25 ft. deep. The widest is the Panama (q.v.); the Kiel is 150 ft. wide, the Suez is 147 ft. wide, and the Manchester 120 ft. The Amsterdam-North Sea Canal has a length of 16½ m. and a depth of 33 ft.

Shipley, town and urban district of the West Riding of Yorkshire, England, on the Aire, 3 m. N. of Bradford. Woollens and worsteds are manufactured. Pop. 32,700.

Ship-money, a tax levied by Charles I. in imitation of an old war-tax leviable on port-towns to furnish a navy in times of danger, but imposed by Charles in a time of peace, without consent of Parliament, upon inland as well as port-towns, provoking thereby widespread dissatisfaction. Hampden's refusal to pay, with the trial and decision in favour of Charles, contributed to bring about the Civil War, which cost Charles his life. The tax was declared illegal by the Long Parliament in 1640.



JOHN
HAMPTON

Shipping. Mercantile shipping includes all ships (cf. *Mercantile Marine*) engaged in the transport of goods or passengers, and subject to certain conditions all ships must be registered. A copy of the Board of Trade certificate must be posted in a conspicuous position on the ship. The

various Merchant Shipping Acts constitute a voluminous code of sea-law. The main matters dealt with are registration, tonnage, liability of owners, food, health, &c., of seamen, medical inspection, overloading, wrecks and salvage, lighthouses, &c. The leading shipping nations are the British Empire (20,800,000 tons); United States (12,430,000 tons); Japan (4,475,000 tons); Norway (4,348,000 tons); Germany (3,937,000 tons), and Italy (3,213,000 tons); and the biggest ships afloat arranged in order are, *Normandie* (French), 83,000 tons; *Queen Mary* (British), 81,000 tons; *Berengaria* (British), 62,100 tons; *Bremen* (German), 51,700 tons; *Rex* (Italy), 51,000 tons; *Europa* (German), 49,750 tons; *Leviathan* (U.S.A.), 49,000 tons.

Shipton, Mother, a probably legendary of Henry VIII., whose preternatural knowledge revealed in her prophecies, published after her death, was ascribed to an alliance with the devil. Among her prophecies were the great Fire of London, invention of the steam engine and the electric telegraph.

Shiraz, city of Iran, occupying a charming site on an elevated plain, 165 m. N.E. of Bushire; founded in the 8th Century; was for long a centre of Persian culture, and a favourite resort of the royal princes. Its beauties are celebrated in the poems of Hafiz and Sadi, natives of the place. It is noted in the East for its wines, and also manufactures silks, carpets, rosewater, &c. Pop. 119,000.

Shire Horse, or English Black, a cart-horse, very powerful but slow; of muscular build and with short strong legs. Modern breeds often have white-starred foreheads.

Shirley, James, English dramatist, born in London; entered the Church, but turning Catholic resigned, and after an attempt at teaching established himself in London as a playwright; wrote with great facility, producing upwards of thirty plays before the suppression of theatres in 1642; fell back on teaching as a means of livelihood, and with the revival of his plays shortly after the Restoration eked out a scanty income till his death in the Great Fire of London. Among his plays were *The Witty Fair One*, *The Wedding*, *The Lady of Pleasure*, *The Tractor*, *The Grateful Servant*, *Hyde Park*, *The Gamester*, and *The Cardinal*. (1596-1666).

Shittim Wood, a hard, close-grained acacia wood of an orange-brown colour found in the Arabian Desert, and employed in constructing the Jewish Tabernacle.

Shoa, the central part of the former kingdom of Abyssinia (q.v.) in the neighbourhood of Addis Ababa; was an independent country till its conquest by Theodore of Abyssinia in 1855; is traversed by the Blue Nile, and has a mixed population of Gallas and Abyssinians.

Shock, a sudden depression of the system produced by violent injury or strong mental emotion, which may amount in serious cases to complete prostration. In the state of collapse consequent upon shock the patient lies completely prostrate, the face pale and bloodless, the skin cold and clammy, and the features contracted and expressive of great languor. There is also extreme muscular debility and the pulse is frequently so weak as to be scarcely perceptible. Shock may occur in consequence of surgical operations, even when the patient is unconscious during their performance under an anæsthetic.

Shoddy, a textile material made up from cotton or woollen waste, or from pieces of old fabric intermixed with material.

Shoeburyness, town in Essex, England, near Southend, of which it now forms part; it is an important station of the Royal Artillery.

Shogun, the former hereditary chief of the army in Japan, from the beginning of the 17th Century until 1868 the actual ruler of the country, the *de jure* ruler or Mikado being a merely nominal ruler. He was also known to Europeans by the name Tycoon.

Sholapur, city of Bombay Presidency, India, in a district of the name. 283 m. E. of Bombay; has cotton and silk manufactures. Pop. 144,700.

Shops Acts, Acts regulating the hours of closing for retail and other shops. An Act of 1904 empowered the local authority of any district with a population of over 20,000 to make closing orders fixing the hours at which all shops or those of a specified class were to be closed for serving customers. The Shops Act of 1912 introduced the obligatory half-holiday. This Act, which applies to wholesale shop and warehouse, as well as retail, shop assistants, restricts the weekly hours of assistants under 18 years of age to 74 hours including mealtimes; shops employing females must provide seats for their female assistants; intervals for meals must be so arranged that no assistant may be employed for more than 6 hours without an interval of at least 20 minutes and, where the hours include those from 11 a.m. to 2.30 p.m., 1-hour must be allowed for dinner and, where they include those from 4 p.m. to 7 p.m., 1-hour for tea.

Shops must close at 1 p.m. on one day every week, but many trades and businesses are exempt from early closing provisions, including those for selling meat, fish, fruit, milk, tobacco, motor accessories, medical and surgical goods, etc. The Shops Act of 1928 makes the "general closing hour" 9 p.m. on "one late day" and 8 p.m. for every other day of the week; the late day must be Saturday unless the local authority decide otherwise; and if, under the Act of 1912, they have fixed any particular day as the half-holiday for any class of shop, they must choose some other day for the late day. Special exceptions may be made for shops in holiday resorts and in trades dealing in refreshments, tobacco, and certain perishable goods. Sunday closing, except in certain special areas inhabited largely by a Jewish population, is rendered compulsory for most shops by an Act of 1937.

Shop Stewards, workers in industrial establishments who, on behalf of the Trades Unions they represent, act as leaders in industrial disputes, supervise the collection of subscriptions, report on working conditions to their Unions, and are responsible for the enlistment of new members. During the war-time truce in industry the shop-steward was the only vehicle of negotiation between employer and employee, and his status was therefore much improved during that time.

Shore, mistress of Edward IV. of London goldsmith till she was taken up by the King, through whom, till the close of the reign, she exercised great power; was ill-treated and persecuted by Richard III. for political purposes; subsequently lived under the patronage of Lord Hastings, and afterwards of the Marquis of Dorset, surviving till 1527; the story of her life has been made the subject of many ballads, plays, etc. (1445-1527).

Shoreditch, borough of E. London, adjoining the City on the N.E. has varied manufactures, especially of Pop. 85,000.

Shoreham, port and holiday resort in Sussex, England, 5 m. W. of Brighton; has oyster and other fisheries and boat-building yards. In the neighbourhood is Lancing College, a well-known public school. Pop. 8,800.

Shoring, a method of preventing the subsidence of a wall or building. The simplest is to prop the wall with 3 or more timbers placed at varying angles against the wall and securely resting on the earth. Two buildings with facing walls at no great distance apart may have "flying" shores, i.e., timbers stretching at right angles from one wall to the other. This type of shoring is necessary when removing a building from between two others to which it is attached. Another method, used when raising a building, is to insert "needles," passed through the wall and protruding from it. A supporting piece is placed under the needle, the whole being raised by jack-screws. Cast-iron screws are now used capable of lifting 14 in.



SHORING

Shorncliffe, village of Kent, England, 2 m. W. of Folkestone, site of a large military camp.

Shorthand, a system of more or less signs or symbols briefer than those used in ordinary writing. Systems of shorthand were in use among the Romans under the republic. Famous English systems before Pitman's Shorthand were those of Byrom (1742), Samuel Taylor's (1786) and Harding's, which Isaac Pitman learned and used before he invented his famous "phonography," first published in 1837. Pitman's system is based upon a philosophical theory of the sounds of the language, and each symbol represents a sound. The system has a strongly predominant position, not only in this country, but throughout the English-speaking world, and in most of the stenographic work in Parliament and the Senate, on the press, in business and commercial offices. In recent years Gregg's system has made considerable progress. As opposed to Pitman's, it consists of more smoothly flowing outlines and a greater speed is claimed for it. The fastest speeds attained in Pitman's shorthand exceed 240 words a minute.

Shorthorn, the name given to a popular breed of domestic cattle; used both for dairy purposes, owing to its rich milk yield, and for beef. Of British origin, it is the most widely distributed of all breeds of domestic cattle. The colour varies considerably, but roan is the commonest. The breed was first developed in Durham in the 18th Century.

Shorthouse, Joseph Henry, English novelist, born at Birmingham; best known for his historical novel, *John Inglesant*, which was received with great acclaim, but afterwards gave rise to charges of extensive plagiarism; wrote also *Sir Percival* and *Little Schoolmaster Mark*. (1834-1903).

Short Parliament, called by Charles I. in 1640; it lasted only three weeks.

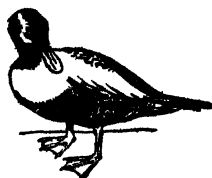
Shotton, village of Warwickshire, England, 1 m. W. of Stratford-on-Avon, famous as the home of Anne Hathaway, Shakespeare's wife, whose cottage is still to be seen there.

Shotts, or Kirk o' Shotts, village of Lanarkshire, Scotland, 8 m. E. of Glasgow. Coal and ironstone are mined in the neighbourhood, and there are ironworks, brick yards, &c. Pop. 20,500.

Shoulder, the joint formed by the humerus (bone of the upper arm) with the scapula (shoulder-blade), the former having a rounded head fitting into the socket of the latter. Another bone called the acromium, projecting from the scapula, forms with the clavicle (collarbone) an arch over the shoulder joint, which is protected by a thick muscle.

Shovel, Sir Cloudesley, English admiral, born at Clay, Norfolk; was apprenticed to a cobbler, but ran away to sea, and by 1674 was a lieutenant in the Mediterranean fleet; was knighted in 1689 for his gallantry as commander of a ship in the battle of Bantry Bay, and in the following year as rear-admiral was prominent at the engagement off Beachy Head; in 1692 gave heroic assistance to Admiral Russell at La Hogue, and in 1702 to Rooke at Malaga. Elevated to the commandership of the English fleets, he in 1705 captured Barcelona, but on his way home from an unsuccessful attack upon Toulon was wrecked with other ships of his fleet on the Scilly Isles and drowned. (c. 1650-1707).

Shoveler, or **Spoon-Billed Duck,** a so-called from the shape of the bill, which is specially adapted for retaining its food, which consists chiefly of shell-fish, insects, etc. There are four species, the chief being the Common Shoveler (*Spatula clypeata*), which breeds in Great Britain. The female is similar to the common Wild Duck; the male has gorgeous plumage of dark green, chestnut and white, though in summer it resembles the female.



SHOVELER DUCK

Shrapnel, a type of shell invented in 1784 by Colonel Henry Shrapnel, a British soldier. It contains bullets which travel forward at great speed when released by the bursting charge. It is very effective when used against troops in the open owing to its wide range.

Shreveport, city of Louisiana, U.S.A., on the Red R., 330 m. NW. of New Orleans. Cotton is grown in the neighbourhood and cattle reared, and cotton goods are made. Pop. 77,000.

Shrew, or **Shrew-Mouse,** a small animal resembling, but unrelated to, the mouse, belonging to the family Soricidae of the Insectivora. It has a long pointed snout, rounded ears and cusped incisor teeth; some live in river-banks, others in fields and woods. The shrew family includes some of the smallest of living mammals. They are terrestrial animals. The British representatives include the Common Shrew (*Sorex araneus*), and the Pigmy Shrew (*Sorex minutus*).

Shrewsbury, county town of Shropshire, England, situated on a small peninsula formed by a horseshoe bend of the Severn, 42 m. W. of Birmingham; it has a Norman castle, abbey church, and ruined walls; the public school, founded by Edward VI., ranks amongst the best in England. It was formerly an important border fortress against the Welsh. A Parliament met here in 1397-1398, and in 1403 the town gave its name to the battle which resulted in the defeat of Hotspur and the Earl of Douglas by Henry IV. It was taken by the Parliamentarians in 1644. Chief industries are glass-painting, malting, and iron-founding. Pop. 37,500.

Shrewsbury, Charles Talbot, Duke of, English politician; was among those who invited William of

Orange to England in 1688, accompanying him on his journey from Holland and becoming Secretary of State; but later entered into secret negotiations with James at Saint Germain. He was created a duke in 1694; in 1710 he became Lord Chamberlain and in 1714 Lord Treasurer, assisting on Anne's death in securing the Hanoverian succession. (1669-1718).

Shrike. See Butcher Bird.

Shrimp, a crustacean of the family Crangonidae, resembling the prawn, but smaller in size, and with a shorter beak. The common shrimp (*Crangon vulgaris*) is greyish in colour, almost indistinguishable from its sandy habitat, and is found in shallow waters round the coasts of the British Isles. As with the lobster, the pink colouring of the animal, as sold for eating, is produced by boiling.

Shropshire, often contracted to **Salop,** a mining county of England, on the Welsh border, between Cheshire (N.) and Hereford (S.); is divided into two fairly equal portions by the Severn, E. and N. of which it is low, level and fertile, excepting the Wrekin (1,330 ft.), while on the SW. it is hilly (Clee Hills, 1,805 ft.). Ellesmere is the largest of several lakes. Coalbrookdale is the centre of a rich coal district, and iron and lead are also found. There are many interesting antiquities, including the remains of the Roman city of Uriconium, five abbeys, and a number of castles. Area, 1,347 sq. m. Pop. 244,200. Shrewsbury is the capital.

Shrove-tide, the period immediately before Lent, ending on Shrove Tuesday, when in the Middle Ages the people "shrove" themselves, or made their annual confession of sins, afterwards giving themselves up to sports and relaxations. The custom of eating pancakes on Shrove Tuesday marks a relic of the last use of eggs before the Lenten fast, during which they were not allowed as food.

Shrub, the term applied to any hard-wooded plant of smaller and thicker growth than a tree, the branches of which spring from the root, or from the stem immediately above the ground. Many species of flowering shrubs are widely used for decoration in gardens, among the most popular being rhododendrons, daphne, lilac, flowering currant and myrtle.

Shuttle, an instrument used in weaving for shooting the thread of the woof between the threads of the warp; also a pointed and metal-capped wooden reel upon which the yarn is wound.

Sialkot, district and town of the Punjab, India. The town, a military cantonment, is 72 m. NE. of Lahore. Tents, sports outfits, cotton, cloth and paper are made. Pop. (dist.) 980,000; (town) 101,000.

Siam, Siam or Muang-Thai, an independent kingdom, occupying the central portion of the Indo-Chinese peninsula, wedged in between Annam and Cambodia (E.) and Burma (W.), and extending down into the Malay Peninsula; the wide Gulf of Siam forms the southern boundary. The rich alluvial valleys of the Menam and the Mekong produce great quantities of rice (chief export), teak-wood, rubber, coconuts, tobacco and cotton, but of the land surface only a small proportion is cultivated, much of the rest lying under forest and jungle. Trade is largely in the hands of the Chinese; the mining of gold, tin and especially rubies and sapphires is also carried on. A university was founded at Bangkok in 1917. The national religion is Buddhism. Trade is mainly with the Malay States, Hong Kong and Japan. The country is undergoing rapid westernisation. Bangkok is

the capital. The present king, Ananda (Mahidol), born 1925, succeeded to the throne in 1935. Area, 200,150 sq. m. Pop. 14,464,000.

Siam, Gulf of, inlet of the S. China Sea between the SW. shores of French Indo-China and the E. coast of the Siamese portion of the Malay Peninsula.

Siamese (*Hylobates syndactylus*), the largest of the gibbons, found only in Sumatra; its height when standing is about 3 ft., and it has long black hair. Unlike most gibbons, it possesses a web of skin between the second and third toes of the foot, and a pouch at the throat similar to the Orang-utan.

Siamese Twins, male twins born in Siam, of Chinese parents, whose bodies were united by a fleshy band extended between corresponding breast-bones; were purchased from their mother and exhibited in Europe and America; married and settled in the U.S.A. Having lost by the Civil War, they came over to London and exhibited, where they died, one 2½ hours after the other. The name has been applied to other cases of "joined twins" who have been born later. (1811-1874).

Sian, a walled city of China, in the province of Shensi, with trade in tea, silk, cotton, sugar, etc. Pop. (est.), 1,000,000.

Sibelius, Johan Julius Christian, Finnish musical composer, born at Tavastehus. A state grant from 1897 enabled him to devote his life to musical composition, his output being for that reason considerable. Something of the natural features of his own country and of the character of his countrymen finds expression in his genius; his tone-poems are replete with the life of folk-songs; while his symphonies are instinct with the might and mystery of nature. His first Finnish opera, *The Maid of the Tower*, was published in 1896; among his many works, which include symphonies, symphonic poems, songs, etc., the best known are *Finlandia* and the *Valse Triste*. (1865-).

Siberia, name formerly applied to the whole of the Russian possessions in Asia, with the exception of those in the Caucasus area to the SW. This territory is now divided between Tadzhikistan, Kazakhstan, and the Kara-Kalpak and Kirghiz Republics, the Far Eastern Region, the Yakutsk and Buriat-Mongol Republics; and the Eastern and Western Siberian regions, with an area of 1,721,000 sq. m. and a pop. of 11,336,000, constitute the present-day Siberia. The capital of W. Siberia is Novosibirsk; of E. Siberia, Irkutsk. Other cities are Omsk, Tomsk, Barnaul and Krasnoyarsk.

There are enormous deposits of coal and of iron, copper and other ores; agricultural development is being speeded up, and large areas are now under corn crops. The N. is mostly tundra and forest. Horses are bred in large numbers. Before the fall of the Czarism, Siberia was largely peopled by political exiles from European Russia. The country was first opened up by the Trans-Siberian Railway, from Europe to the Far East, opened in 1891; railway development has continued under the Soviet Government, a line connecting Siberia with Turkestan being the most important new link of communication. In recent years the Trans-Siberian Railway has been double-tracked. Civil Aviation routes of international importance also cross Siberia, the most important being the Moscow-Vladivostok line.

Sibthorp, John, British botanist, born at Oxford; professor of botany at Oxford from 1784. He was one of the founders of the Linnean Society, and wrote treatises on the flora of Greece and of Oxford. (1758-1796).

Sibthorpia, a genus of trailing plants of the natural order

Scrophulariaceae. There are 8 recognised species, of which one, *Sibthorpia europaea*, the Cornish money-wort (q.v.), is found in the S. of England.

Sibyl, the name given to a woman, or to a number of women, much famed in antiquity, endowed with visionary prophetic power, the most famous of the class being the Sibyl of Cumæ, who offered King Tarquin of Rome 9 books for sale, which he refused on account of the exorbitant sum asked for them, and again refused after she had burnt 3 of them, but in the end paid what was originally asked for the 3 remaining, which he found to contain oracular utterances bearing on the worship of the gods and the policy of Rome. These, after being entrusted to keepers, were afterwards burned, and the contents replaced by a commission appointed to collect them in the countries around, to share the same fate as the original collection. The name was applied in medieval times to figures representative of the prophets who foretold the coming of Christ; the prophets so represented were reckoned sometimes 10, sometimes 12 in number.

Sicilian Vespers, the name given to a massacre of the French in Sicily at the hour of vespers on the eve of Easter Monday in 1282, the signal for the commencement being the first stroke of the vesper bell. The massacre included men, women and children to the number of 8,000 souls, and was followed by others throughout the island.

Sicily, the largest island in the Mediterranean, lying off the SW. extremity of Italy, to which it belongs, and from which it is separated by the narrow strait of Messina, 2 m. broad; the three extremities of its triangular configuration form Capes Faro (N.E.), Passaro (S.), and Boco (W.). Its mountainous interior culminates in the volcanic Etna, and numerous streams rush swiftly down the thickly wooded valleys. The coastlands are exceptionally fertile, growing excellent crops of wheat and barley, as well as an abundance of fruit. Sulphur-mining is an important industry, and large quantities of the mineral are exported. There are valuable tunny, sardine, and other fisheries. It enjoys a fine, equable climate, but malaria is in parts endemic. The inhabitants are a mixed—Greek, Italian, and Arabic—race, and differ considerably in dialect and appearance from Italians proper. Palermo, the largest city, is situated on the precipitous N. coast; other towns are Messina, Catania, Trapani and Marsala. As part of the "Kingdom of the Two Sicilies," comprising Sicily and Naples, it was overrun by Garibaldi in 1860, and in the same year was incorporated with the kingdom of Italy. Area, 9,935 sq. m. Pop. 4,000,000.

Sickert, Walter Richard, British Whistler in his youth, but after going to Paris he came under the influence of Degas and the Impressionists. Scenes of low life were his speciality, and he excelled in painting interiors. In 1924 he was made an A.R.A., and in 1934 an R.A., but resigned from the Academy the following year. In 1928-1929 he was President of the Royal Society of British Artists. (1860-).

Sidcup and Chislehurst, urban district of Kent, England, 13 m. S.E. of London, chiefly a residential suburb of London. The Emperor Napoleon III. resided



SIBTHORPIA
EUROPEA

at Chislehurst after his abdication, and died there. Pop. 54,000.

Siddons, Sarah, English tragic actress, born in Brecon, the daughter and eldest child of Roger Kemble, manager of an itinerant theatrical company; became early a member of her father's company, and at 19 married a member of it. Her first appearance at Drury Lane as Portia in 1775, was a failure; by 1782 her fame was established, after which she joined her brother, John Kemble, at Covent Garden, and continued to act there till her retirement in 1812. She was distinguished in many parts, above all as Lady Macbeth, in which character she took farewell of the stage. (1755-1831).



MRS. SIDDONS

Sidereal Day, the period elapsing between two successive transits of a meridian by a star; it is approximately 23 hrs. 56 mins.; *sidereal time* is reckoned from the moment when the first point of Aries crosses a given meridian.

Sidereal Year, the period during which the earth makes a revolution in its orbit with respect to the stars; it is a fraction over 365½ days.

Sidgwick, Henry, English ethical and political philosopher, born at Shipton, Yorkshire; professor of Moral Philosophy at Cambridge; author of *Methods of Ethics*, in which he supported a compromise system between the intuitionists and utilitarians, *The Principles of Political Economy*, and *The Elements of Politics*. He held a high place in all these three studies. (1838-1900).

Sidlaw Hills, a range of hills extending from Kinnou Hill, near Perth, N.E. to Brechin, in Angus, and reaching nearly 1,500 ft. in height; most interesting point Dunsinane (1,114 ft.).

Sidmouth, a watering-place on the S. Devonshire coast, England, 14 m. ESE. of Exeter; lies snugly between high cliffs at the mouth of a small stream, the Sid. Pop. 8,500.

Sidmouth, Henry Addington, Viscount, English statesman, born in London, the son of a physician; entered Parliament in 1783, and was Speaker from 1789 till 1801, in which year, after the fall of Pitt over Catholic emancipation, he formed a ministry, assuming himself the offices of First Lord of the Treasury and Chancellor of the Exchequer. This ministry of the "King's Friends" went out of office in 1804, after negotiating the Peace of Amiens (1802), and in subsequent governments of Pitt Sidmouth held various offices, being an unpopular Home Secretary from 1812 to 1821; created viscount in 1805. (1757-1844).

Sidney, Algernon, English politician and soldier of extreme republican views, second son of Robert, second Earl of Leicester, and nephew of Sir Philip Sidney; first came into public notice in 1641-1642 by his gallant conduct as leader of a troop of horse in the Irish Rebellion; came over to England in 1643, joined the Parliamentarians, rose to a colonelcy and command of a regiment in 1645; was subsequently governor of Dublin and of Dover (1647), entered Parliament (1648), and although appointed one of the commissioners to try Charles I., absented himself from the proceedings, but afterwards approved of the execution; withdrew from politics during Cromwell's Protectorate, but on the reinstating of the Long Parliament (1659) became a member of the Council of State; was on a diplomatic mission to

Denmark when the Restoration took place, and till his pardon in 1677 led a wandering life on the Continent; intrigued with Louis XIV. against Charles II., assisted William Penn in drawing up the republican constitution of Pennsylvania, was on trumped-up evidence and on the evidence of his own *Discourses concerning Government*, which had never been published, tried for complicity in the Rye House Plot and executed, his attainder being, however, reversed in 1689. (1622-1683).

Sidney, Sir Philip, English poet and courtier; born at Penshurst,

Kent, the son of Sir Henry Sidney, lord-deputy of Ireland; quit Oxford in 1572, and finished his education by a period of Continental travel, from which he returned imbued with the love of Italian literature; took his place at once in the court of Elizabeth, and received rapid promotion, being sent as ambassador in 1576 to the court of Vienna; his favour with the queen was not impaired by his bold *Remonstrance* against her projected marriage with the Duke of Anjou, and in 1583 he was knighted. Two years later the queen forbade him to accompany Drake to the West Indies, and appointed him governor of Flushing, but in the following year he received his death-wound at the battle of Zutphen gallantly leading a troop of Netherlands against the Spaniards. His fame as an author rests on his euphuistic prose romance *Arcadia*, his critical treatise *The Defence of Poesy*, and above all on his exquisite sonnet series *Astrophel and Stella*, in which he sings the story of his hapless love for Penelope Devereux, who married Lord Rich. (1554-1586).



SIR PHILIP SIDNEY

Sidney Street Siege, an affair in the East-end of London in Jan., 1911, when two armed alien criminals held the police at bay from a barricaded house. Winston Churchill, then Home Secretary, personally intervened, and called out troops and artillery to storm the house, which eventually caught fire and trapped the hunted men.

Sidon, an ancient Phœnician city on the E. of the Mediterranean, 20 m. N. of Tyre, with an extensive commerce; was famed for its glass and purple dye.

Siebengebirge, a range of hills in the right bank of the Rhine, 20 m. above Köln, distinguished by its seven high peaks.

Siege, the investiture of a town or fortress by hostile troops in order to induce it to surrender either by starvation or by attack at a suitable juncture. In ancient and mediæval warfare sieges played a great part, but under modern conditions of mechanised warfare long sieges seem likely to become a historic memory, as present-day siege artillery is in advance of any possibility of effective fortification.

Siemens, Ernst Werner von, German electrician and inventor, born at Lenthe, Hanover; served in the Prussian artillery, and rendered valuable services in developing the telegraphic system of Prussia; patented a process for electroplating in gold and silver, and was the first to employ electricity in exploding submarine mines; retired from the army in 1849, and with Halske established a business in Berlin for telegraphic and electrical apparatus, which has become notable throughout the world, and has allied establishments in St. Britain; made many contributions to electrical science; was ennobled in 1888. (1816-1892).

Sienna, an Italian city of much importance during the Middle Ages, in Central Italy, 60 m. S. of Florence; is still surrounded by its ancient wall, and contains several fine Gothic structures, notably its marble cathedral (13th Century) and municipal palace; has a university and institute of fine arts; silk and cloth weaving, ironwork, and a wine and oil trade are the chief industries. Pop. 49,000.

Sienna, an iron oxide mixed with other substances, used as a pigment. "Burnt" sienna gives a dull brown tint, "raw" sienna a bright reddish brown.

Sierra Leone, a British maritime colony since 1788, on the W. coast of Africa, having a foreshore of 180 m. between Rivières du Sud (N.) and Liberia (S.); includes the peninsula of Sierra Leone proper with its densely wooded Sugar-Loaf Mt., and a number of coast islands, and stretches back to a highland eastern frontier ill-defined; the climate is hot, humid, and unhealthy; has been called "The White Man's Grave"; is fertile but not well exploited by the negro population, half of whom are descendants from freed slaves; ground-nuts, kola-nuts, ginger, hides, and palm-oil, are the principal exports. Freetown is the capital. The Protectorate of Sierra Leone extends over a region adjoining the Colony. Area (Colony), 4,000 sq. m.; (Protectorate), 26,000 sq. m. Pop. (Colony), 103,000; (Protectorate), 1,672,000.

Sierra Madre, one of the main mountain chains of Mexico, extending in a N. direction to Arizona, and forming the W. buttress of a fertile plateau stretching eastwards; to the W. the states of Sinaloa and Sonora slope downwards to the sea.

Sierra Morena, a mountain chain forming the watershed between the valleys of the Guadiana, on the N., and Guadalquivir, on the S.; has valuable deposits of lead, silver, quicksilver, copper, and other metals.

Sierra Nevada, (1) a mountain range in S. Spain, 60 m. in length; it lies for the most part in Granada, crossing the province E. and W. in bold, rugged lines, and clad on its higher parts with perpetual snow, whence the name (Spanish: nevada, "snowy"); the Cerro de Mulhacen (11,421 ft.) is the highest peak in Spain. (2) A mountain system in California, stretching NW. and SE. for 450 m., and forming the eastern buttress of the Great Central Valley; the highest peak is Mt. Whitney (14,502 ft.). (3) A lofty mountain group in Colombia, S. America, stretching NE. almost to the borders of Venezuela.

Sight, a metal device fixed to the barrel of a rifle or other small arm to assist accuracy of aim. It consists of two portions, the fore-sight, which is usually fixed, and the rear-sight, which is adjustable. The rear-sight is notched or perforated in such a way that the fore-sight is visible through the opening and covers the target when the gun is correctly aimed. In artillery, the necessity for making allowance for wind, travel of target, drift and other important factors, and the fact that the target is often quite invisible from the gun, have led to the evolution of complex sights and an elaborate technique of using them.

Signalling, communication by signs, in a military sense it includes line telegraphy and telephony, wireless, visual signalling and message-carrying agencies. The means available for visual signalling are roughly four in number: flags, heliograph, lamps, and shutters. With flags, which can be used in daylight only, two methods of signalling are employed, viz., mazes, with a single flag, and

semaphore (q.v.) with two flags. The heliograph depends for its effect upon the intermittent reflecting of sunlight by a mirror. By this means messages can be read in favourable conditions at a distance of 70 m. Lamp signals can be read at a distance of about 4 m. by day and 8 m. by night. Shutters are small portable structures having a black surface which changes to white when the signalling surface is exposed. Messages can only be sent for short distances by shutters. A machine for semaphore signalling is carried on all warships, while a searchlight (q.v.) is commonly used for signalling; either by day or night, and is quite effective over long distances.

Signet, or Privy Signet, the royal seal on letters patent, grants, etc. Since the Great Seal Act (1884), however, instruments bearing the sign-manual do not require the signet, the counter-signature of certain ministers and officials being sufficient authority.

Signet Ring, a finger-ring on which is engraved the monogram or initials of the owner, which may be impressed on sealing-wax as an authentication of documents, etc., in the manner of a seal.



Sign-Manual, the royal signature, formerly affixed to grants, letters patent, etc., now referring to sign-manual warrants, which, when countersigned by a secretary of state or other responsible minister, may be issued under the Great Seal.

Sikhs (H. disciples), a native religious and military community of the Punjab, India, and forming some fifteen states dependent on the Punjab government; founded by one Nanak (born 1469) as a religious monotheistic sect purified from the grosser Brahmanical superstitions and practices; were organized on a military footing in the 17th Century, and in the 18th Century acquired a territorial status, ultimately being consolidated into a powerful military confederacy by Ranjit Singh, who, at the beginning of the 19th Century, extended his power over a wider territory. In 1845-1846 they crossed their E. boundary, the Sutlej, and invaded English possessions, but were defeated by Sir Hugh Gough and Sir Henry Hardinge, and had to cede a considerable portion of their territory; a second war in 1848-1849 ended in the annexation of the entire Punjab, since when the Sikhs have been the faithful allies of the English, notably in the Indian Mutiny and the World War.

Si-kiang, river of S. China, rising in the mountains of Yunnan and flowing mainly E. for 1,250 m. to Canton, where it enters the sea through a large delta. It is navigable to Wuchow, over 200 m. upstream.

Sikkim, a small native state in NE. of the Himalayas, bounded on the W. by Nepal and on the E. by Bhutan and Tibet. It has an area of 2,818 sq. m., and is under British protection. It is heavily forested and produces rice, fruit, maize, millet and wool. The people are chiefly Nepalese, Lepchas and Bhutias. Gangtok is the capital. Pop. 109,800.

Silchester, village of Hampshire, England, 7 m. N. of Basingstoke. Here excavations from 1896 onwards revealed the foundations of the Romano-British town of Calleva Atrabatum, including those of the first Christian church in Britain, an amphitheatre, forum, basilica etc., as well as traces of private houses and streets. The objects found are in Reading Museum.

Silesia, district of Europe, since 1919 divided between Prussia, Poland and Czechoslovakia; the Oder flows NW. through the heart of the country, dividing the thickly forested and, in parts, marshy lands of the N. and E. from the mountainous and fertile W. Rich coalfields lie to the S., and zinc is also a valuable product; agriculture and the breeding of cattle, horses and sheep flourish, and cottons and linens are manufactured.

Prussian Silesia comprises Upper and Lower Silesia, the former covering 3,746 sq. m. and being predominantly industrial (Pop. 1,483,000), while the latter is agricultural and has an area of 10,277 sq. m. (Pop. 3,204,000). Breslau is the chief town of Prussian Silesia. Polish Silesia forms a county, with an area of 1,628 sq. m. (Pop. 1,295,000); it included, until 1938, the former Austrian town of Teschen but not the famous coal basin of that name. Czechoslovakian Silesia (formerly part of Prussian Upper Silesia) has an area of 1,708 sq. m. and, until 1938, included the Teschen coal basin, which has now been surrendered to Poland. (Pop. 735,300).

Silhouette, a portrait taken in profile, and filled in with black, or cut out of black paper. The name is derived from Etienne de Silhouette, minister of finance under Louis XV. of France (in whose reign the silhouette became popular as a cheap method of portraiture), in satirical allusion to his extreme economy.

Silica, usual name for the dioxide of silicon, SiO_2 . It is found in most of the minerals which are common in igneous and sedimentary rocks in the form of the silicates of soda, potash, alumina and lime (e.g. felspar, etc.). Silica itself is found in many forms, e.g. quartz, chalcedony, jasper, agate and flint; in the form of quartz sand, it is a main constituent of glass. The silicate of soda is known as "water-glass" and is commonly used for preserving eggs.

Silicon, a non-metallic chemical element, discovered by Berzelius in 1823. Its chemical symbol is Si; atomic number, 14; atomic weight, 28.06; and melting-point, $1,420^\circ\text{C}$. It is rarely found except in compounds, e.g., silicon dioxide, or silica (sand), silicon tetrachloride, silicon trichloride, and in various hydrogen compounds. Compounds of silicon are used extensively in industry (as sand, glass, carborundum, water-glass, etc.), but the element itself is used mainly in the production of ferro-silicon alloys, which are extremely hard.

Silk, a lustrous thread or fabric manufactured from the thread obtained from the larvae of certain moths. The chief silk-producing larvae belong to the Bombycidae family, which includes the common silkworm (*Bombyx mori*). The Chinese were the first to produce silk, and China is still the chief silk-producing country. Silk was known and used by the ancient Greeks, but the cultivation of the silkworm was not introduced into Europe until the 6th Century.

In silk manufacture the first operation is reeling the silk from the cocoons; the silk is then washed, wound on bobbins and sorted. Silk yarns are long, uniform in diameter, fine, elastic, lustrous and durable. In the manufacture of silk fabric France takes first place in Europe, Lyons being the centre of the trade. Many purposes for which silk was at one time employed are now served by the much cheaper artificial silk (q.v.) or rayon.



SILK WORM AND MOTH

Siloam, a pool mentioned in the Bible (Isaiah viii., 6); it seems to have been outside Jerusalem, on the S., and to have been connected with an upper pool by a conduit (II. Kings xviii., 17).

Silurian, the name given to the Palaeozoic rocks lying above the Ordovician and below the Devonian. In the British Isles deposits of this age are found in S. Wales, the Welsh border, and Southern Scotland, and include the Wenlock limestone and Ludlow slates. The first true fish appeared in Silurian times, but the characteristic fossils are echinoderms and brachiopods.

Silver, a metallic chemical element belonging to the same group as copper and gold. Symbol, Ag (from the Latin *argentum* "silver"); atomic number, 47; atomic weight, 107.88. It is one of the comparatively few elements that occur native (in Peru, Mexico, Canada, New South Wales and elsewhere), but it is chiefly found in the form of its compounds with sulphur, chlorine and other elements. The chief ore is argentite, or silver sulphide. Much silver is also obtained from lead ores, which are almost always argentiferous.

Silver is a brilliant white metal, melting at 960.5°C . and boiling at about $2,000^\circ\text{C}$.; its specific gravity is about 10.47. Silver is the best known conductor of electricity, and only its high price prevents its extensive use in electrical work. British "silver" coinage is actually only one-half silver, the remaining alloy being copper, nickel and zinc. Certain silver compounds, especially the nitrate and the oxide, are employed extensively in medicine.

Silver Fir (*Abies pectinata*), a fine coniferous tree native to Central Europe and especially characteristic of the Alps. It thrives well in the cooler parts of Britain; reaching a height of more than 150 ft. It has a conical crown reaching nearly to the ground, and the branches stand out in flat tiers. The wood is used for masts and spars, and the tree yields turpentine.

Silversmith, a worker in silver. Excellent and artistic silver-work was produced by the ancient Greeks. After the Middle Ages Italian work reached perhaps the pinnacle of the silversmith's art in the work of such masters as Benvenuto Cellini. English silver ware was especially distinguished during the Georgian era. To-day much fine silver-work is produced at London, Paris, Brussels, Antwerp and Nuremberg.

Silvertown, an industrial district of West Ham, Essex, on the N. bank of the Thames, adjoining the Royal Victoria Dock; the scene of a disastrous munition works explosion during the World War in January, 1917.

Simbirsk, former name of the town as Ulianovsk (q.v.).

Simeon, son of Jacob and founder of Israel; the territory assigned them in the division of the Holy Land among the tribes was in the extreme south.

Simferopol, town of the U.S.S.R., the capital of the Crimean Republic, situated 49 m. N.E. of Sebastopol; surrounded by gardens, orchards and vineyards, it exports a great quantity of fruit. There is a modern medical institute. Pop. 98,600.

Simla, the chief town of a district in the Punjab, India, and since 1864 the summer (May-October) hill-quarters of the British administration in India; beautifully situated on the wooded southern slopes of the Himalayas, 7,156 ft. above sea-level, and

170 m. N. of Delhi. It has a cool and equable climate, and possesses two vice-regal palaces. Pop. 27,500.

Simnel, Lambert, English impostor, son of an Oxford tradesman. Educated by Richard Simon, a priest, he was taken by him to Ireland as Edward, Earl of Warwick, son of the Duke of Clarence, Yorkist claimant to the throne, who was then incarcerated in the Tower. Crowned king at Dublin, 1487, he invaded England with an army, but was defeated by Henry VII. at Stoke-on-Trent. He was pardoned and made the king's scullion. (c. 1475-1534).

Simnel Cake (Latin, *simila*, fine flour), originally bread or biscuit made of fine flour and water; later, a rich cake eaten in mid-Lent.

Simon, Rt. Hon. Sir John, English lawyer and politician; called to the bar in 1899 (K.C., 1908), he entered the House of Commons as a Liberal in 1906, became Solicitor-General in 1910, Attorney-General in 1913, and Home Secretary in 1915. In 1927 he was chairman of the Indian Statutory Commission ("Simon Commission"), whose recommendations were later embodied in the new Indian constitution. He was Foreign Secretary, 1931-35, and Home Secretary, 1935-37, and became Chancellor of the Exchequer in 1937. (1873-).

Simonides, Greek lyric poet, born in Ceos; little of his work, which included lyrics, elegies, and epigrams, is extant, but he is famous for a two-line epitaph on the Spartans slain at Thermopylae. (c. 550-c. 465 B.C.).

Simon Magus, a sorcerer of Samaria, who, when he saw the miracles wrought by the Apostles, offered them money to confer the like power on himself (Acts viii.). Hence simony, the sin of buying or selling spiritual privileges for material profit.

Simony, an ecclesiastical offence consisting in the offer or acceptance of money or other reward for nomination or appointment to ecclesiastical office. Under existing English law it consists in the acceptance of reward for the presentation of a particular person to a benefice; and the commission of simony invalidates the presentation. See *Simon Magus*.

Simoom, or *Simoon*, a hot, dry windstorm, bearing clouds of sand and dust, occurring in the regions about the Red Sea and in parts of north Africa.

Simplon Pass, an Alpine pass at a height of 6,600 ft. connecting Brieg in Switzerland with Domodossola in Italy. It is crossed by a road built by Napoleon. The Simplon tunnel, by which the railway passes from Brieg to Iselle, has a length of 12 m. 560 yds.

Sims, George Robert, English journalist and playwright, born in London; was on the staff of *Fun*, also a contributor to the *Referee* and *Weekly Dispatch*, making his mark by his humorous and pathetic ballads and stories, over the signature "Dagonet"; also wrote several popular plays, including *The Lights of London* and *The Romany Rye*. (1847-1922).

Sims, William Sowden, American admiral; born in Ontario, Canada. Served as naval attaché at Paris and elsewhere; in 1917 on the entry of the U.S.A. into the World War was placed in supreme command of the American fleet in European waters. (1858-1936).

Sinai, Mount, one of a range of three mountains on the Sinai Peninsula, between the Gulf of Suez and the Gulf of Akaba, at the head of the Red Sea. From the summit or slopes of Sinai Moses is said to have received the Ten Commandments from

Jehovah. At a monastery here, in 1844, Tischendorf discovered the famous *Codex Sinaiticus* of the Gospels, now in the British Museum.

Sinclair, Sir Archibald, British politician; entered the army in 1910, and two years later succeeded to the baronetcy. Entering Parliament in 1922, he became chief Liberal Whip (1930-31), and Secretary of State for Scotland (1931-32). In 1935 he was elected chairman of the Parliamentary Liberal Party. (1890-).

Sinclair, Upton, American novelist; born at Baltimore, Maryland.

An ardent Socialist and reformer, he wrote *The Jungle*, 1906, which exposed the conditions prevalent in Chicago stockyards and led to the passing of pure food laws; *King Coal*, 1917, focused attention on the mining industry, while *The Brass Check*, 1919, was aimed at the corruption of the Press. Other polemical novels were *The Goose Step*, 1923 (on endowed universities), *Money*, 1927, *Boston*, 1928 (in defence of Sacco and Vanzetti), *The Way Out*, 1933, and *Co-op*, 1936. (1878-).

Sind, or *Sindh*, province of NW. India, in Bombay Presidency. It extends from Baluchistan and the Punjab, on the N., to the Indian Ocean and the Runn of Cutch, on the S., and is traversed by the Indus, whose delta it includes. The Lloyd Irrigation scheme, with its great barrage at Sukkur, irrigates about 44 million acres; on the N. and E. are wide stretches of desert land, and in the S. are the Haia Mts. Area, 46,378 sq. m. Pop. 3,887,000. Sind was annexed to British India in 1843, after the victories of Sir Charles Napier over the amirs; it was constituted an autonomous province in 1937; the chief city and port is Karachi.

Sindhia, the hereditary title of the Mahratta dynasty in Gwalior, Central India, founded in 1738 by Ranaji Sindhia, who rose from being slipper-bearer to the position of hereditary prime minister of the Mahrattas. These princes offered determined resistance to the British, but in 1803 were crushed by Sir Arthur Wellesley, much of their territory passing into British hands. The dynasty was later reinstated and proved loyal during the Mutiny.

Sinecure, an office to which very light, or no, duties are attached. Under the patronage system of government appointments which existed in Great Britain until the middle of the 19th Century, a large number of such offices, to which considerable salaries were often attached, were in existence, and served to provide rewards for political service. An existing example is the Cabinet office of Lord Privy Seal.

Singapore, town and island in the Straits Settlements, Malay Archipelago, belonging to Great Britain; the island of Singapore measures 27 m. by 14 m., and has an area of 225 sq. m.; it is connected with the Malay Peninsula by a causeway, and produces rubber, pineapples and other fruit. Pop. 651,500. The town of Singapore stands on the S. coast of the island and ranks as the chief British naval base in the Far East and one of the most powerfully defended ports in existence; it is also a military and air station. The splendid harbour has a huge floating and other docks, and coaling-wharves. There is an enormous trade, while tin-smelting, fruit-canning and the preparation of rubber are carried on. Pop. 350,000.

Singer, Isaac Merritt, American inventor, born at Pittstown, N.Y.; began work at 12, and led a wandering life; invented and marketed the Singer sewing machine about 1851, and founded the Singer Company; afterwards settled at Torquay, England. (1811-1875).

Single-stick, a fencing weapon, consisting of a round tapering stick of ash, about 34 in. in length, provided at the thicker end with a basket-work hand-guard; it is employed chiefly as a practice substitute for the cutlass or sabre.

Single Tax, a method of taxation proposed by the American economist Henry George, who claimed that a single tax on rent values, properly assessed, would solve problems of national income. The idea was based on the assumption that wealth, in the economic sense, is best represented by land alone. In agricultural lands the scheme might be workable, but the industrial character of modern countries presents great and complex difficulties.

Sing-Sing, an American prison at Ossining, 30 m. N. of New York City, built in 1825 by convict labour. The regime, long of notorious harshness, has undergone great modifications during recent years, and it is now run on enlightened lines.

Sinister, in heraldry, the left side of a shield—that is, the side which is to the observer's right as he faces the shield. A bend sinister, or transverse band passing diagonally across the shield from sinister chief (top) to dexter base (bottom) is the heraldic indication of illegitimacy.

Sin-kiang, the Chinese portion of the Turkestan, N. of Tibet between the Tian-Shan and Kun-lun ranges; its capital is Urumtsi (Tihwafu); other towns are Kashgar, Khotan and Ili. Wool, cotton, silk and jade are produced. Area, 550,000 sq. m. Pop. 1,200,000.

Sinking Fund, a fund formed by amounts out of earnings to make good, either annually or at the end of a period of years, the wear and tear of plant, machinery and other physical assets. A sufficient reserve fund is accumulated to maintain depreciation rates and to provide for special classes of losses not covered by insurance. In Government finance, a sinking fund is formed for the purpose of paying off the National Debt. The essence of the system consists in raising the fund out of the excess of the revenue over the expenditure.

Sinn Fein, an Irish republican and whose name means "Ourselves Alone." It first became powerful in 1915, and the following year fomented the Easter rebellion in Dublin; the movement progressed under De Valera, and organised the Irish Republican Army, which waged war against the British troops till 1922, and only lost its power when the establishment of the Irish Free State split its own ranks.

Sinope, seaport of Turkey, in Asia Minor; situated on a narrow isthmus, 350 m. N.E. of Istanbul; it possesses two fine harbours, a naval arsenal, and Byzantine ruins; the ancient Greek town of Sinope was the birthplace of Diogenes and the capital of Mithridates. Pop. 32,400.

Sinus, in anatomy, a cavity containing sinuses of the brain, or air, as in the accessory sinuses of the nose, which are cavities in certain bones of the head and face, lined with mucous membrane and communicating with the nose. They are liable to infection (sinusitis) during a cold in the head.

Sioux, or Dakota, Indians, a N. American Indian tribe once spread over the territory lying between Lake Winnipeg, on the N., and the Arkansas R. on the S., but now confined chiefly to S. Dakota and Nebraska. Failure on the part of the U.S.A.



Government to observe certain treaty conditions led to a great uprising of the Sioux in 1862, which was only put down with difficulty; conflicts also took place in 1876 and 1890, the Indians finding in their chief, Sitting Bull, a determined and skilful leader.

Sioux City, city of Iowa, U.S.A., on the Missouri R., occupied in meat-packing, pottery and cement making, and other industries. Pop. 80,000.

Siphon, an apparatus for transferring liquids from one vessel to another by the use of air pressure. Its essential element is a bent tube, with one arm longer than the other; the short end is dipped into the liquid to be drawn off, the vessel into which it is to be decanted so placed that the mouth of the other arm is below the level of the liquid in the other vessel.

Sirdar, the title of the commander-in-chief of the Egyptian army.

Siren, an instrument for estimating the pitch of a given note by measuring the frequency of the sound waves. It consists essentially of a disk with equally spaced holes through which air is blown, rotating the disk; the number of holes passing a given point in a second can be easily calculated, and hence the frequency may be deduced. From its powerful, piercing sound the siren is often used as a warning signal in lighthouses, &c.

Sirenia, an order of aquatic mammals, without hind limbs, the forelimbs specialized as flippers, flattened tails and, save for the lips, no hair; represented only by the Dugong (*q.v.*) and Manatee (*q.v.*), though other species, now extinct, are known.

Sirens, in Greek mythology, nymphs who were fabled to lure passing sailors to their doom by the fascination of their music. Ulysses had his ears stuffed with wax and himself lashed to the mast till he had passed safely by them. Orpheus, however, surpassed their music by his melodious notes, so that they flung themselves into the sea out of mortification and were changed into boulders.

Sirius, or **The Dog-star**, the brightest star in the heavens, belonging to the constellation of Canis Major; it is comparatively near the earth, being at a distance

a double star, its companion having a density 61,000 times that of water.

Sirocco, a warm, damp, S. or SE. wind prevalent in Mediterranean lands during the winter; also, a hot, dust-laden wind in Sicily and S. Italy, blowing from N. Africa.

Sisal, a fibre obtained from the leaves of *Agave sisalana*, a plant of the natural order Amaryllidaceae, native to Yucatan and increasingly grown in Mexico, the SE. United States and Tanganyika; cords and ropes are prepared from its fibres.

Siskin (*Spinus* or *Carduelis spinus*), a British song-bird of the Finch family, about 4½ in. long, green in main colouring, with patches of yellow and black; it is usually found in the neighbourhood of pine woods.

Sistine Chapel,

the private chapel of the Pope, in the Vatican, constructed by order of Pope Sixtus IV. in 1478 and decorated with frescoes by Michelangelo representing the Creation of the World, the Creation of Man, the Deluge, The Last Judgment, and other subjects. The singing of the Sistine choir is famous.



SISKIN

Sisyphus, a mythical king of Corinth, who for offending the gods was doomed in the nether world to roll a huge stone up a hill, which before reaching the top rolled back again, making his toil endless. In various authorities he is described as son of Aeolus and Enarete or of Autolycus.

Sitka, formerly New Anchangel, the capital of Alaska, U.S.A.; on the W. coast of Baranof I., surrounded by snowy mountains, it has a good harbour, and is a naval coaling-station; salmon fishing and curing are the chief industries. Pop. 1,000.

Sittingbourne, market town of Kent, England, 10 m. S.E. of Rochester; paper, cement and bricks are made, and there are oyster fisheries. The town stands on the Roman Watling Street, has an ancient earthwork and other remains, and was a halting-place for the Canterbury pilgrims. Pop. (with Milton Regis, near by) 20,000.

Sitwell, Edith, English poetess, sister of Osbert and Sacheverell Sitwell; according to *Who's Who*, she early developed "an intense dislike to simplicity, morris-dancing, a sense of humour and every kind of sport except reviewer-baiting"; first published work *The Mother and Other Poems*, 1915, followed by *Wheels*, 1916, *Alexander Pope and Collected Poems*, 1930, *Aspects of Modern Poetry*, 1934, *Victoria of England*, 1936, and other works often displaying originality and wit. (1887-).

Sitwell, Osbert, English poet and novelist; served in the World War in the Grenadier Guards; began his literary career with *Twentieth Century Harlequinade and Other Poems*, 1916, followed by *Argonaut and Juggernaut* (satires), 1919; *Before the Bombardment*, 1926, and *The Man Who Lost Himself*, 1929 (novels), and numerous other works, including *Miracle on Sinai*, 1933, and *Penny Foolish*, 1935. (1892-).

Sitwell, Sacheverell, English poet and critic, brother of the foregoing; his poems include *The Hundred and One Harlequins*, 1923, and *The Cyder Feast*, 1927; an enthusiast for baroque art, his critical studies include *German Baroque Art*, 1927, *Spanish Baroque Art*, 1931, *Mozart*, 1932, *Liut*, 1934, *Dance of the Quick and the Dead*, 1936. (1900-).

Siva, Hindu divinity, the destroyer in the trinity in which Brahma is the creator and Vishnu the preserver. His spouse is the dread Kali or Durga, and his emblem the linga, symbolizing the creation which follows destruction. His cult is post-Vedic.

Sixtus, the name of five Popes. **S.I.** (Saint), Pope from 257 to 258; **S.III.**, Pope from 432 to 440; **S.IV.**, Pope from 1471 to 1484; **S.V.**, Pope from 1585 to 1590; only the two following are of any note.

Sixtus IV., born near Savona, the son of a fisherman; became general of the Franciscans; succeeded Paul II. as Pope, 1471; was notorious for his nepotism; abetted Pazzi in his conspiracy against the Medici at Florence, but was a good administrator and a man of liberal views; he built the Sistine chapel and bridge. (1414-1484).

Sixtus V., born near Montalto, of poor parents; succeeded Gregory XIII. in 1585, and set himself to stamp out disorder and replenish the exhausted treasury of the Church; allowed freedom of worship to the Jews, but was zealous in crushing heresy. (1521-1590.)

Sizar, formerly a poor student at the universities of Cambridge and Dublin, so called from the "sise" or allowance of food they received out of the college buttry; nowadays, a student who pays reduced fees.

Size, a thin glue prepared from ordinary animal or fish glue, refined and diluted with water. Size prepared by boiling gum or powdered ochre in linseed oil forms a basis for laying gold-leaf. Size is also used in the paper and other industries, and to stiffen fabrics.

Skagerak, an arm of the North Sea between Norway and Denmark, and connecting the Cattegat with the North Sea; it is 140 m. long and 75 m. broad, and deep towards the Norwegian coast.

Skald, the name given to a bard of poet among the ancient Scandinavians, whose function it was to compose and relate the sagas or stories of the exploits of chiefs and heroes. The last of the bards was Skurla (d. 1284).

Skate, the common name of a number of fish of the family *Rajidae*, sub-class *Elasmobranchii*; distinguished by the pectoral fins being extended to join the head, while the body is flattened and there is a long, slender tail. There are a number of British species, the largest being the common skate (*Raja batis*), which attains a width of 7 ft.

Skating, as practised by early northern peoples, was with suitably shaped bones, bound to the foot. Modern skating is done with a pair of steel blades, fitted to a steel frame, or, in the case of roller-skating, with rollers fitted to a frame which can be clamped to the boot. Style skating depends upon upright carriage, the free foot being held near the ice, with the arms hanging easily and used in assisting movement. In speed skating, the body is bent forward and the hands clasped behind the back.

The International Skating Union holds championship meetings five times annually. Figure-skating, or describing symmetrical and often complex figures upon the ice, is a highly specialized branch of the art. Very popular to-day is ice-hockey, the fastest of all games; this and other forms of skating are often indulged in upon indoor rinks of artificially made ice in those countries whose climate prohibits outdoor skating.

Skeat, Walter William, English philologist, born in London; professor of Anglo-Saxon at Cambridge (1878), he was the author of an *Etymological English Dictionary* and was a great authority on early English literature; he was president of the English Dialect Society, and edited numerous texts. (1835-1912).

Skegness, seaside resort of Lincolnshire, shire, England, 12 m. E. of Spileby. It has fine sands and golf links and a pier, bathing-pool and boating-lake. Pop. 9,000.

Skeleton, a framework of rigid or semi-rigid structures which serves chiefly to support the body in animals. The simplest form of skeleton is that of sponges, consisting of spicules of mineral matter, while insects, crustaceans, centipedes, etc., have an external skeleton (exoskeleton) composed of hard plates. It is only in vertebrates that a true internal skeleton (endoskeleton) is found, consisting of an assemblage of bones and cartilages made up of two divisions, an axial skeleton comprising a vertebral column, ribs and skull, and an appendicular skeleton including the pelvic and pectoral girdles and their appendages. In addition to support, the skeleton provides a system of levers upon which the muscles act.

Skelton, John, English poet and satirist, born at Diss, in Norfolk; his chief works are: *Why come ye nat to Court?* a satire against Wolsey; the *Book of Colyn Cloute*, against the corruption of the Church; and the *Book of Phyllyp Sparowe*, the lament of a schoolgirl for the death of her pet sparrow. (c. 1460-1529).

Ski, a form of snow-shoe originating in Norway, and consisting of a long, narrow board, curved upward in front and strapped to the foot. A pair of ski-sticks are generally used in conjunction with these shoes, for balancing, braking, etc.; the stick has a metal wheel or disk near the point to prevent its sinking too far into the snow.

Ski-ing has become one of the most popular of winter sports, flourishing in Switzerland, Germany, Canada, Australia, New Zealand, and the U.S.A., apart from Scandinavia, the place of its origin, where a great international ski tournament is held every February, near Oslo. The Ski Club of Gt. Britain, founded in 1924 by amalgamation of existing clubs, rules the sport as regards the British Isles.

Skiddaw, mountain in Cumberland, England, 3,054 ft. in height; it is about 3 m. N. of Keswick, the usual starting-point for its ascent.

Skin, the external covering of the body. It is made up of two layers, the epidermis, or cuticle, and the dermis, or corium (the true skin). The epidermis is composed of several layers, the deepest of which, the basal layer, is formed of regular rows of columnar cells which multiply and eventually form the superficial or horny layer. The corium is made up of fibrous tissue with blood-vessels, nerve-endings, lymphatics, hair follicles, involuntary muscle-fibres, sebaceous glands, sweat-glands, etc. Pigment, when present, is found in granules mainly in the basal layer of the epidermis; it forms a protection against the injurious effects of excessive sunlight. The skin is a powerful excretory organ, constantly pouring waste products out of the body in the form of sweat and moisture; it also regulates the body temperature and assists in respiration.

Skipton, town of Yorkshire, England, in the W. Riding, 26 m. NW. of Leeds; there is a grammar school, founded in 1548, also some Norman remains; textiles are made, and there is a large agricultural trade. Pop. 12,400.

Skittles, a game played in a covered "skittle-alley" with nine wooden skittles or "pins," about 1 ft. in height, at which is hurled a flat wooden ball or "bowl," weighing about 10 lb., the object being to knock all the skittles over with the fewest possible throws; there are several varieties of the game.

Skua (*Stercorariidae*), a family of sea-birds found in N. and S. Atlantic regions. One of their distinctive features is the "cere," the bare wax-like base of the bill. The Great Skuas of the genus *Megalestria*, of which four species are recognised, include the Bonxie (*M. catarrhactes*) breeding in the Shetlands, Richardson's Skua (*Stercorarius crepidatus*), a long-tailed species, and a somewhat smaller one occurring in the N. of Scotland. Although apparently well adapted to swimming and diving, all skuas live chiefly by bullying other birds into disgorging their prey.

Skull, the name applied collectively to the bones of the head, composed in most vertebrates of a facial and a cranial portion, and enclosing the brain and most of the organs of sense. The skull of man includes twenty-two bones, united, except in the lower jaw, by immovable joints.

Skunk, a genus (*Mephitis*) of carnivorous mammals belonging to the weasel family (Mustelidae).

The common skunk (*Mephitis mephitis*), which inhabits N. America, is about the size of a large cat. Its fur is black, streaked longitudinally with white, and is much prized. The skunk is notorious



for the yellow fluid with a persistent, disgusting odour which it can emit from the anal glands—sometimes to a distance of 12 ft.—when disturbed or annoyed.

Skye, island of the Inner Hebrides, and the largest of this group, separated from the mainland of Inverness-shire (in which county it is included) by the narrow channel Kyle Rhea; has a deeply indented coastline and a surface consisting largely of moorland, the most notable features being the lofty "lochs" (highest point 3,309 ft.); sheep and Highland cattle are raised, and there are valuable fisheries; Portree is the chief town and port. Other towns are Bradford, and Kyleakin, whence there is a ferry to Kyle of Lochalsh. Area, 600 sq. m. Pop. 11,660.

Skye Terrier, a long-haired dog of the terrier family, originally bred in the western Isles of Scotland, especially in Skye. It is a long-bodied dog with short legs and a blue, grey or fawn coat. There are two varieties, prick-eared and drop-eared. An average Skye terrier weighs about 18 lb., and is 40 in. in length and 9 in. high at the shoulder.

Skylark. See Lark.

Skyscraper, a term for the very high feature of modern American architecture. They are constructed of stone and cement on a steel frame, and are usually designed as office buildings, apartments or hotels. The more modern buildings are built on the "zoning" principle, in which the stories recede as the height increases, whereby the light and ventilation of the street and adjacent buildings are not unduly impeded. Among the skyscrapers of New York City are the Empire State Building and the Chrysler Building.

Sky-writing, a form of commercial advertising in which the names of products, exhortations to purchase them, and similar slogans are traced against the sky as a background by clouds of white smoke emitted from aeroplanes.

Slade School, a school of art in London, attached to University College, named after Felix Slade (1790-1868), English art collector, who founded professorships of art at London, Oxford and Cambridge. Sir E. J. Poynter was the first professor at the Slade School (1871), but Legros was the real founder of the school's reputation.

Slag, a metallurgical by-product obtained in smelting ores after the metals have been extracted. Various kinds of slag are used for cement manufacture, road-making, as fertilisers, and in other ways.

Slander, spoken words which from their to an actionable wrong. Special damage must be shown to have followed the utterance in order to ground an action, except in the following cases, when the words are said to be actionable *per se*:—where the words obviously impute a criminal offence; where they impute having a contagious disease, which would cause the person affected to be excluded from society; where they convey a charge of unfitness, dishonesty or incompetence in a profession, trade or office of profit; and where they impute unchastity to a woman.

Slang, expressions in common colloquial use but regarded as being outside the accepted standard of the language in question. Apart from the slang used in talk by everyone (much of the most terse and pithy slang current in English-speaking countries is of American origin), almost every trade and profession has its own particular slang, while thieves, beggars, convicts, etc., have their own cant or lingo constituting a kind of secret language only to be understood by one of their fraternity.

Slate, an indurated, laminated argillaceous rock, which splits readily into thin slabs along planes of cleavage that do not necessarily follow the bedding-planes. The best slates come from N. Wales. They contain mica, quartz and other minerals; purple and red slates contain micaceous hematite, while green slates contain chlorite. The chief use of slate is as a roofing material, but it is also employed for sinks, slabs, shelves, mantelpieces, billiard tables, etc.

Slate Clubs, organizations among the working classes arranging for weekly contributions to be stored up till Christmas and paid out to members with interest. They originated in the days when the slate was the common means of recording transactions.

Slaughterhouse. See **Abattoir**.

Slave Coast, the name given to the coast of the Bight of Benin, in W. Africa, from Lagos to the Volta R.

Slave River, Great, river of Canada, flowing into the Great Slave Lake, which it connects with Lake Athabasca; its length is about 258 m. Its chief tributary is the Peace R.

Slavery, the state or condition of a slave; involving the obligation to work for the benefit of a master without the consent or contract of the slave. The word "slave" originally signified a member of the Slavonic race reduced to servitude by the Teutons. The sources of slavery, whether in the Old Testament or in ancient Roman times, were much the same, namely, war, debt, paternal authority, purchase, and descent from slaves. War was the most fruitful source, and it was, in fact, an upward step in civilization when slavery was substituted for slaughter of the captives. The Egyptians, Carthaginians, Greeks, Romans and Spaniards, even when their civilization was at its highest, all had slaves.

In modern times, a long succession of humanitarians declaimed in vain against the slave trade. In 1786 William Wilberforce brought the subject before Parliament, but the Act abolishing the slave trade only became law in 1807. Agitation was then directed against slavery itself, and in 1833 an Act was passed which liberated nearly 800,000 slaves in the British West Indies, compensation being paid to their owners. In 1838 slavery was abolished in India. The American Civil War (1861-65) arose out of the slavery question, and the ultimate success of the North under Lincoln led to the abolition of slavery throughout the Union. It still exists in some countries, notably in certain more remote parts of Africa, and in Arabia, China and elsewhere, but is gradually being extinguished by the spread of enlightenment and international co-operation under the auspices of the League of Nations.

Slavonia, district of Yugoslavia. See **Croatia and Slavonia**.

Slavs, an important branch of the Aryan race-stock, comprising a number of European peoples chiefly inhabiting eastern Europe, including (among others) the Russians, Serbs, Czechs, Poles, Croats, Moravians, and the Sorbs, Wends and Lashubes now merged in the population of Germany. At the dawn of history we find them already settled in Europe, chiefly in the neighbourhood of the Carpathians, whence they spread N., E., and W., assuming their present position by the 7th Century.

Sledge, or **Sleigh**, a vehicle for transport, for passing passengers or goods over ice; flat, smooth runners replace wheels. The sledge may be drawn by hand, by animal power (reindeer, dog, etc.) or propelled by a motor; a hand sledge used on snow, mainly for sporting purposes, is called a toboggan.

Sleep, the condition normally recurring every night and lasting some hours in which the nervous system is largely inactive and the organs of sense and locomotion and some of the intellectual functions are in a state of abeyance. In sleep the functions of organic life are not much affected. The eyes are closed and the pupils contracted proportionally to the intensity of the sleep. The very young need much sleep; in adult life about eight hours are required; in old age there should be more, but generally there is less. A morbid tendency to excessive sleep implies imperfect nutrition and sometimes disease of the nervous tissue; but it may be due to overwork, undue heat or cold, or other causes.

Sleeping Sickness (*Trypanosomiasis*), a tropical disease prevalent in E. Africa (especially in Tanganyika Territory), in northern Nigeria, and also, sporadically, in W. Africa. Lethargy is the characteristic symptom, followed by stupor and death. The disease is probably conveyed by contaminated water, but the parasitical origin is not known, though the tsetse fly is a common vehicle of infection.

Sleeplessness. See **Insomnia**.

Sleepy Sickness. See **Encephalitis Lethargica**.

Slesvig. See **Schleswig-Holstein**.

Slide Rule, an instrument in the form of a rule in which a second movable rule runs in a groove cut into its longitudinal axis; the lengths of the graduations on the rule and slide are proportional to the logarithms (q.v.) of the numbers they indicate, so that by manipulation of the slide the instrument may be used for rapid mechanical multiplication and division. Other forms of rule, generally cylindrical in shape, are also found, which enable a greater degree of accuracy to be obtained.

Slieve Bloom, mountain range in Eire (Ireland), forming part of the border between Offaly (King's Co.) and Leix (Queen's County). The highest point is about 1,730 ft.

Sligo, seaport of Eire (Ireland), the county town of Sligo, in Connaught; it is at the mouth of the Garvogue, 137 m. NW. of Dublin; it has a cathedral and a ruined 13th Century abbey, and exports agricultural produce. Pop. 11,000.

Sligo, maritime county of Eire (Ireland), in the province of Connaught; the land, sloping N. to the coast from the Ox Mts., is chiefly pasture, divided into small holdings; Sligo Bay is a fine sheet of water, and in the S. and E. are the picturesque Loughs Arrow and Gill; the area is 797 sq. m.; fishing and the manufacture of coarse woollens and linens are the principal industries; the Moy, Owenmore, and Garvogue are navigable rivers. Pop. 67,300.

Slips, an inclined plane consisting of a wooden framework with or without metal rails, along which a ship is run from the building yard to the water at its launching.

Sloane, Sir Hans, Irish physician and naturalist, born in Co. Down; became a leading physician in London, and in 1727 president of the Royal Society; an indefatigable botanist and collector, his valuable museum was purchased by the nation and formed the nucleus of the British Museum. (1680-1753).

Sloe, See **Blackthorn**.

Sloop, a fore-and-aft rigged vessel with one mast, similar to a cutter, but with a jib-stay and a fixed bowsprit. A sloop-of-war (now obsolete) was any cutter-rigged vessel equipped with guns on the upper deck only.

Sloth, a group of tropical S. American feeders, living in trees, clinging to the underside of the branches, and of sluggish habits. Their slow and awkward movement is due to the peculiar structure of the wrist and ankle-joints, the feet being turned in towards the body and provided with long claws, while the forelimbs are disproportionately long. The coarse, shaggy coat accumulates a growth of greenish algae, which effectually conceals the animal among the tree-tops.



Slough, town of Buckinghamshire, England, 18 m. W. of London, on the Grand Junction Canal. It is an important engineering and manufacturing centre. Pop. 33,600.

Slovakia, province of Czechoslovakia, between Ruthenia and Moravia, with an area of 18,900 sq. m.; it is generally mountainous and includes the High Tatras Mts.; grain, sugar-beet, tobacco and fruit are grown, and cattle-rearing and the mining of silver, iron, copper, lead and rock salt are leading industries. Bratislava is the capital. The province formed part of Hungary until 1918. Pop. 3,330,000.

Slovaks, a Slavonic peasant people, subject to the crown of Hungary until 1918 and included then in the state of Czechoslovakia then formed, especially in the provinces of Slovakia and Moravia.

Slovenes, a southern Slavonic people, bordering on Austria and Italy and once included in Austro-Hungarian territory, but since 1918 united with the Serbs and Croats to form Yugoslavia.

Slow-worm, or **Blind Worm**, (*Anguis fragilis*), a limbless lizard resembling a snake, which, contrary to popular belief, is neither slow nor blind: widely distributed throughout Europe, it is nocturnal and feeds mostly upon worms and slugs. It is common in England.

Slug, name of a group of terrestrial molluscs related to land snails but devoid of an external shell, though an internal shell may be present. They are very widely distributed and very destructive to field and garden crops in moist weather, though becoming dormant in frosts. Slugs breathe through a small orifice on the right-hand side, and progress by contractions of the flattened, broad, muscular foot.

Sluis, or **Sluys**, town of the Netherlands, in Zeeland, 9 m. N.E. of Bruges. In 1340 the French were defeated near here in a sea-fight by the fleet of Edward III. Pop. 2,750.

Small Arms, a term including rifles, machine guns, swords, bayonets, lances and similar light and easily portable weapons. Courses of training in the use of small arms are given at the Small Arms Schools at Hythe (chiefly for rifles and light automatics) and Netheravon (for machine guns). Chief small arms factory in England is at Enfield, Middlesex.

Small-holding, a plot of agricultural land of not more than 50 acres. County and borough councils can, under the Small Holdings and Allotments Act, 1926, acquire land to provide such holdings for renting to the cultivators but if the land acquired exceeds 50 acres its annual value for income-tax purposes must not exceed £100. There are about 300,000 small holdings in Great Britain.

Smallpox, or **Varicella**, an acute infectious disease, characterized by fever and an eruption developing into pustules. Its cause is not known, though it is

believed to be due to a filter-passing virus. One attack generally gives immunity to subsequent infection. The incubation period is on an average 12 days. The symptoms are rigor, followed by fever, with a temperature of 103-104°F. or even higher, quick pulse, costiveness, thirst, painful headache, vomiting and back-ache. The eruption begins to appear 3 or 4 days after the onset of the symptoms. "Confluent" smallpox shows the severest symptoms, this condition being almost entirely confined to the face, which it disfigures, leaving deep scars. Cases of smallpox have been much less frequent since the introduction of vaccination.

Smeaton, John, English civil engineer, born near Leeds; began life as a mathematical instrument maker; made improvements in mill-work, and gained the Copley Medal in 1759; the same year finished the rebuilding of Eddystone Lighthouse, burnt down in 1755; engineer of the Forth and Clyde Canal, he also designed many harbours, bridges, canals and drainage schemes. (1724-1792).

Smelt, or **Sparling**, (*Osmerus eperlanus*), a small edible sea fish akin to the salmon; silvery in colour, with an olive green back, it attains a length of 13 in., and is found between the English Channel and Scandinavia.



SMELT

Smelting, the process of obtaining metal from its ore by the combined action of heat, air and fluxes. The most important agent for smelting iron, copper and lead is the blast furnace. Working is continuous, coke, flux and ore being charged at the top, and the molten products tapped at intervals from the hearth below.

Smethwick, town of Staffordshire, England, 3 m. W. of Birmingham; it is an industrial centre, manufacturing nuts and bolts, scales, lighthouse appliances, glass, etc. Pop. 84,354.

Smew (*Mergellus albellus*), a water bird of the duck family, averaging about 16 in. in length, mainly white in colour, with black back, black markings on head and wings and a crest of feathers on the head; it is found off the E. coasts of Britain in winter, occasionally visiting inland waters.

Smigly-Rydz, Edward, Polish soldier in the Polish Legions throughout the World War, and in the Russo-Polish War of 1920; created and trained the modern Polish army, becoming inspector-general after the death of Pilsudski, whom he succeeded as "marshal"—virtually equivalent to dictator, with the official rank of second person in the state after the president. (1886-).

Smiles, Samuel, Scottish author, born at Haddington; abandoned medicine for literature, and in 1857 published a *Life of George Stephenson*, followed by other biographies; his most popular work, *Self Help*, appeared in 1859. (1812-1904).

Smillie, Robert, British labour politician, born at Belfast; starting in a factory at the age of 11, he afterwards held numerous labouring jobs, and as a miner in Lancashire gained first-hand knowledge of colliery life; he became president of the Scottish Miners' Federation (1894-1918) and was re-elected in 1921; from 1912-1921 he was president of the Miners' Federation of Gt. Britain, being instrumental, as a result of the great coal strike of 1912, in securing a national minimum wage; he sat on the royal commission on mines in 1919; he was Labour M.P. for Morpeth, 1923-1929, and has written *My Life for Labour*, 1924. (1857-)

Smith, Adam, British political economist, born at Kirkcaldy, Fife; studied at Glasgow and Oxford, was appointed to the chair of Logic in Glasgow in 1761, and next year to that of Moral Philosophy. In 1776 he produced his *Inquiry into the Nature and Causes of the Wealth of Nations*, a work which has had a world-wide influence upon economic thought. In 1787 he was elected lord rector of Glasgow University. (1723-1790).



ADAM SMITH

Smith, Sir Graefen Elliot, British anthropologist, born in New South Wales; demonstrator of anatomy at Cambridge, he conducted brilliant researches on the anatomy of the mammalian brain; professor of anatomy successively at Cairo, Manchester and London. His researches upon skulls of prehistoric man discovered at Piltdown, England, and in Africa, Java and elsewhere, did much to develop a new school of anthropology. He wrote *The Ancient Egyptians*, 1911; *The Royal Mummies*, 1912; *Human History*, 1930; *The Search for Man's Ancestors*, 1931; *The Diffusion of Culture*, 1933, and other works. (1871-1937).

Smith, John, English soldier and colonist, born in Lincolnshire; after a life of adventure and peril in Europe, he became in 1606 a leader of the English colonists of Virginia; established friendly relations with the Indians, after his life had been saved by Pocahontas, the Indian princess, whom on his return to England he presented to Queen Elizabeth; explored much in New England and wrote pamphlets advocating colonization. (1630-1631).

Smith, Joseph, founder of the Latter Day Saints or Mormons, born at Vermont, U.S.A. In 1827 he professed to dig up the *Book of Mormon*, inscribed on gold plates. On this he founded his cult, claiming to be a Divine medium; though the founder of Mormonism, he was not a polygamist; together with his brother, he was lynched while in gaol by a hostile mob. (1805-1844).

Smith, Sydney, English political writer, wit, born at Woodford, Essex. Having taken orders, he settled in Edinburgh in 1798, becoming an editor and contributor of the *Edinburgh Review*; afterwards removed to London, where in 1831 he became a canon of St. Paul's; an ardent champion of Catholic emancipation and parliamentary reform. His writings deal with abuses of the period; he is chiefly remembered for many witty sayings. (1771-1845).

Smith, William Henry, English business man and politician, the pioneer of railway station bookstalls. Entering parliament in 1868, he was successively Secretary to the Treasury, First Lord of the Admiralty, Secretary for War, Irish Secretary, and Leader of the Conservative Party; his widow was created Viscountess Hambleden. (1836-1891).

Smith-Dorrien, Sir Horace Lockwood, British general. Joining the infantry in 1876, he served in the Zulu War, and in the Egyptian, Sudan, Tirah and Chitral campaigns, and commanded a division in the Boer War. In the World War he led the 2nd Corps in the retreat from Mons, and fought the heroic battle of Le Cateau, but, failing to agree with Sir John French, retired in 1915; from 1918 to 1923 he was Governor of Gibraltar. (1853-1929).

Smithsonian Institution, a celebrated American institution of learning in Washington, D.C., endowed by James Smithsonian (1765-1829), British chemist and mineralogist. The

institution, housed in a fine building, is under government control; it encourages scientific research, administers various funds, museums, collections, etc., and directs scientific expeditions.

Smoke, a suspension of fine solid particles in a gas. Coal smoke consists mainly of small particles of carbon, which aggregate to form soot. Cigarette smoke appears blue because the particles are very fine, with diameters of the order of a wave-length of light; smoke rising from a chimney in dry, clear air also appears blue, but on a damp day it appears greyish-white and opaque, because the particles are larger, owing to the condensation of moisture on them. The earliest provisions for smoke abatement were framed in 1845 and 1847. Furnaces not consuming their own smoke and chimneys emitting volumes of black smoke are nuisances under the Public Health Act, 1875, and succeeding Acts.

Smokeless Powder, an alternative powder, but producing far less smoke and recoil; it consists of gun-cotton or nitrated cellulose; it is largely used for sporting guns.

Smolensk, town of the U.S.S.R., on the Dnieper, 244 m. S.W. of Moscow; surrounded by walls. It has a fine cathedral, and a university, founded in 1919; is an important railway junction, and has metallurgical and engineering industries. Here in 1812 Napoleon defeated the Russians on his march to Moscow. Pop. 104,000.

Smollett, Tobias George, British novelist, 1st, born at Dalquhurn, Dumbartonshire. His first effort in literature was a failure. In 1746 he travelled as a surgeon's mate on board a warship to the West Indies, and on his return to England in 1748 achieved his first success with *Roderick Random*, which was followed by *Peregrine Pickle*, 1761, *Ferdinand Count Fathom*, 1753, and *Humphrey Clinker*, 1771. The plot of his novels is a mere sequence of incidents, but in cynical characterization he is not easily equalled. (1721-1771).



TOBIAS SMOLLETT

Smuggling, importing or exporting goods clandestinely and without paying the duties imposed by law. By an Act of 1779 it was made a felony, but is now punishable by fine and imprisonment. Under the Customs Consolidation Act, 1876, smuggled goods are subject to forfeiture. Taking goods out of warehouses without paying duties is a misdemeanour; signalling to smuggling vessels renders the offender liable to a fine of £100.

Smut, a disease of cereal and other plants of the grain. It is caused by a fungus (*Ustilago*) which attacks the ears of barley, oats and rye; the blackening, if examined under a microscope, will be found to be composed of round spores. Soaking the grain in a dilute solution of lysol, formalin or copper sulphate, previous to planting, is a preventive.

Smuts, Rt. Hon. Jan Christian, South African general and politician. During the South African War he led the Boer forces in Cape Colony against the British; after the war he became minister, successively, of the interior, of defence, and of finance. In the World War he led the British forces in E. Africa, and in 1917 became South Africa's representative in the Imperial War Cabinet. Premier of South Africa, 1919-1924, and, in 1933, became minister of justice. He has also shown himself to be a philosopher of merit, his chief work being *Hollam*. (1870-

Smyrna. See Izmir.

Smyrna, Gulf of, an inlet of the Aegean Sea, 40 m. in length by 20 m. in breadth.

Smyth, Dame Ethel Mary, British composer; born in London, she studied music in Leipzig, and produced her first opera, *Fantasio*, in 1898; it was followed by *The Wreckers*, 1908, which, together with *The Boatwain's Mate*, 1917, is her best known work. She has also composed a mass, chamber music and symphonies, including *The Prison*, 1931. A prominent suffragette, she has written several volumes of reminiscences. In 1922 she was made a D.B.E. (1858-).

Snaefell, the highest mountain in the Isle of Man, situated 5 m. SW. of Ramsey; its height is 2,034 ft.

Snail, the common name of certain more or less similar shelled molluscs, chiefly belonging to the family Helicidae. The common garden snail is noted for its slow creeping motion, round spiral shell, long eyestalks retractible at will, and for its great destructiveness to garden crops. Snails are most active in warm, moist weather.

Snake, the common name for all the reptiles of the sub-order Ophidia of the Squamata (Lizards and Snakes) order. They have elongated bodies, covered with horny scales; no limbs, apart from vestigial hind limbs which appear in some boas and pythons as minute spur-like processes; hooked conical teeth, and in a large number of species special fangs for injecting venom from a gland. The jaw is distensible, so that prey can be swallowed whole.

Snakes are essentially tropical, the species rapidly diminishing in number the further the distance from the equator. Pythons, boas and in general, the largest snakes are non-poisonous and rely upon their enormous crushing power for overcoming their prey. Only three snakes are native to Great Britain, the venomous viper or adder (*Viper berus*), the harmless grass-snake (*Natrix natrix*), and the smooth snake (*Coronella austriaca*).

Snake River, a river of N. America, amid the Rockies; flows S. and NW. through Idaho, forming the Shoshone Falls; through southern Washington it flows W. under the name of the Lewis or Fork R., and discharges into the Columbia after a course of 1,050 m.

Snapdragon, popular name for *Antirrhinum* (q.v.)

Snell, Henry Snell, first Baron, English politician; born at Sutton-on-Trent. As a lad he worked on farms, as a postman, clerk, etc.; in 1895, he became Secretary to the Director of the London School of Economics; for many years a propagandist and public speaker on behalf of Socialism and the Ethical movement; entered the House of Commons, 1922; in 1931 received a peerage and became Parliamentary Under-Secretary for India; Chairman of the London County Council, 1934-1937, and leader of the Labour party in the House of Lords (1865-).

Snipe, the common name of a number of birds of the Plover family,

especially of those of the genus *Gallinago*. The most important species is the Common Snipe, a wading bird with a long, straight bill, noted for its curious angular flight when disturbed. It breeds in marsh land in Europe and N. Asia; is brown mottled with black above and white below, and is a favourite with the sportsman and epicure.



JACK SNIFE

Other species occurring in Britain are the Great Snipe, a bird very similar in appearance to the Common Snipe, and the Jack Snipe, which is somewhat smaller.

Snorri Sturluson, Icelandic historian and poet the author of the great prose *Edda* and of the collection of sagas entitled *Heimskringla*, he was a man of position and influence in Iceland, but having provoked the ill-will of King Hacon was at his instigation assassinated. (1179-1241).

Snow, aqueous vapour solidified into icy particles, which cohere in regular symmetrical forms, having usually six rays or sides; a number of such crystals usually cling together and fall as snowflakes. Their white appearance is due partly to enclosed air particles and partly to the reflection of light at their numerous surfaces. Snow is never seen at sea-level in the tropics, and seldom reaches a limit of 15° from the tropics; but above certain altitudes it falls in all parts of the world. The snow-line is the zone on a mountain above which snow always lies.

Snow-bunting (*Plectrophenax nivalis*), an Arctic bird of the Finch family, a winter migrant to Great Britain. In summer the head, neck, lower parts and a patch on the wings are pure white, while the rest of the plumage is black; in winter the plumage is white, tinged with ruddy brown. The bird has a shrill, piping note not unlike that of the lark.

Snowden of Ickornshaw, Philip Viscount, British politician; born at Keighley, Yorkshire, he entered the civil service, but took to journalism and politics, becoming chairman of the Independent Labour Party in 1903, and again in 1917. In 1906, he entered the House of Commons, served on several royal commissions, and in 1924 became Labour's first Chancellor of the Exchequer, a post he again held in the second Labour Government of 1929. In 1931 he was prominent in the National Government, becoming Lord Privy Seal and a viscount. (1864-1937)

Snowdon, a mountain range in Caernarvon, N. Wales, extending from the coast to near Conway; it has five distinct summits, of which Moel-y-Wyddfa (the conspicuous peak) is the highest, being 3,560 ft.; the easiest ascent is from Llanberis, on the N.

Snowdrop (*Galanthus nivalis*), one of the earliest British spring flowers, in mild seasons flowering as early as January. It is of the natural order Amaryllidaceae, grows from a bulb, and has linear leaves and an erect, slender stalk, bearing a solitary, white, bell-shaped flower.

Snow-plough, an apparatus for removing moving snow from roads, railway tracks, etc. On roads a motor-propelled vehicle with a wedge-shaped frame to push the snow aside for subsequent melting or carting away is generally used; on railways a plough with cutting blades affixed to a rotating wheel that will throw the old snow clear of the line is the general form.

Snuff, a powdered preparation of tobacco, inhaled through the nostrils. It is made by fermenting and drying tobacco leaves, and grinding them in a mill. The peculiar flavour of "high-dried" snuffs depends on the mode of drying. Dry snuffs are sometimes scented or adulterated with quicklime; moist snuffs, like rappee, with hellebore or ammonia.

Soane, Sir John, English architect, born near Reading, studied in Italy, and became architect to the Bank of England, which he rebuilt; bequeathed his house in Lincoln's Inn Fields, with an important art collection, to the nation. This house was recently rebuilt. (1753-1837).

Soaps, the sodium salts (hard soaps) or potassium salts (soft soaps), of various fatty acids; they are made by a process of saponification, which consists in hydrolysing a fat by heating it with a solution of caustic alkali, e.g., sodium hydroxide. After the reaction, soap and glycerine are both left in solution, and the former is obtained as a precipitate by "salting-out," i.e. by the addition of common salt. It is filtered off, partially dried, compressed and cut up into blocks of suitable shape and size. The glycerine, an important by-product, is also extracted. Among the chief fats and oils used in the manufacture of soap are tallow, palm-oil, cotton-seed oil, olive oil, whale oil and coconut oil.

Soapstone, a synonym for *Steatite* (q.v.).

Soapwort, or *Fueller's Herb* (*Saponaria officinalis*), a perennial herb of the pink (*Caryophyllaceae*) family. It grows 2-3 ft. high and has a lilac or white flower. The gummy sap which froths with water is used in India for washing clothes.

Soar, river of England, which, rising in Warwickshire, flows through the border of Leicestershire, flows through the latter county and joins the Trent 10 m. ESE. of Derby, after a course of 40 m.

Sobieski, surname of the great patriot at Olesko, in Galicia. He was elected king of Poland in 1674, having shown his ability by repeated victories over the Turks and Russians. A wise and brave ruler, his greatest feat was the rout of the Turks who were besieging Vienna in 1683 (1624-1696.)



JOHN SOBIESKI

Sobraon, a town in the Punjab, India, on the Sutlej, in the vicinity of which Sir Hugh Gough won a decisive victory over the Sikhs, February 10, 1846, terminating the first Sikh War.

Socage, name given to a feudal tenure service (such as agricultural work or the payment of rent) other than knight service.

Social Contract. The social contract theory of politics teaches that the right of a government to govern is based upon an agreement made before the institution of the first organized State that the subjects would obey the ruler on condition of his affording them security and protection. The theory was taught by most early English political philosophers, including Hobbes and Locke, but owed most of its popularity to Rousseau's (q.v.) treatise of that name.

Socialism, the political and economic doctrine which seeks to reorganize Society by the abolition of competition, and to replace capitalist production for profit by co-operative production for use. It first entered the domain of serious consideration in the 19th Century, when various thinkers, writers and experimenters, such as Robert Owen and William Morris in Great Britain, Fourier in France, and Karl Marx and Engels in Germany, made from various angles contributions to the general fund of socialist thought.

It has developed along various lines, the State Socialists anticipating the gradual extension of the activity of the State until it covers the whole field of economic activity; the industrial Socialists, Syndicalists, Guild Socialists and Trade Unions seeking the organization of a scientific system of production and distribution by the extension of trade unionism and the assumption by producers'

and consumers' organizations of the machinery of government; and the Communists, following Marx, asserting that the violent overthrow of existing governments by revolution will pave the way first for the Socialist State and later for the supersession of the State altogether as a result of the abolition of class distinctions.

British Socialism before the Great War was mainly non-Marxian, its theory being largely due to the work of the Fabian Society, and its political propaganda being mainly in the hands of the then predominantly Trade Unionist Labour Party. Since the Russian Revolution of 1917 there has been a general overhaul of Socialist theory, and except in English-speaking countries the name has tended to fade into disuse as representing any theory of economics or politics essentially different from Communism, though the Nazi party of Germany, like many political bodies in other parts of Europe with similar aims, officially claims to be "Socialist." In Great Britain the Labour Party looks forward to a Socialist state as its objective. See **Internationalism**; **Communism**; **Labour Party**; **Syndicalism**.

Social Wars, an insurrection (90-88 B.C.) of the allied states in Italy against the domination of Rome, in consequence of their exclusion from the rights and privileges of citizenship. The revolting states were confined to the Sabellians and their kin, the Sabines and Volscians remaining loyal to Rome and the Umbrians and Etruscans keeping aloof; they were eventually defeated by L. Cornelius Sulla.

Society Islands, island group in the Pacific, consisting of 13 principal islands and numerous islets, the chief being Tahiti and Moorea. They are mountainous and surrounded by coral reefs, and have a fertile soil and luxuriant vegetation. Phosphate and copra are the main products. The group belongs to France. Pop. about 25,000.

Society of Friends, commonly called **Quakers**, a religious sect founded in 1652 by George Fox; though at first much persecuted, grew in numbers and influence. Silence plays a large part in the meetings of the Quakers, and they have no external sacraments. They are opposed to war and have supplied leaders for all kinds of philanthropic work. Friends' House, Euston Road, London, is the headquarters of the society.

Society of Jesus. See **Jesuits**.

Socinians, a sect of Unitarians taking their name from Faustus Socinus. Besides denying the doctrine of the Trinity, they deny the divinity of Christ and the divine inspiration of Scripture. They originated in the 16th Century in Poland, and eventually spread into Prussia, the Netherlands and England.

Socinus, Faustus, Latinized name of Fausto Sozzini, Italian theologian, born at Siena. After a period of service with the Tuscan court, he visited Poland in 1579, married the daughter of a nobleman and gained many important adherents to the Unitarian doctrines which he had helped to found. In 1598 he was injured by an anti-Protestant mob in Cracow; he was one of the leading figures of the later Reformation. (1539-1604).

Sociology, the science which treats of the nature and development of society and social institutions; a science to which Herbert Spencer, in succession to Comte (who coined the word) and Frédéric Le Play, contributed more than any other writers, deducing a series of generalizations by comparison of individual with social organisms.

Socrates, Athenian philosopher, pronounced by the Delphic oracle the wisest of men; began life as a sculptor, but soon turned to philosophy, his pupils being the most promising men of the city. He wrote no book, propounded no system, and founded no school, but strove to instil into all and sundry a love of justice and truth. Charged with not believing in the State religion, with introducing new gods, and corrupting youth, he was convicted and condemned to death. To an offer of escape he turned a deaf ear and drank the hemlock potion prepared for him with perfect composure. The best ancient account of his life, death and teaching is in Plato's *Dialogues* and *Crito*. His most celebrated pupils were Xenophon and Plato. (c. 469-399 B.C.).



SOCRATES

Soda, a name applied to three distinct substances, viz., sodium hydroxide, or caustic soda; sodium carbonate decahydrate, or washing-soda, and sodium bicarbonate, or baking-soda. Anhydrous sodium carbonate is sometimes known as soda-ash.

Sodium, a metallic chemical element belonging to the group of the alkali metals. Symbol, Na (Latin, "natrium"); atomic number, 11; atomic weight, 23.00. It was first isolated in 1807 by Sir Humphrey Davy by electrolysis. Being an extremely reactive substance, it does not occur in nature in the free state. Its principal natural compounds are sodium chloride, or common salt, sodium nitrate, or Chile saltpetre, and trona, or sodium sesqui-carbonate. It is a soft, silvery-white metal which may be easily cut with a knife. It floats on water, with which it vigorously reacts, forming sodium hydroxide and hydrogen. In moist air it rapidly tarnishes, and when heated in air or oxygen takes fire and burns with a brilliant golden-yellow flame. Commercially the chief use of sodium is for conversion into sodium cyanide, NaCN, which is employed in the extraction of gold.

Sodium Bicarbonate, or **Baking-Soda**, a white crystalline solid of the formula NaHCO_3 . It is slightly soluble in water, and the solution is practically neutral to litmus. On heating, whether dry or in solution, it readily decomposes into sodium carbonate, water, and carbon dioxide. When mixed with dough and heated, Sodium Bicarbonate yields carbon dioxide in this way, and the gas makes the dough rise; hence the use of Sodium Bicarbonate in cooking. Sodium Bicarbonate is also used as a remedy for certain forms of indigestion.

Sodium Carbonate, or **Soda-Ash**, a white crystalline solid of the formula Na_2CO_3 . Washing-soda consists of crystals of sodium carbonate decahydrate; it is prepared by dissolving Sodium Carbonate in water and concentrating the solution by heat until it will deposit crystals of the decahydrate on cooling. A hydrated form of Sodium Carbonate occurs naturally in East Africa, Queensland, and a few other localities, but most Sodium Carbonate is made by the ammonia-soda process invented by Ernest Solvay (1838-1922), a Belgian chemist. Sodium Carbonate dissolves in water to give an alkaline solution, though its alkalinity is less pronounced than that of caustic soda. The decahydrate loses its water of hydration on heating, but the anhydrous substance is unaffected by heat. The decahydrate crystals (washing-soda) gradually lose

nine-tenths of their water on mere exposure to dry air; they fall to a white powder of the monohydrate and are said to effloresce. Sodium Carbonate is mainly used in the manufacture of glass, caustic soda and soap, though it has a host of minor uses. Its domestic applications depend mainly on its power to soften hard water and on its detergent action.

Sodium Chlorate, a white crystalline solid made by the electrolysis of hot concentrated brine. It evolves oxygen when heated and is a powerful oxidizing agent; its chief use is as a weed-killer, for which purpose it is often mixed with calcium chloride and applied as an aqueous solution.

Sodium Hydroxide, or **Caustic Soda**, a chemical compound of the formula NaOH . It is obtained commercially by the electrolysis of sodium chloride (common salt) solution, when it collects in solution round the negative electrode or cathode, but principally by a method first introduced by William Gossage (1799-1877). It is a white crystalline solid, with a burning ("caustic") action on the flesh; in the air it rapidly becomes wet owing to the absorption of atmospheric moisture, in which it finally dissolves. On solution in water it produces considerable heat; the solution is slimy to the touch and strongly alkaline in character. (See *Alkali*.) Sodium Hydroxide is largely used in chemical laboratories, e.g., for forming sodium salts by the neutralization of acids, for liberating ammonia gas from ammonium salts, and for precipitating insoluble metallic hydroxides. It is also a good absorbent of carbon dioxide, with which it yields first sodium carbonate (q.v.) and then sodium bicarbonate (q.v.). Commercially it is used as a source of metallic sodium, for the manufacture of soap and artificial silk, in the dye industry, and for a wide variety of other purposes.

Sodom and Gomorrah, two ancient cities of Palestine which for their wickedness were consumed by fire from heaven (Gen. xix.). Lot and his family alone being spared. They are supposed to have stood near the S. border of the Dead Sea.

Sodor and Man, an Anglican diocese included now in the province of York. The ancient bishopric of Sodor (Norse for "southern islands," including the Isle of Man), together with certain Scottish Isles, was included in the Norwegian province of Trondhjem, and the name survived after the Norwegian association was terminated in 1266.

Sofia, city and capital of Bulgaria, situated near the R. Isker, 75 m. NW. of Plovdiv. Formerly oriental, it has largely undergone reconstruction, and with hotels, banks, a government palace and other buildings presents a fine modern appearance. There is a national university; an important trade emporium, it manufactures cloths, silks and leather, and has long been famous for its hot mineral springs. Pop. 287,000.

Soho, a district in west-central London, off Oxford Street and Shaftesbury Avenue; it has a large foreign colony, and is famous for its restaurants; the district was fashionable in the 17th and early 18th Centuries, and has many literary associations.

Soil, the upper layer of the solid land, consisting of a deposit of particles of decomposed rocks, generally clay and sand, mixed with decaying vegetable and animal matter (humus), which together furnish a reservoir of solid and liquid materials that nourish vegetation. The chief agents in this disintegration and decomposition are moisture, changes of temperature, frost, chemical and bacterial action, etc. On upland slopes with a northern aspect, or in places where for other

reasons sunshine does not penetrate, the dead vegetable matter tends to change into peat, an important constituent of soil in mountain regions.

Soissons, town of France, in the dept. of Aisne, on the R. Aisne, 65 m. N.E. of Paris; has a 12th Century cathedral and ruins of a famous abbey; chief industries are brewing and the manufacture of textiles; it has figured in many wars, from the days of Clovis and Pépin to the World War, when it was twice occupied by the Germans. Pop. 17,300.

Sokoto, province of the British protectorate of Nigeria, W. Africa, bounded N. by the Sudan and S. by the R. Benue, the main affluent of the Niger. The dominant people are Fulahs, and the capital is Sokoto, on the Kebbi R., 220 m. N.W. of Zaria; groundnuts and cotton are exported. Area, 58,860 sq. m. Pop. 1,667,000.

Sokotra, an island off the E. coast of Guardafui, over 70 m. long and 20 m. broad; it is mountainous, comparatively barren and inhabited by Mohammedans, who rear sheep, goats and cattle; the sultan is a feudatory of Great Britain. Pop. c. 12,000.

Solanaceae, a family of dycotyledonous alternate-leaved plants of great economic importance, of which the typical genus *Solanum* includes the Potato (*Solanum Tuberosum*), tomato (*Solanum Lycopersicum*), and Bittersweet or Nightshade (*Solanum Dulcamara*). Tobacco (*Nicotiana Tabacum*) is also a member of the family, as is Deadly Nightshade (*Atropa Belladonna*).

Solar Cycle, a period of 28 years, at the end of which, in the Julian calendar, the days of the month return to the same days of the week.

Solarium, a room or balcony exposed to the sun's rays, especially one adapted for sun-bathing or for treatment by artificial sunlight.

Solar System, The. Of the whole which is of the most immediate interest to man is the solar system. The sun is one of the stars of the Milky Way, and it is believed that at some remote period—perhaps about 2,000,000,000 years ago—another star approached the sun very closely, or possibly actually collided with it. As a result of the cataclysm, gaseous fragments were ejected, and these afterwards cooled to form the planets. Minor fragments torn from the planets soon after their birth remained in association with them as moons. The planets of the system, in order of their distance from the sun, are Mercury, Venus, Earth, Mars, the minor planets or asteroids, Jupiter, Saturn, Uranus, Neptune and Pluto. The asteroids were probably formed by the disintegration of a single planet which came so close to Jupiter as to be broken up by the tidal influence of the latter. The only planets other than the earth upon which life as we know it seems to be at all possible are Venus and Mars.

Solar Year, the period of 365 days 45.5 seconds which the earth takes to complete a revolution round the sun.

Solder, a fusible alloy of varied composition. Soft solders, for metals which melt at a comparatively low temperature, are usually alloys of tin, lead and bismuth; hard solders of copper, lead, and (for the precious metals) silver. The surfaces to be soldered are cleaned with a "flux" of borax, resin, etc., according to the nature of the metal, and the solder, with the metal surfaces to be joined, heated with a blowpipe or, in the case of soft solders, with a soldering iron.

Sole, the common name of the flat-fish of the genus *Solea*. The common sole (*Solea vulgaris*) is a highly-valued food fish, abundant in the English Channel.

The upper side of the body is dark brown, the lower white; the eyes are upon the right side of the head, the teeth upon the left side. Other species include *Solea tascaris*, or lemon sole, and *Solea variegata*, or variegated sole.



VARIEGATED SOLE

Solemn League and Covenant. See Covenant.

Solent, the western portion (Spithead) of the strait which separates the Isle of Wight from the mainland of Hampshire, England. It is 15 m. long, with an average breadth of 3 m., but at its W. entrance, opposite Hurst Castle, contracts to $\frac{1}{2}$ m.

Solferino, a village in N. Italy, 20 m. Austrians were defeated by the French and Sardinians, June 24, 1859.

Solicitor, an attorney or law-agent, in a law court. The term was formerly restricted to agents practising in the Chancery courts, but by the Judicature Act, 1873, all persons practising in the Supreme Courts are called solicitors, and the term attorney is now obsolete. In Scotland the term is applied to writers to the signet or general legal practitioners. In America a solicitor may act as counsel, whereas in England he can only do so in a county court, or before a magistrate.

To become a solicitor, qualifying examinations must be passed and a certificate to practise obtained from the Incorporated Law Society (see Lawyer). Admission to the rolls is allowed in certain cases, after four years' service under articles, to those who have passed one or other of various specified examinations. Discipline over the members of the profession is maintained by the Incorporated Law Society. Under the Solicitors' Act, 1928, a solicitor may not employ any person who has been struck off the rolls or suspended from practising, without the written consent of the Society.

Solicitor-General, a law officer of the Crown, ranking below the Attorney-General, whose deputy he is; he draws a salary of £4,000 and fees. Scotland has its own Solicitor-General.

Solids. Matter exists in three physical states: solid, liquid and gaseous (though perhaps the colloidal state should be added). In the gaseous state, the molecules of the substance are so far removed from one another that the force of attraction between them is negligible, and they are free to move in any direction and to any distance within the bounds of their containing vessel. In a liquid, the molecules are much closer together, and, although they have considerable freedom of movement, the force of attraction between them is sufficient to keep them from parting company immediately. In a solid, however, the molecules are so close together, and in general so methodically and regularly packed, that freedom of locomotion has vanished, although there is presumably still some freedom of vibration.

Soliman I., the Magnificent, tenth and greatest of the Ottoman sultans, the son of Selim I., whom he succeeded in 1520. After making peace with

Persia, and pacifying Syria, he captured Belgrade and wrested Rhodes from the Knights of St. John, 1523. He twice led his army into Hungary, besieging Vienna in 1529, but, being repulsed, he turned his arms towards the East, conquering large parts of Armenia, Persia and N. Africa. He died at Szegedvár while opening a new campaign against Hungary. (1494-1566).

Solingen, a manufacturing town of Prussia, situated near the Wupper, 13 m. E. of Düsseldorf; has long been famed for its steel and iron works and cutlery manufactures. Pop. 140,200.

Solomon, King of Israel from c. 974 to David and Bathsheba, and David's successor; famed for his love of wisdom and the glory of his reign. The buildings he erected in Jerusalem, including the Temple and a palace on Mount Zion, were raised regardless of expense. Taxes multiplied and reduced large sections of the people to poverty or actual slavery. The Temple took 7½ years to complete.

Solomon Islands, a large group of islands in the W. Pacific; 500 m. E. of New Guinea. They are volcanic in origin, mountainous, wooded, and thickly populated by Melanesians; copra, coconuts and pearl shells are produced. The islands are in two divisions, the S. division forming a British protectorate with an area of 375,000 sq. nautical miles, the headquarters being at Tulagi. Pop. 94,000. The N. division was formerly German and is now administered by Australia under mandate; Bougainville, the largest island, covers 3,880 sq. m., and Buka, 190 sq. m. Pop. about 45,000.

Solomon's Seal (*Polygonatum*), a genus of plants of

the natural order Polygonaceae, of which it is the typical genus, comprising 275 species, mostly found in temperate regions, 3 being found in Britain, including the common species (*Polygonatum officinale*), a common English wild-flower, which grows to a height of 1-3 ft. The flowers are greenish white and pendulous, the berries blue-black and pulpy. The name is derived from the somewhat seal-like scars left upon the creeping rootstock by the detachment of the dead annual shoots.



SOLOMON'S SEAL

Solon, Athenian lawgiver, and one of the seven sages of Greece, born in Athens; elected archon in 594 B.C., with power to ordain whatever he might deem of advantage for the benefit of the state, he framed a constitution in which property, not birth, was made the basis of the organization. He divided the citizens into four classes, gave additional power to the assemblies of the people, and made the archons and official dignitaries responsible to them; but after an absence of 10 years he returned to find things lapsing into the old disorder, whereupon he withdrew into private life. (c. 638-c. 558 B.C.).

Solothurn (French: Soleure), a canton of NW. Switzerland, in the Jura, covering 308 sq. m. It is hilly, but fertile and well-cultivated, especially in the valley of the Aar. The inhabitants are mainly German-speaking Catholics. Soleure, the capital, situated on the Aar, 18 m. N.E. of Berne, has a fine cathedral, and manufactures cottons, clocks and cement. Pop. (cantons), 144,200; (town), 13,700.

Solo Whist, a card game resembling players. A player may combine with his partner in an effort to take eight tricks, or seek to take five or nine tricks—solo or abundance respectively—against the three

remaining players; or by calling *misers* declare his intention of taking no tricks.

Solstice, either of the two points on the ecliptic at which the sun is farthest distant N. or S. from the equator. They mark mid-summer and mid-winter respectively, the times at which these points are reached being about June 21 and Dec. 21.

Solution, a homogeneous mixture of two or more substances, e.g. a gas in a gas, liquid or solid, a liquid in a liquid, a solid in a liquid, or a solid in a solid. If one of the substances in the mixture is in much greater proportion than the other or others, it is known as the solvent, the other substance(s) being known as the solute(s). If, however, no one substance greatly exceeds the rest in amount, the aggregation is usually described as a mixture. There is no hard and fast distinction between solute and solvent, though when a solid is dissolved in a liquid it is conventional to describe the latter as the solvent, no matter what its proportion may be to the solid dissolved.

Solway Firth, an arm of the Irish Sea, separating Cumberland from the S. of Scotland (Kirkcudbright and Dumfries); it is 38 m. in length, and from 2 m. to 22 m. in width, and receives the Annan, Dee, Nith, Eden and Derwent, and has valuable salmon-fisheries; it is spanned near Annan by a railway viaduct 1,960 yds. long.

Solway Moss, a former swampy tract now drained and cultivated, in Cumberland, on the Scottish border, the scene of the defeat of the Scottish army in 1542.

Somaj, Brahma. See Brahma-Samaj.

Somaliland, British, a British protectorate of NE. Africa, extending 400 m. along the Gulf of Aden from Lahadu Wells to Bandar Ziyada and bounded inland by Abyssinia and French and Italian Somaliland. Skins, gums, livestock and gold are exported. The chief settlements are Berbera, Hargeisa and Burao; the inhabitants are Somalis, Mohammedan nomads who came under British protection in 1884. Area, 68,000 sq. m. Pop. 245,000.

Somaliland, French, colony of the French, Somali coast, NE. Africa, situated between British Somaliland and Eritrea. Djibouti is the capital and an important port, as also is Obock. The chief industry is the transit trade from the interior of Abyssinia, Djibouti being linked with Addis Ababa by rail. French influence began here in 1862, and was gradually extended by agreement with the native sultans. Area, 8,500 sq. m. Pop. 44,500.

Somaliland, Italian, colony of NE. Africa, extending S. from Bandar Ziyada, on the Gulf of Aden, to the border of Kenya, and covering 194,000 sq. m.; cattle-rearing and agriculture are the chief occupations; the capital is Mogadiscio; in 1936 the territory was incorporated as a province of Italian E. Africa. Pop. 1,022,000.

Somerset, Edward Seymour, Duke of, Protector of England during the reign of Edward VI. The brother of Jane Seymour, third wife of Henry VIII, he was prominent in the French and Scottish wars in the latter's reign. Created Earl of Hertford, 1537, on Henry's death 10 years later he was made protector and Duke of Somerset; as part of an attempt to marry Edward VI. to Mary Queen of Scots, he repeatedly defeated the Scots, notably at Pinkie, 1547. A zealous Protestant, he strove to introduce the first book of Common Prayer, and having made numerous enemies in this and other ways, was imprisoned in 1549, but soon released; imprisoned again for treason, 1551, he was beheaded on Tower Hill. (c. 1504-1552).

Somerset, Robert Carr, Earl of, Scottish favourite of James I.; accompanied the king to England as a page in 1603, and four years later was knighted; by 1612, when he became the king's secretary, his ascendancy over the latter was complete. In 1614 he became Lord Chamberlain, but next year was accused of poisoning Sir Thomas Overbury, who had opposed Carr's marriage (1613) with the divorced countess of Essex; imprisoned until 1622, when he was pardoned. (c. 1590-1645).

Somerset House, a Government building in London, between the Strand and the Victoria Embankment, built on the site of the palace of the Protector Somerset, and opened in 1786; departments accommodated include the Inland Revenue, Audit and Exchequer, Wills and Probate and Registry-General. The E. wing is occupied by King's College.

Somersetshire, a maritime county of England fronting the Bristol Channel, between Devon on the SW. and Gloucestershire on the NE., with Wiltshire and Dorset on the E. and SE.; diversified by the Mendips (NE.), Quantock Hills, Exmoor (SW.) and other smaller elevations, it consists chiefly of level plains largely given over to pasture. It is watered by the Bristol Avon, the Parret and other lesser streams, and its orchards rank next to those of Devon. Taunton is the county town, but Bath is the largest; other towns are Yeovil, Bridgwater, Wells and Weston-super-Mare. Area, 1,621 sq. m. Pop. 475,000.

Somerville, city of Massachusetts, U.S.A., in Middlesex county, on the Mystic river, adjoining Boston, of which it is a residential suburb. Pop. 103,900.

Somme, dept. of N. France, fronting the English Channel, between Seine-Inférieure, on the SW., and Pas-de-Calais, on the N.; one of the most prosperous agricultural and manufacturing districts of France, it covers 2,440 sq. m.; Amiens is the chief town. Pop. 466,600. The district was the scene of two of the biggest battles of the World War; the first was fought from July to November, 1916, when an Allied offensive gained ground at tremendous cost to both sides; the second was from March to April, 1918, when Germany launched her final offensive and met with some partial, though temporary, success.

Somme, river of N. France, which rises in the dept. of Aisne, near St. Quentin, and flows 150 m. SW. and NW. to the English Channel, which it enters near St. Valéry; it is navigable as far as Abbeville.

Somnath, an ancient town of Gujarat, India, in the SW. of the peninsula of Kathiawar; close by is a Hindu temple, despoiled in the 11th Century of its treasures and gates. In 1842 Lord Ellenborough brought from Afghanistan what he supposed to be the famous "Gates of Somnath," which are now in the arsenal of Agra. Pop. 7,000.

Sonata, a musical composition usually designed for one or two instruments; it developed in the 18th Century out of the customary suite of dance measures, and consists of several movements (generally three or four) related in key but contrasted in tempo.

Song, a short poem to be sung to music, but more especially a musical setting of a short poem. The word is usually applied to solos, but also to compositions for more than one voice. The "madrigal" of the Elizabethan period was a composition in contrapuntal style, being a part-song for voices only. "Folk-songs" are those spontaneously created by peoples with an intuitive gift for matching national sentiment with

music. Cecil Sharp's work in collecting English folk-songs has caused a revival of interest in them. Earlier English song-writers include Purcell, Handel and Dr. Arne, while among modern song-writers are Elgar, Delius, Sterndale Bennett, Holst, Sir Charles Parry, Sir Charles Stanford, Arthur Somervell, Vaughan-Williams, Roger Quilter, John Ireland, Peter Warlock and Arthur Bliss. The leading German song-writers are Schubert, Mendelssohn, Loewe, Brahms, Schumann, Hugo Wolf and Franz Liszt. Later names are Richard Strauss, Joseph Marx, Max Reger, Gustav Mahler, Hans Pfitzner, Paul Hindemith, Felix Weingartner, Zilcher and numerous others. Among the French school are Duparc, Fauré, Gounod, Debussy, Ravel, Saint-Saëns, Massenet and Honegger.

Sonnet, a form of poetical composition, consisting of 14 decasyllabic or hendecasyllabic iambic lines, rhymed according to two well-established schemes which bear the names of their two most famous exponents, Shakespeare and Petrarch. The Shakespearean sonnet consists of three four-lined stanzas of alternate rhymes clinched by a concluding couplet; the Petrarchan of two parts—an octave (the first eight lines) rhymed abbaabba and a sestet (the concluding six lines) arranged variously on a three-rhyme scheme.

Soochow, city and treaty port of China, capital of the province of Kiangsu, 50 m. NW. of Shanghai, on the Grand Canal; walled all round; it carries on printing and manufactures fine silk. Pop. 260,000.

Sophia, granddaughter of James I. of England by his daughter Elizabeth; in 1658 she married Ernest Augustus, Elector of Hanover; their son George became, in 1701, George I. of England. (1630-1714).

Sophia, St., or "Holy Wisdom," the name of several Christian churches, especially the famous Byzantine church at Istanbul (q.v.), erected by Justinian.

Sophists, a class of teachers in ancient Greece, which arose about the middle of the 5th Century B.C. and later developed the principle that we have only a subjective knowledge of things, and no knowledge at all of objective reality; by means of a subjective dialectic, they sought to destroy all that had ever been objectively established, such as the laws of the state, inherited custom, religious tradition and popular belief.

Sophocles, Greek tragic poet, born in Athens. His first appearance as a dramatist was in 483 B.C., when he had Æschylus as his rival and won the prize with his *Triptolemus*. He was afterwards defeated by Euripides, but retrieved the defeat the year following by the production of his *Antigone*. In 440 B.C. he served as a general under Pericles in the Samian War. Of his hundred or so tragedies only 7 survive—*Ajax*, *Antigone*, *Electra*, *Œdipus Tyrannus*, *Trachiniae*, *Œdipus Coloneus* and *Philoctetes*—all alike remarkable for the intense humanity, sublime passion and lofty morality that inspires them. (495-406 B.C.).

Soprano, the highest type of female voice, with a range usually from C below the treble clef to G or A above it. Until the late 18th Century adult male sopranos ("castrati") were frequently employed, both in operatic and church music.

Sorbonne, a celebrated college of the founder, Robert de Borbon, chaplain to Louis IX. in the 13th Century. It maintained a predominant influence on the theological thought of Europe until the rise of the new learning of the Renaissance (16th Century). Suppressed in 1782, during the Revolution, it was revived by Napoleon in

1808, and is at present the seat of the Académie Universitaire de Paris, with faculties of science and literature.

Sordello, Italian troubadour, born at Mantua. In 1220, having seduced the wife of his patron at Verona, he was forced to flee to Provence. Later he served Charles of Anjou, and in 1286 was imprisoned at Naples; his end is obscure. Several of his satires, love songs and longer poems survive. He figures in Dante's *Il Purgatorio* and in a famous poem by Robert Browning.

Sorghum, an annual cane-like cereal, bearing a dense head of spikelets, with small corn-like seeds. *Sorghum vulgare* is the Indian or Great Millet, or Guinea-corn. In India it forms with rice and wheat one of the staple foods of the people. Bread, porridge, etc., are made from it; its seeds, when crushed, constitute an auxiliary food for cattle, sheep and poultry. It is also extensively cultivated in various parts of Africa.

Sorrel, the common name of a number of British perennial meadow or pasture plants, containing a high proportion of potash oxalate, giving it an acid taste, the leaves sometimes being used as a salad. Important species are the sorrel-dock (*Rumex acetosa*) of the order Polygonaceae. Some other species of *Rumex* are also known as sorrels. Wood-sorrel (*Oxalis acetosella*) is a small British herb, the leaves of which droop or "sleep" at night and in cold weather.



SORREL
(*Rumex acetosa*)

Sorrento, a watering place on a promontory of the Bay of Naples, Italy. Fruit growing is carried on in the neighbourhood, and wine and silk are manufactured. It was the birthplace of Tasso. Pop. c. 9,000.

Sortes Virgilianae ("Virgilian lots"), a common method of "fortune telling" adopted in the Middle Ages; it consisted in opening a copy of Virgil's *Aeneid* at random, putting the finger on a passage, and deciding one's course of action on the basis of the passage so chosen.

Sou, a former French coin of silver or copper, equivalent to one-twentieth part of the livre. The name is still popularly applied to the five-centime piece.

Soufflé, a dish consisting of beaten some essence or other agent, and baked until a brown puffy top is formed. The most usual soufflé flavourings are chocolate, coffee, cheese, ginger and lemon.

Soul, that part of the nature of man (or other animal) which is conceived of as immaterial; generally used to mean the seat of his sentiments, emotions and aspirations, but not necessarily including his mind, intellect or apparatus of thought. In Christian theology the soul, or principle of divine life, is usually conceived of as being infused into the body at conception or birth, and is differentiated, though not always very clearly, from the "spirit," or the highest of the three parts of man's nature. The Scholastics distinguished between the vegetative soul, or principle of life, common to man and other animals, and the rational soul, peculiar to man (though perhaps possessed also by angels and other higher spiritual beings, if such exist). In Eastern religions the soul is frequently conceived of as an eternal principle which makes its home in a succession of differing bodies; the southern school of Buddhists denies the existence of a soul

altogether, asserting that what man thinks of as such is nothing more than a series of continuously changing states. Other thinkers, including many mediæval Arabic philosophers and later pantheists, would make all souls parts of, or manifestations of, a single "world-soul."

Soult, **Nicholas-Jean de Dieu**, marshal of France, born at St. Amans-la-Bastide, dept. of Tarn; enlisted as a private in 1785, and by 1794 was general of a brigade; gallant conduct in Swiss and Italian campaigns under Masséna won him rapid promotion, and in 1804 he was created a marshal; served with Napoleon in Germany, and led the deciding charge at Austerlitz, and for his services in connection with the Treaty of Tilsit received the title of Duc de Dalmatie; at the head of the French army in Spain he outmanœuvred the English in 1808, conquered Portugal, and opposed to Wellington a skill and tenacity not less than his own, but was thwarted in his efforts by the obstinate incompetence of Joseph Bonaparte; turned Royalist after the abdication of Napoleon, but on his return from Elba rallied to the emperor's standard, and fought at Waterloo; was subsequently banished, but restored in 1819; became active in the public service, and was honoured as ambassador in England in 1838; retired in 1847 with the honorary title of "Marshal-General of France." (1769-1851).

Sound, a sense-impression produced on the human or animal ear by the impact of waves in the atmosphere vibrating at rates roughly between 20 and 20,000 per second—vibrations at higher or lower rates than this being inaudible. If the waves follow one another at regular intervals they are perceived as a musical note; if not, they constitute a noise. The pitch of a musical note is determined by the number of vibrations which reach the ear per second. If this number is large the pitch is high. Sound waves travel in air at a speed of 1,100 ft. per second, and since light travels at a much greater speed (186,000 miles per second) a peal of thunder is always heard after the appearance of a lightning flash which occurs simultaneously with it. For the same reason soldiers at the rear of a long column marching behind a band usually appear to be out of step with those in front.

Sound waves are reflected by any large obstacle, and produce an echo if the time which elapses between the arrival of the direct and reflected wave is sufficient to enable an observer to distinguish them. In water sound travels at a speed of 4,500 ft. per second, and the depth of water may be determined by transmitting sounds through it to the bottom, and measuring the interval which elapses before the echo is heard. High pitched notes are reflected better than those of lower pitch. Hence the high pitched sounds produced by traffic in a busy street are reflected backwards and forwards between the buildings on either side, and from an adjoining quiet side street a low rumble is heard.

Sound, a strait 50 m. long, between Sweden and Denmark, which connects the Kattegat with the Baltic Sea.

South Africa, The Union of British dominion, extends from the Cape of Good Hope to the R. Limpopo, with a total area of 472,550 sq. m. The Orange, the Vaal, and the Limpopo are the chief rivers, and Table Mountain, the Bergens, Drakensbergen, Nieuwveeld, Roggeveld, and Sneeuwbergen are the principal mountains. Originally discovered by Bartholomew Diaz, a Portuguese, in 1486, the Cape of Good Hope was visited 11 years later by Vasco de Gama; it was nearly 200 years later that the Dutch and English began to settle, and in 1814 the Cape became a British

colony, as did Natal in 1843. The Transvaal and Orange Free State were colonized by Dutch Boers (q.v.) and at the end of the last century there was a clash with Britain that resulted in the Boer War (q.v.), and the ultimate establishment of the Union of South Africa as a British Dominion. Dominion status dates from 1909.

The Union comprises Cape Province, Natal, the Orange Free State, and the Transvaal, and is governed by a Governor-General, an executive council, and two Houses of Parliament, which meet at Cape Town, though Pretoria is the seat of government. In addition, each province has its own Provincial Council. Agriculture is the main occupation of the people, wheat and fruit-growing being the chief industries, though large quantities of cotton and wool are also produced; there is a growing wine industry, and tea and sugar are also cultivated. Industrial development is rapidly proceeding, especially in the Transvaal. Gold mining is the main source of wealth, and diamonds, coal, copper and tin are also mined. Gold, wool, hides and skins, diamonds and citrus fruits are, in that order, the principal exports.

Since 1920 the Union Government has held a mandate for the former German territory of South-West Africa; it is seeking to take over from Great Britain the administration of the native protectorates of Basutoland, Bechuanaland, and Swaziland. The white population is largely Dutch-speaking, and mainly Protestant. The total population is 9,590,000, including about 2,000,000 of European extraction.

South Africa Company,

The British, a chartered company founded by Cecil Rhodes in 1889 to administer Rhodesia. Besides supervising trade it was responsible for governing the district, and it also rented land to settlers. When the charter expired in 1923, Southern Rhodesia was granted responsible self-government, and a year later the Company was relieved of the administration of Northern Rhodesia, which was taken over by the Colonial Office.

Southall, a borough of Middlesex, England, 9 m. W. of London; it is largely a residential suburb of the metropolis, but has motor-car making, chemical and other industries. Pop. 49,500.

South America. See *America, South*.

Southampton, the third seaport of Great Britain, in Hampshire, 79 m. SW. of London, situated on a small peninsula at the head of Southampton Water between the mouths of the Itchen (E.) and the Test (W.); portions of the old town walls and four gateways still remain; is the headquarters of the Ordnance Survey; has splendid docks, the property of the Southern Railway, which have recently been greatly enlarged and improved, and is an important port of call for liners and cargo vessels for America, Canada, the West Indies, Brazil, and South Africa; yacht and ship-building and engine-making are flourishing industries. There is a university college with buildings at Highfield. Pop. 177,500.

Southampton, *Henry Wriothesley*, Earl of, born at Cowdray, Sussex; he was an early patron of Shakespeare, who dedicated to him *Venus and Adonis* and *Lucrece*, and most of whose sonnets are by some supposed to have been addressed to him. For his part in the Earl of Essex's rising, 1601, he was condemned to death, but was merely confined in the Tower and deprived of his titles, which were restored on the accession of James I. He interested himself in colonial projects, and died in the service of the Dutch at Bergen-op-Zoom. (1579-1634).

Southampton Water, an inlet of the sea on the S. coast of England, running about 7 m. NW. from the Solent past Southampton. It is about 2 m. broad at its entrance near Calshot Castle. On the eastern shore are the ruins of Netley Abbey, on the W. the New Forest. It receives the rivers Itchen and Test, and forms an excellent harbour for the passenger liners and other vessels using the port of Southampton.

South Australia, the third largest of the States of Australia, stretches N. and S. in a broad band through the heart of the continent from the Southern Ocean to the Northern Territory, having Queensland, New South Wales, and Victoria on the E., Western Australia on the W., and the Northern Territory on the N. Until 1926 it included the last-named, which was then constituted a separate Territory under the direct administration of the Commonwealth Government. South Australia begins about 26° S. latitude, and is traversed southwards by the Finke R. as far as Lake Eyre (3,706 sq. m.), by the Flinders Range, and the lower Murray R. in the E., and diversified here and there by low ranges and Lakes Amadeus (NW.), Torrens and Gairdner (S.). The S. coast is penetrated by the great gulfs of Spencer and St. Vincent, round and to the N. and E. of which the bulk of the population is gathered; wheat, fruits, and wine are produced, and there are important copper mines; chief exports, wool, wheat, barley, meat, iron ore, and copper. The railway and telegraph systems are well developed, the Overland Telegraph Line (1,973 m.) stretching across the continent from Adelaide to Darwin being a marvel of engineering enterprise. Began to be settled in 1836, and five years later became a Crown colony. The capital is Adelaide. Area, 380,100 sq. m. Pop. 589,000.

South Bend, a city of Indiana, U.S.A., Joseph R., 85 m. SE. of Chicago. It has many manufactures, including agricultural implements, freight cars, woollen goods and paper, and is the seat of the important university of Notre Dame. Pop. 104,200.

South Carolina. See *Carolina, South*.

Southcott, Joanna, English religious fanatic, born in Devon, of humble parents; imagined herself to be with child, and predicted she would on a certain day give birth to the Prince of Peace, for which occasion great preparations were made, but she died of dropsy two months after the time predicted. She left a box with instructions that it was to be opened in time of national crisis in the presence of a number of bishops; her box was X-rayed in 1927 and found to contain only rubbish, though her followers declared that the box in question was not the genuine one. (1750-1814).

South Dakota. See *Dakota, North* and *South*.

Southend-on-Sea, a town in Essex on the Thames estuary, one of the largest and most frequented holiday resorts in England; within the borough borders are Westcliff, Leigh, Thorpe Bay and Shoeburyness; its pier is the longest in the country. Pop. 138,000.

Southern Cross, a constellation of the southern heavens, the five principal stars of which form a rough and somewhat irregular cross, the shape of which is gradually changing. It corresponds in the southern heavens to the Great Bear in the northern.

Southern Railway, the smallest of the four main railway systems of Great Britain, founded in 1825 by the fusion of the London

and South Western, London Brighton and South Coast, South Eastern and Chatham, and some smaller systems. A great part of the mileage has been electrified, including the whole of the London suburban tracks and the lines from London to Hastings, Brighton and Portsmouth. The London terminal stations are Waterloo, Victoria, London Bridge, Cannon Street, Charing Cross and Holborn Viaduct.

Southernwood, a scented worm-wood (*Artemisia abrotanum*), a shrubby, hoary plant of the order Composite, with yellow flowers. Popular names for it are "old man" and "boy's love."

Southey, Robert, English poet-laureate, born at Bristol; was expelled from Westminster School for a satirical

article in the school magazine against flogging; in the following year (1793) entered Balliol College, where he only remained one year; married (1795) clandestinely Edith Fricker, sister to Mrs. Coleridge, and visited his uncle at Lisbon, where in six months he laid the foundation of his knowledge of Spanish history and literature; still unsettled he again visited Portugal, and finally was relieved of pecuniary difficulties by the settlement of a pension on him by an old school friend, which he relinquished in 1807 on receiving a pension from the Government; meanwhile had settled at Keswick, where he prosecuted with untiring energy the craft of authorship; *Joan of Arc*, *Thalaba*, *Madoc* and *The Curse of Kehama* won for him the laureateship in 1813, and in the same year appeared his prose masterpiece *The Life of Nelson*. Of numerous other works mention may be made of his *Histories of Brazil* and the Peninsular War, *Lives of Bunyan* and Wesley, and *Colloquies on Society*. (1774-1843).



ROBERT SOUTHEY

South Foreland, a chalk headland, in Kent, England, between Dover and Deal, at the E. extremity of the strip between the Kentish coast and Goodwin Sands known as "The Downs."

South Georgia, an island in the Atlantic Ocean, about 800 m. SE. of the Falkland Is., of which it is a dependency. It is a mass of high snow-covered mountains. A whaling station has been established at Grytviken. Pop. c. 100.

South Island, the largest of the three principal islands of New Zealand. It has an area of 58,100 sq. m. The chief towns are Christchurch, Dunedin, and Invercargill. Sheep farming, dairying, and butter and cheese-making are the chief industries. Pop. 556,000.

Southport, a seaside resort of Lancashire, shire, England, situated on the southern shore of the Ribbles estuary, 18 m. N. of Liverpool; is a town of quite modern growth. Pop. 79,300.

Southsea. See Portsmouth.

South Sea Bubble, the disastrous financial project set on foot in 1711 by Robert Harley to relieve the national debt and restore public credit, which produced an unparalleled rush of speculation, ending in the ruin of thousands of people. Through the efforts of Harley a company of merchants was induced to buy up the floating national debt of £10,000,000 on a Government guarantee of 8 per cent. interest, and a right to a monopoly of trade in the South Seas. The shares rose by leaps and bounds as tales of the fabulous wealth of the

far South Seas circulated, till, in 1720, 2300 shares were quoted at \$1,000; earlier in the same year the company had taken over the entire national debt of upwards of £30,000,000. In the craze for speculation which had seized the public hundreds of wild schemes were floated. At length the "Bubble" burst. The chairman and several directors of the company sold out when shares had reached \$1,000; suspicion followed, confidence vanished, stock fell, and in a few days thousands from end to end of the country were bewailing their ruin. The private estates of the fraudulent directors were confiscated for the relief of the sufferers. To Sir Robert Walpole belongs the credit of extricating the finances of the country from the muddle into which they had fallen. The South Sea Company continued to trade along legitimate business lines until 1750.

Southwark, metropolitan borough of London, on the Surrey side of the Thames, opposite the City. It is known pre-eminently as "The Borough," and until recent years was for certain purposes under the immediate jurisdiction of the City authorities. It is partly industrial and partly residential; its buildings include the Anglican cathedral of St. Saviour and the Catholic cathedral of St. George. Its streets and alleys play a large part in the novels of Dickens. Pop. 152,000.

Southwell, village-city in Nottinghamshire, England, 16 m. from Nottingham; it is famous chiefly for its minster, mostly of 12th Century work; the nave is Norman; it was made a cathedral church in 1884. Pop. c. 3000.

Southwell, Robert, English poet; born in Norfolk; studied at Douai, and became a Jesuit priest; came to England as a missionary, was thrown into prison, tortured ten times by the rack, and after three years confinement executed at Tyburn as a traitor for disseminating Catholic doctrine. His poems, religious chiefly, were finally collected under the title *St. Peter's Complaint, Mary Magdalen's Tears, and Other Works*. *The Burning Babe* is one of his best-known productions. (c. 1580-1596).

South-West Africa, a named territory of the Union of South Africa, and formerly a German colony. Since 1926 it has had a measure of self-government subject to the Union. It forms a portion of the South African plateau, having a mean average height of about 3,800 ft. It is interspersed with small mountain ranges. Brandberg has an elevation of 8,550 ft., and the Moltkebliek, 8,148 ft. Apart from the boundary rivers there are no perennial streams. The country is fairly rich in minerals, diamonds and vanadium being worked; stock-raising is the principal industry, the country being generally unsuitable for agriculture. There is a considerable native population, largely of Hottentots and Bushmen. During 1937 the Government found it necessary to curb the political activities of the German-speaking inhabitants, numbering some 10,000, who have been affected by Nazi ideals.

Southwood, First Baron, cr. 1937, of Ellias; newspaper proprietor and publisher. Born at Birmingham. At the age of 19 worked as a newsboy. Now directs over 50 publications, totalling a sale of nearly 20,000,000 copies weekly, including *Daily Herald*, *The People*, *John Bull*, *Sporting Life*, *Woman*, *Ideal Home*, *Everywoman's Picturegoer*, *Passing Show*, *Weekly Illustrated*, *Tailor Sketch*, *Bystander*, *Illustrated London News*, *Sphere*, *Illustrated Sporting and Dramatic News*, *Britannia and Eve*, *Drapers' Record*, *Men's Wear*, etc., etc. Festival President in 1931 of the News-vendors' Benevolent and Provident Institution, Festival President of the

Printers' Pension, Almshouse and Orphan Asylum Corporation in 1934, Trustee of the Newvenders' Benevolent and Provident Institution, Trustee of the Printers' Pension, Almshouse and Orphan Asylum Corporation, President of the Lloyd Memorial Carton Seaside Home, President of the Hornsey Central Hospital, President of the London School of Printing and Kindred Trades, President of Association of Teachers of Printing and Allied Subjects, President of the Advertising Association, 1938, etc., etc.

Sovereign, the standard gold coin current in Britain of 22 carat fineness, value one pound sterling or 20 shillings; weight 123.274 grains troy. It became the standard of British monetary value by the Coinage Act, 1816. Since the World War it has been replaced in ordinary use by paper Treasury, or later Bank, notes. Its actual gold value in August, 1938, was about 33s. 5d.

Sovereignty. The sovereignty of a State is the person, body, or authority whose will is supreme and cannot be contravened by the subjects of the State. It is quite possible for the legal and actual sovereignty to be separated; thus, in Soviet Russia legal sovereignty would appear to reside with the Supreme Soviet of the U.S.S.R., but in actual fact it is exercised by the Communist Party. In Great Britain the legal sovereignty resides in the King and Parliament; in some states, such as the U.S.A., which comprises a federation of so-called sovereign states, sharing sovereign powers with a Federal government, it is not easy to say wherein resides the legal sovereignty. In a democratic government, such as those of Great Britain, France, and the U.S.A., the people hold the political sovereignty, but in a totalitarian state the popular will is subordinated to that of the dictatorship, which is both legal and political sovereignty. Each state in international law is sovereign in and over its territory but, though this sovereignty presupposes a certain amount of independence, it is not necessary that there should be complete independence; e.g., in many states the control of foreign policy may be dependent on the will of another or protecting state. The sovereignty of mandated territories lies in the mandatory state which is under obligation to make a report annually to the League of Nations.

Soviet, a Russian name for a workers' council, such as were first formed in the unsuccessful rising of 1905, and became the organs of government after the 1917 revolution; the Soviet system is based upon the idea of a series of local elective bodies from the village and town soviets at the base to the supreme Soviet of the U.S.S.R., at the top. Thus the primary assembly, council or soviet of all the workers in a particular factory, or of all the agricultural workers or peasants in a particular village, sends representatives to the next higher soviets, or provincial congresses of soviets; thence go delegates to the All Russian Congress which, according to the Constitution, meets every two years.

Soya, or Soy, Bean, the seeds of a leguminous plant (*Glycine soya*) indigenous to Ceylon, Manchuria, Japan and other parts of Asia. Its seeds are crushed to make margarine, and are used in the East to produce the table condiment, soya bean sauce, as well as for fodder and as a manure crop. Another cultivated variety of similar commercial value is sometimes distinguished as a separate species, the *Glycine hispida*.



SOYA BEAN

Spa, a watering-place in Belgium, 20 m. S.E. of Liège; a favourite health and fashionable resort on account of its springs and its picturesque surroundings. For part of the World War it was the general headquarters of the German army, and the residence of the Kaiser after the summer of 1918. It was in an hotel here that he abdicated on November 9, and it was from his château the following day that he escaped into Holland. Here also were conducted negotiations for the Armistice, and in 1920 an international conference on reparations payments. Pop. c. 9,000.

Spa, a general name for a mineral spring or for the locality in which such springs occur. Among well-known Continental spas are Spa in Belgium, which has given its name to them as a class, Aix-les-Bains, Baden, Contrexéville, Homburg, Karlsbad, Kissingen, Seiditz and Wiesbaden. British spas include Bath, Buxton, Leaton, Cheltenham, Harrogate and Matlock.

Space, extension in three dimensions; in metaphysics, continuous, unbounded or unlimited extension in every direction, regarded as empty of matter. Kant concluded that Space, like Time, was not an objective reality, but only a subjective appearance under which we cognise a reality which in itself is non-spatial as well as non-temporal, or one of the necessary forms by which outer sense material must be apprehended to enable us to arrive at necessary *a priori* truths and to render mathematics possible.

Before Kant, Berkeley taught that the idea of space is conceived under the joint influence of retinal sensations, and of muscular sensations of motion in a way analogous to that by which the laws of dynamics have been evolved from experience. This theory was elaborated by Mill, Lotze, and Wundt, and is accepted by most modern scientific psychologists.

Einstein's theory of relativity demands a complete revolution in the fundamental idea of three-dimensional geometrical space, requiring us to abandon Newton's conception of "absolute space" as that which "remains always similar and immovable." The system of geometry imposed by the theory of Relativity is four-dimensional, four factors being essential in determining the position of an "event" as well as the three dimensions of the place of the "event"; in other words, the position of an event is determined in space-time, and this space-time is non-Euclidean in its properties.

Spaghetti, a foodstuff made from long thin tubes, resembling macaroni, but smaller in diameter; popular in Italy and Southern France. It is now also manufactured on a large scale in the U.S.A. The hard wheats from which it is made are rich in the gluten which is an important element in its popularity.

Spahi, an Algerian cavalry soldier serving in the French army. The name is derived from a Persian word which has also given rise to "sepoy" (q.v.).

Spahlinger, Henry, Swiss scientist; study of bacteriology, especially to tuberculosis and its treatment; during the World War he was engaged in the output of tetanus serum; director of the Geneva Bacteriological Institute. (1882-).

Spain, a republic of SW. Europe, which, with Portugal, occupies the entire Iberian Peninsula, and is divided from France on the N. by the Pyrenees, and on the E. and S. is washed by the Mediterranean; the NW. corner fronts the Bay of Biscay (N.), and the Atlantic (W.), while Portugal completes the western boundary. Its area is, together with the Canaries and the Balearic Isles, divided

into 50 provinces, although the names of the 14 old kingdoms, states and provinces (New and Old Castile, Galicia, Aragon, etc.) are still in use. The coast-line is short compared with its area. It is in the main a highland country, a vast plateau, 2,000 to 3,000 ft. high, occupying the centre, buttressed and crossed by ranges (Sierra Nevada in the S., Sierra de Guadarrama, Sierra Morena, etc.), and diversified by the long valleys of the Ebro, Douro, Tagus, Guadalquivir, and other lesser rivers. Climate varies considerably, but, over all, is the driest in Europe; agriculture is by far the most important industry, and Valencia and Catalonia the provinces where it is most successfully carried on, wheat and other cereals, the olive and the vine being the chief products. Other important industries are mining, the Peninsula being extremely rich in the useful minerals, merino sheep farming, anchovy and sardine fisheries, wine-making and the manufacture of silk, leather, paper, and cotton; chief exports are wines, fruits, mineral ores, oil and cork. Madrid, Barcelona, Valencia, Seville, and Malaga are the chief towns. Roman Catholicism is the religion of the majority; until very recent years education was in a backward condition, and illiteracy common, though great strides were made in this field after 1931, under the Republican Government. Area, 196,600 sq. m.; Pop. 23,570,000.

The outstanding fact in the history of Spain, after the downfall of the Roman Empire, of which she had long formed a part, is the national struggle with the Moors, who overran the Peninsula in the 8th Century, firmly established themselves, and were not finally overthrown till Granada, their last possession, was taken in 1492; 16 years later the country became a united kingdom, and, for a brief period, with its vast American colonies and wide European possessions, became, in the 16th Century, the dominant power of Europe; thereafter she lagged more and more in the race of nations and her once vast colonial empire gradually crumbled away till practically nothing remained. Spain succeeded in keeping out of the World War, but thereafter the history of the country was one of unrest and violent political changes.

Up to 1931 the government was a hereditary and avowedly constitutional Monarchy with a Cortes consisting of a Senate and a Chamber of Deputies, though universal suffrage, which prevailed, was for Spain a modern innovation. But beneath were corruption and intrigue in high places seeking to stem the ever-rising tide of threatening revolution. In 1931 Alfonso XIII., abandoned by his ministers, his army and even his courtiers, fled to England, and a republic was proclaimed. Between 1931 and 1936 there were no fewer than 9 changes of government, notwithstanding that the new Constitution, under which all these changes took place, was a most enlightened one. Its fundamental principles were that Spain was a democratic republic of workers of all classes, organized in a regime of liberty and justice, constituting an integral State, but allowing for a large degree of autonomy for such regions as Catalonia and the Basque Provinces; having no official religion, and with all citizens equal before the law; even war was renounced as an instrument of national politics.

In August, 1933, General Sanjurjo, head of the civic guard, who had refused to employ his picked force of 40,000 men to save the monarchy, brought out the Seville garrison to overthrow the new regime, but failed and fled. His attempt exasperated the Anarchists of Catalonia and Andalusia, and very soon there was armed revolt against the republic which was only finally suppressed after the Government had introduced Moorish troops. Later power fell to the parties of the Right,

with an alliance between the old Republican party led by Lerroux and the strong Catholic party led by Gil Robles. During this regime occurred a revolt of miners in the Asturias, which was suppressed. Finally, early in 1936, the newly-created Popular Front, composed of Socialists, Communists, and Left Republicans, won an overwhelming electoral victory, on which supervened, almost immediately, the Spanish Civil War (q.v.).

Spalding, a market town in Lincolnshire, Lincoln, in the heart of the Fens; has a 13th Century church and the ruined Wykeham Abbey in the vicinity; chief industries are agricultural produce and the raising of bulbs. Pop. 12,400.

Spandau, town of Prussia, Germany, in Brandenburg, at the confluence of the Spree and Havel, 8 m. W. by N. of Berlin, in which it is now included. In the "Julius Tower" of the powerful citadel was preserved before the World War the German war-chest of £8,000,000, retained from the French indemnity of 1871. There is a fishing industry, and porcelain and cloth are manufactured. Pop. c. 100,000.

Spandrel, in architecture, the space between the outer curves of an arch and the square head over it; also the space between the outer mouldings of two arches and the string-course.



SPANDREL

Spaniel, a large, drooping-eared, long-haired variety of dog, with silky coat, used by sportsmen and kept as a pet. The Cocker is a small breed used for flushing woodcock; its coat is variously black-and-white, red-and-white or liver-and-white. The Springer is a slower and heavier dog; varieties of the Springer are the Clumber and Sussex; their colour is generally lemon-and-white. The Water spaniel has short, crisp curls, long deeply-fringed ears, broad spreading feet, and is usually liver-and-white in colour. There are many varieties of toy spaniels, all characterized by short muzzles and bulging eyes.

Spanish-American War, a conflict between Spain and the U.S.A. in 1898, consequent upon disturbances in Cuba and the blowing-up in Havana Harbour of an American battleship, the *Maine*. The Americans occupied Cuba and the Philippine Islands, which, by the peace treaty of the following year were, with Puerto Rico, finally evacuated by Spain, Cuba becoming independent under American protection, Puerto Rico and the Philippines falling to the United States.

Spanish Civil War, a conflict opened in July, 1936, the immediate cause being the murder of the Monarchist leader, Calvo Sotelo, while the real cause was the conflict between the immature Republican elements and the old order as represented by the Army leaders. It began with a revolt which broke out in Morocco on July 18. Fighting then spread to Seville, Malaga, Cadix, and the Canaries, while the Spanish Foreign Legion, organized by Franco (q.v.) and other rebel elements, held Melilla and Ceuta against Government forces.

The rebels soon took Pamplona, Zaragoza, Valladolid, and Burgos, which last-named became their headquarters in the N. The conflict in European eyes now took on the aspect of a struggle between Fascists and Communists, and sympathies were aligned accordingly. Great Britain and France led efforts to arrange a pact of non-

intervention, but though this was eventually accomplished with some little success in 1937, large bodies of troops had previously been landed in Spain by Germany and Italy. In August, 1936, insurgent cruisers shelled San Sebastian, and Irún was bombarded from the air, both towns falling. A remarkable resistance to the Government was offered by rebel forces in the fortress of the Alcazar at Toledo, the greater part of which was blown up during the operations. Toledo fell to Franco on September 28. On November 4, the insurgents captured Getafe, the airport of Madrid, but the aerodrome had been completely destroyed. The fighting for the city was protracted and bitter in the extreme.

In the early part of 1937 insurgent vessels, endeavouring to blockade government territory, sank a number of ships off the Spanish coasts; in April the world was horrified by the destruction from the air by the rebel forces of Gernika (Guernica), the ancient Basque capital. Continual fighting round Madrid failed to win the city for the rebels, but Bilbao was occupied in June, and Santander in August. The government established itself at Valencia, and later in Barcelona as the year advanced, and in 1938, Franco's rebel army held all W. and N. Spain, but Catalonia and most of Aragon were firmly held by the Republicans. Naval attacks on neutral shipping by "unknown submarines" became a frequent feature of operations in the Mediterranean, and in spite of Italian denials many observers continued to suppose that "unknown" meant in fact Italian. One of the fiercest battles of the War developed on the Ebro in September, 1938, following a successful government offensive a month earlier. See also **Non-Intervention Committee**.

Spanish Main (i.e. mainland), a name given at one time to the S. American provinces of Spain bordering on the Caribbean Sea, and also to the Caribbean Sea itself; was the scene of the activities of buccaners, whose refugees were in its many islands.

Sparkling Plug, an electrical device used in internal combustion engines for igniting the mixture of air and petrol by which the motive force is supplied to the engine.

Sparrow, or **House Sparrow** (*Passer domesticus*), a small house-haunting bird of the Finch family, the inveterate follower of civilized man. Ranges over the whole British Isles, Europe, N. Africa and Asia. The plumage is brown striped with black, head bluish-grey. It has no song apart from the familiar "chirrup." An allied species, the **Tree Sparrow** (*Passer montanus*) has a black patch on the cheeks and a white patch at the throat. It occurs in hedgerows, etc., in the country. The **Hedge Sparrow** (*Prunella modularis*) is also a common species.

Sparrow Hawk, the common name of a genus (*Accipiter*) of birds of prey of the Falconidae family. The common species *Accipiter nisus* is widely distributed in the British Isles. It is dark grey on the back, reddish white barred with brown underneath, about 12 in. long, and is very destructive to young birds and small animals.

Sparta, or **Lacedaemon**, Greek city-state, the capital of ancient Laconia, in the Peloponnese, on the right bank of the Eurotas, 50 m. from the sea; was 6 m. in circumference, consisted of several distinct quarters, originally separate villages, never united into a regular town. It

was unvalued, depending for defence on the bravery of its citizens. Its mythical founder was Lacedaemon, who called the city Sparta from the name of his wife. One of its early kings was Menelaus, the husband of Helen; Lycurgus (q.v.) was its law-giver; its policy was aggressive and its sway gradually extended over the whole Peloponnese, extinguishing at the end of the Peloponnesian War the rival power of Athens, which for a time rose to ascendancy, and its supremacy was unquestioned thereafter for thirty years, until all Greece was overborne by the Macedonians.

Spartacus, leader of the revolt of the slaves at Rome, which broke out about 73 B.C.; was a Thracian by birth, a man of powerful physique, in succession a shepherd, a soldier and a captain of banditti; was in one of his predatory expeditions taken prisoner and sold to a trainer of gladiators, and became one of his slaves; persuaded his fellow-slaves to attempt their freedom, and became their chief and that of other runaways who joined them. Two years they defied and defeated one Roman army after another sent to crush them, and laid Italy waste, till at the end of that time Licinius Crassus overpowered them in a decisive battle at the R. Silarius, in which, in 72 B.C., Spartacus was slain. The German Communist organization, which under Karl Liebknecht and Rosa Luxemburg led a revolt in 1919, took the name Spartakusbund from him.

Spasm, a sudden convulsive movement, or contraction of a muscle, either clonic, when there is a rapidly repeated succession of contractions and relaxations of the muscles, or tonic, as in tetanus, when the contraction persists for some time without relaxation. The affection is in either case due to abnormal working of the central nervous system and is a symptom rather than a disease.

Spawn, the name given to the eggs of fishes and amphibians. In the case of most fishes the spawn is deposited by the female outside her body, and impregnated by the male ejecting his milt or spermatic fluid over the ova so deposited. The spawn before deposition is commonly known as "hard," and the milt as "soft," roe.

Speaker of the House of Commons, the member who is elected by the House of Commons to preside over its deliberations and to represent the House as a whole when the Commons and Lords meet together in presence of the King. He possesses a casting vote, which he uses if necessary, but does not take part in debates or vote as an ordinary member. By custom he is re-elected at the beginning of every Parliament until he sees fit to resign, and is not generally opposed in the constituency which he represents; but this custom was broken at the General Election of 1935.

Spear, a very ancient war and hunting weapon, consisting of a blade fixed on the end of a long shaft. It has been replaced as a cavalry weapon by the lance. The Assyrian spear must have been very strong, for on monuments a warrior is seen dislodging stones of buildings with it. The Macedonian spear-phalanx was famous in the history of tactics. In England it was used as late as Flodden. As a hunting instrument a spear, fitted with barbs, is used for pig-sticking and for stabbing fish.

Spearmint. See **Mint**.

Special Constables, in England men sworn in to help the police in times of emergency, a task in which all citizens are liable for em-



SPARROW
HAWK

ployment, under penalties imposed by the 1831 Special Constables Act. This Act was passed at the time of the Reform riots, and special constables were enrolled then, during the Chartist riots, at other times of political unrest, and notably in the World War and during the General Strike of 1926. A permanent body of Special Constables is now attached to each police force, and is called on to perform police duties when necessary at the discretion of the head of the force.

Special Reserve, a section of the reserve forces of the British Army instituted in 1907, when the Territorial Force was created and the old Militia abolished. The special reserve battalions attached to each regular infantry regiment supplied drafts to the latter in the World War. In 1921 the term "Special Reserve" was abolished and the term "Militia" restored, but no appointments have been made to the force.

Species, a group of plants or animals so closely resembling each other that they may be considered as mere individual varieties of a common type. As a general rule members of a single species are able to interbreed. If several species share several characters in common, they are grouped together to form a genus. When the genus and species of a plant or animal have been decided, its scientific name is expressed by two words, the former of which denotes the genus and the latter the species. Thus the zoological name of the springbok is *Gazella euchore*, *Gazella* being the name of the genus that includes all gazelles, while *Euchore* is the name of the species including springboks only.

Specific Gravity, the ratio of the volume of a substance to the weight of the same volume of some standard substance; the latter is usually water in the case of solids and liquids, and hydrogen or air in the case of gases. The specific gravity of a solid may be determined by measuring its weight in grams, finding its volume in cubic centimetres, and then dividing the weight by the volume. A given floating body will sink deeper in a liquid of low than in one of high specific gravity, and upon this fact is based the instrument known as a hydrometer, which is used for rapidly measuring the specific gravity of a liquid. It consists typically of a hollow glass tube weighted at the bottom to make it float upright, and contains a graduated vertical scale with appropriate figures; it is allowed to float in the liquid and the specific gravity can be read off directly from the graduation on a level with the surface of the liquid.

Specific Heat of a substance is the ratio of the amount of heat required to raise the temperature of one gram of the substance through one degree Centigrade to that required to raise the temperature of one gram of water through the same interval. The amount of heat required for the latter purpose is taken as the unit of heat, *viz.*, the calorie, so that a body's specific heat is the number of calories required to raise the temperature of one gram of it 1° C. In comparison with most other substances, water has a high specific heat, which is one reason why it is such a suitable substance for domestic heating circuits; it carries a great deal of heat with it, and this heat is transferred to neighbouring objects as it cools down.

Spectator. The celebrated English periodical which grew out of Richard Steele's *Tatler*, to which Addison, the originator of the *Spectator*, was a prolific contributor. Its first number appeared in 1711. Addison and Steele were the chief contributors, in nearly equal proportions.

Others were Pope, Thomas Tickell, Swift, Isaac Watts and John Hughes. The paper terminated in 1714. The modern review of the same name was established in 1828, the founder and first editor-proprietor being Robert Stephen Rintoul (d. 1858). Among its noted contributors were Carlyle, Edward Gibbon Wakefield, Walter Bagehot, and St. John Lee Strachey.

Spectroscope, an instrument for viewing spectra; if the spectra are to be measured also, an instrument called a spectrometer is used. The principles involved in both these instruments are the same. A convex lens is placed at the distance of its focal length from a narrow adjustable slit; light from the slit falls on a prism where dispersion takes place; the rays fall on another convex lens which brings them to a focus; the slit and the first lens form the "collimator" (to bring the rays into line) and the second lens and an eyepiece, also of two lenses, form the "telescope."

Spectrum, the name given to the coloured band, red at one end and violet at the other, which is perceived when a ray of white light passes through a prism. The fact that coloured light can be produced from white light was known to the ancients, and Seneca (q.v.) observed that the colours of a rainbow are identical with those formed by the bevelled edge of a piece of glass.

The first accurate work on the subject, however, was carried out by Newton, who, allowing a sunbeam to enter a darkened room through a hole in the shutter and to fall upon a glass prism, found that a band of coloured light was formed on a white screen held on the other side of the prism, and gave the succession of colours as red, orange, yellow, green, blue, indigo, and violet. He rightly assumed that the explanation of the phenomenon was that white light is not homogeneous, and that rays of different colours are differently refracted (see *Refraction*) in passing through the prism.

The coloured band is called a spectrum, and to the casual observer the spectrum of sunlight is apparently continuous. W. H. Wollaston (1766-1828) and J. Fraunhofer (1787-1826) later discovered that the solar spectrum contained a number of black vertical lines, some strong and some faint. The significance of the "Fraunhofer lines" was discovered in 1859 by G. Kirchhoff and R. W. Bunsen, who showed that if a coloured flame is examined through a spectroscope the spectrum often consists of a few bright lines instead of a continuous band. Thus if a sodium compound is heated in the Bunsen flame it gives a bright yellow colour and the spectrum consists simply of two brilliant yellow lines close together—the rest of the band is dark. Other elements or their compounds produce different spectra, each element possessing its own individual spectrum. Kirchhoff and Bunsen next showed that if white light is viewed through a coloured flame the spectrum of which contains bright lines, the spectrum of the white light is no longer continuous, but has dark vertical lines in the position of the bright lines of the coloured flame.

From a study of individual spectra, and a comparison of them with the Fraunhofer lines, it has been possible to ascertain the composition of the sun's atmosphere; and similar work has been carried out on other stars. In chemical research the investigation of spectra has had important results: several elements, such as caesium, rubidium and helium, were first discovered spectroscopically, while exact measurement of lines has afforded much insight into the structure of atoms.

Spee, Maximilian, Count von, German admiral. Born at Copenhagen, he was a pioneer of the German navy, and in November, 1914, he won the battle of Coronel against Craddock; the following month Admiral Sturdee met him off the Falkland Is. the German squadron lost, and Von Spee went down in the *Scharnhorst*. (1861-1914).

Speed, Harold, English painter, born at London; studied at South Kensington and the Royal Academy Schools. His portraits include Edward VII., King Albert of Belgium, John Burns, John Redmond, Campbell-Bannerman, Holman Hunt, Baden-Powell, Lord Grey of Fallodon. His "Alcantara, Toledo," bought by the Chantry Bequest, is in the Tate Gallery. He has done much mural decoration. (1873-).

Speed Indicator, or **Tachometer**, an instrument for indicating the revolutions per minute of a revolving shaft by means of a hand moving over a graduated scale. The various types include centrifugal, air-vane, and magnetic.

Speedometer, a speed-indicator in vehicle. It enumerates wheel revolutions, being connected with the road-wheel through a flexible drive. In the chronometric type the number of revolutions of the driving shaft during a finite interval is automatically and repeatedly recorded. Electrical speedometers as used on motor coaches comprise a small generator driven off the gear-box and connected to a moving-coil voltmeter.

Speedwell, the genus *Veronica* of the natural order Scrophulariaceae, comprising 250 species found in temperate regions only and many in Alpine districts. They are hardy shrubs and plants, with white, blue or purple flowers, so named because the blossoms fly off as soon as the plant is gathered; seventeen species are native to Britain, *Veronica Chamadrys* being the commonest speedwell. See also *Veronica*.

Veronica Andersonii can be obtained with variegated foliage, (*Veronica* while other species are glabrous. *Chamadrys*)

Speke, John Hanning, British explorer, born in Somersetshire; served as a soldier in the Punjab; joined Burton in 1854 in an expedition into Somaliland, and three years after, in an attempt to discover the sources of the Nile, and setting out alone discovered Victoria Nyanza, which he maintained was the source of the river, but which Burton questioned. On his return he published in 1863 an account of his discovery, which he was about to defend in the British Association when he was accidentally shot. (1827-1884).

Spelt, an inferior hardy kind of wheat, *Triticum Spelta*, also known as German wheat, since it is much grown in that country; it has a solid straw with strong spikes of grain.

Spelter, name given by Boyle to zinc; it was also applied to blismuth, with which zinc was once confused. The term is now used for commercial zinc, containing about 97-98 per cent. of zinc, 1-3 per cent. of lead, up to 0.1 per cent. of iron and, more rarely, some cadmium and arsenic.

Spensorborough, W. Riding of Yorkshire, England. Its manufactures include textile machinery, chain belting, soap, clothing, cotton goods, and worsted. Pop. 36,400.

Spencer, Herbert, English philosopher, born at Derby; adopted at first the profession of a railway engineer, which in about eight years he abandoned for

literature, his first effort being a series of *Letters on the Proper Sphere of Government in the Nonconformist* in 1842, and his first work, *Social Statics*, published in 1851, followed by *Principles of Psychology* four years after. In 1861 he published a work on *Education* and his *First Principles* the following year, after which he began to construct his system of *Synthetic Philosophy*, which established his fame. He published treatises on biology, psychology, ethics, and sociology, but was unable to complete his intended conspectus of all the science of his time. His reputation in his day was extremely high, especially among the successors of the Utilitarians, but later developments in philosophy have somewhat overshadowed it. (1820-1903).

Spenser, Edmund, author of the *Faerie Queen*, and one of England's greatest poets; details of his life are scanty



EDMUND SPENSER

and often hypothetical; born at London, he entered Pembroke Hall, Cambridge, as a "sizar" in 1569, and during his seven years' residence there took a master's degree, and formed an important friendship with Gabriel Harvey. Three years of unsettled life followed, but were fruitful in the production of the *Shepheards' Calendar* (1579), which at once placed him at the head of the English poets of his day; had already become the friend of Sir Philip Sidney and Leicester, and in 1580 was appointed private secretary to Lord Grey, then proceeding to Ireland as the Lord Deputy, and on his master's return continued to make his home in Ireland, where he obtained some civil appointments, and in 1591 entered into a considerable estate as the advocate of the repressive policy set forth in *A View of the Present State of Ireland*; he was little loved by the Irish, and on the outbreak of Tyrone's rebellion in 1598 his house was sacked and burned, and he himself forced to flee to London, where he died a few weeks later "a ruined and heart-broken man." The rich promise of the *Shepheards' Calendar* had been amply fulfilled in the *Complaints*, *Amoretti*, *Colin Clouts Come Home Again*, the *Epithalamium*, and above all in the six published books of the *Faerie Queen* (1589-1596), in which all his gifts and graces as a poet are at their best. (1552-1599).

Spermaceti, a white waxy matter from the head of the sperm-whale (q.v.). Candles made of it yield a particularly steady and bright light. It is also used as a lubricant.

Spermatozoon, the male gamete or reproductive cell of an animal, which fuses with and fertilizes the female gamete or egg-cell (ovum).

Sperm Whale. See *Cachalot*.

Spey, a river of N. Scotland which, rising in Badenoch, flows N.E. through Inverness, Elgin, and Banffshire, and falls into the Moray Firth after a course of 107 m.; the salmon-fisheries are valuable; it is the swiftest of the rivers of Great Britain.

Speyer, or *Spire*, German town on the Palatinate, 14 m. SW. of Heidelberg, with a Romanesque 11th Century cathedral, of its kind one of the finest in Europe, and the remains of the Rotescher, or imperial palace, where in 1529 the Diet of the Empire was held at which the Reformers first got the name of Protestants, because of their protestation against the imperial decree issued at Worms



prohibiting any further innovations in religion. Pop. c. 28,000.

Spezia, the chief naval station of Italy; occupies a strongly fortified site at the head of a bay on the W. side of Italy, 56 m. SE. of Genoa; manufactures mostly cables, machinery, and olive oil. In its bay Shelley was drowned. Pop. c. 110,000.

Sphagnum. See *Bog-Moss*.

Sphenodon, a reptile, *Hatteria punctata*, found in New Zealand, and called by the Maoris Tuatara. See *Hatteria*.

Sphere, the solid figure produced by a complete revolution of a semi-circle about its diameter; or in other words, a solid body every point of whose surface is equidistant from the centre. The area and volume of a sphere are respectively $4\pi r^2$ and $\frac{4}{3}\pi r^3$.

Spheroid, a body approximating to a perfect sphere; in other words, a solid figure produced by the revolution of an ellipse about one of its axes. An oblate spheroid is a spheroid produced by the revolution of an ellipse about its shorter axis; the most familiar case being that of the earth.

Sphinx, a fabled animal, an invention of the body and claws of a lioness, and the head of a woman, ram, or goat, often with wings and tail, effigies of which were frequently placed before temples on each side of the approach: a Greek legend tells that one waylaid travellers and tormented them with a riddle, and if they could not answer it devoured them, but Oedipus answered it, whereupon she threw herself into the sea. The great sphinx at Gizeh, Egypt, near the second pyramid, is 190 ft. in length and 70 ft. in height.

Sphygmograph, an instrument for recording variations in pulse-beats; it consists of a pad which when resting against the artery of the wrist operates a pen or recorder which traces a curve on paper or smoked glass corresponding to the pulse movement.

Spice, a general name for vegetable substances possessing aromatic and pungent properties, such as pepper, cloves, nutmeg, ginger, cinnamon, caraway, etc. They are mostly imported from the Far East, especially the Dutch East Indies, Malaya, and the neighbouring countries, and are derived from the root, stem, bark and fruits of various tropical plants.

Spice Islands. See *Moluccas*.

Spider, general name for a large and (Araneae) of Arachnida, most of which secrete a thick fluid by which they form webs used both for entrapping their insect prey and as dwellings. Some of the tropical species, especially the tarantula, attain a considerable size. The spider is eight-legged, the last joint of each leg being armed with two toothed hooks; has a soft tumid abdomen, eight eyes, but apparently no auditory organ. The bite of the spider is not generally poisonous to man, though cases of death from the bite of the tarantula have been reported. Spiders are remarkably pugnacious, and often, in fighting, lose a limb which, however, they have the power of reproducing. Species indigenous to Britain include the common Garden Spider (*Aranea diadema*), the Jumping Spider (*Epiblemum scenicum*), the Water-Spider (*Argyroneta aquatica*), etc.

Spiderwort, a genus (*Tradescantia*) of the order Commelinaceae native to tropical and N. America. A few species, including *T. virginica*, or Virginia spiderwort, with purple flowers, are grown in Great Britain as stove greenhouse or hardy perennials.

Spikenard, a Himalayan plant, *Nardostachys jatamansi*; its root sends up numerous stems with small spikes of purple flowers, each having four stamens. An aromatic substance of great repute in the ancient world for anointing the body was prepared from it.

Spilsbury, Sir Bernard, British pathologist, a logist, pathological adviser to the Home Office, whose expert evidence is frequently decisive in murder trials. (1879-).

Spinach, herbaceous plant (genus *Spinacia*) of the order Chenopodiaceae; *Spinacia oleracea* is the common or Garden Spinach; is a hardy annual with large, succulent, triangular leaves on long petioles, which are used as a table vegetable.

Spindle-tree, a tree (*Eucalyptus euro-paeus*) of the order Celastraceae, found in coppes, thickets, and hedges throughout England, generally as a tall bushy shrub, but it may reach 20 ft. in height. It has a short trunk of coarsely-grained bark, and orange-crimson berries. Furnishes a hard-grained wood used for spindles and skewers.

Spine, the backbone or vertebral column, the axial support of the body of vertebrate animals, composed of a series of vertebrae or bones placed one against the other and connected by ligaments. In man there are 24 true vertebrae, with the sacrum and coccyx, each consisting of 4 or 5 vertebrae fused together. The spinal cord, an extension from the brain of the central nervous axis, is situated within the canal formed by the concavities of the vertebrae. It is encased in three successive membranes, the pia mater, arachnoid, and dura mater. Curvature of the spine results from distortion of the vertebrae, and sometimes results in the development of a compensatory "hump"; Pott's disease is a special form of spinal curvature generally found in children.

Spinel, a vitreous mineral occurring in octahedral crystals, embedded in crystalline limestone and associated with calcite. It may be of almost any colour, transparent to opaque, and, when pure, consists of 72 parts of alumina to 28 of magnesia. Varieties known as spinel rubies, balas rubies, and sapphirines are used as gems.

Spinnet, or spinnet, a musical instrument, with a keyboard, related to the harpsichord, in vogue between 1500 and 1760.



SPINET

Spinning, drawing out and twisting textile materials into threads, either by hand or with machinery. One of the earliest of human inventions, it was at first performed with spindle and distaff; the process is represented on Egyptian tombs. A spinning wheel was invented in Nürnberg about 1530, and soon afterwards introduced into England. About 1767 James Hargreaves (q.v.) invented the spinning jenny (i.e. gin or engine) by which one person could spin at least 16 threads simultaneously. This was the forerunner of the mule, invented in 1774 by Samuel Crompton (q.v.), who combined the principle of drawing by rollers, introduced in 1738 by Lewis Paul, with that of the jenny. Arkwright's spinning-frame was invented in 1767; its chief value was its provision of the warp, which the jenny was unable to supply.

In modern cotton-manufacture spinning is the final process after scutching, carding, drawing and slubbing; it is performed by the ring spinning frame or the mule—the action of the latter being intermittent. Machines of the self-actor type can be built to produce

coarse, medium, or fine counts. The chief elements of a silk-spinning machine are a viscose pipe, spinning pipes for taking up the viscose, and a metal spinning jet drilled with holes of diameters according to the fineness of the filament required.

Spinoza, Benedict or Baruch, philosopher, born at Amsterdam, of a Jewish family of Portuguese extraction; exchanged his early studies in Jewish theology for that of physics and the works of Descartes, in which inquiry he drifted farther and farther from the Jewish creed, and at length openly abandoned it. This exposed him to a persecution which threatened his life, so that he left Amsterdam and finally settled at The Hague, where he lived by polishing optical glasses; he suffered from ill-health, and died of consumption when he was only 44; his great work, the *Ethica*, was published a year after his death. He taught that all existence may be summed up in the ideas of extension and thought, which are attributes of God, the sole unlimited and simple substance, in whom all else is comprehended. His system, neglected in his own day and after his death, had great influence on thinkers of the 18th and 19th Centuries, and the "God-intoxicated man" is now firmly established as one of the greatest philosophers of all time. (1632-1677).

Spion Kop, a battle in the British-South African war fought near a hill of that name in January, 1900, and resulting in heavy British losses.

Spiraea, genus of plants of the natural order Rosaceae, of which meadow-sweet (*Spiraea ulmaria*) is a British species. The flowers are mostly white or pink in colour; height from 6 inches up to 7 feet.

Spiral, a curve which winds in a plane about and continually recedes from a fixed centre, like a watch-spring; or a curve which winds about a cylinder while at the same time rising or advancing forward, like a lighthouse stairway.

Spire, a slender tapering pyramidal or conical structure on the top of a tower or steeple; rare in Norman architecture, the earliest spires of that period being merely conical roofs. In medieval buildings, the spires are generally octagonal or circular in plan, hollow or solid, and elegantly decorated with crockets, panels and bands, especially in the early English Gothic architecture. The spire almost always terminates in a finial. A spire rising from the exterior of the wall of a tower without gutter or parapet at the base is called a broach.

Spirit, in philosophy and theology, the supreme principle in man, that part of his personality by which he is in contact with the transcendental or the divine. The name is also given to that part or residue of man which, in the belief of some, is able after physical death to manifest its continued existence by communicating in various ways with those left behind on earth.

Spirit, the Holy, the third Person of the Western Christian Trinity; in the belief of the Western churches proceeds from the Father and the Son, in that of the Eastern churches from the Father through the Son. He is also known by the alternative names of Holy Ghost and Paraclete or Comforter. He is the indwelling divine life in the Christian church, whom Jesus promised should be shed upon His followers after His own death, and who, according to the New Testament tradition, was manifested in the Apostles, as described in the Book of Acts, shortly after the Ascension.

Spirits of Salts. See *Hydrochloric Acid*.

Spiritualism, in philosophy, denotes the doctrine that the only real is the spiritual; in religion indicates a belief in the existence of spirits with whom

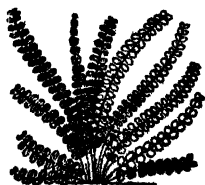
we, by means of certain mediums, can hold correspondence, and who, whether we are conscious of it or not, exercise in some cases an influence over human destiny; especially those of the dead who, from their continued interest in the world, continue to mingle in its affairs. In recent years, particularly since the World War, spiritualism has become the basis of a popular and rapidly-spreading creed in English-speaking countries.

Spithead, the eastern portion of the strait which separates the Isle of Wight from the Hampshire coast, 14 m. long, with an average breadth of 4 m.; is a sheltered and safe riding for ships, and as such is much used by the British navy; receives its name from a long "spit" or sandbank jutting out from the mainland.

Spitsbergen (Svalbard), an Arctic archipelago lying 350 m. N. of Norway, embracing West Spitsbergen, North-East Land, Stens Foreland, King Charles Land or Wiche Island, Barents Land, Prince Charles Foreland, besides numerous smaller islands; practically lies under great fields of ice, enormous glaciers, and drifts of snow, pierced here and there by mountain peaks, hence the name Spitsbergen; the home of vast flocks of sea-birds, of polar bears, and Arctic foxes, while herds of reindeer are attracted to certain parts by a scanty summer vegetation; there are valuable coal deposits, which are now being worked. It was discovered in 1596 by Barents (q.v.), and has been the starting point of many expeditions to the North Pole. Since 1925 it has been a Norwegian possession. Area, 24,300 sq. m. There is a small permanent population.

Spleen (anatomy), a soft, vascular organ situated between the cardiac end of the stomach and the diaphragm; about 5 in. long by 3 in. broad and weighing 6 oz. It increases in size after a meal, reaching its full size in about 5 hours; becomes enlarged in fevers, and in prolonged ague is permanently atrophied; occurs only in the vertebrates. Its functions are not fully known, but like the other ductless glands it produces secretions which appear to be of importance in stimulating digestion, and it helps to promote the formation of blood corpuscles.

Spleenwort, popular name of a genus (*Asplenium*) of ferns of the order Polypodiaceae, so-called either because its lobular leaves are spleen-shaped or because of its medicinal properties. *Asplenium Trichomanes* is the common or maidenhair spleenwort; the wall-rue or wall spleenwort is a good rock fern; *Asplenium Nidus* or bird's nest fern is a fine tropical plant.



COMMON SPLEENWORT

Splint, an appliance for preventing an injury to or movement in a part of the body, generally a limb, that has been wounded or injured. It usually consists of a piece or pair of pieces of wood bound tightly against or on either side of the injured portion.

Split (formerly *Spalae*), town of Yugoslavia, in Dalmatia, finely situated on a promontory on the E. side of the Adriatic, 160 m. S.E. of Fiume; a place of considerable antiquity, and one of the great cities of the Roman world; is chiefly famed for the vast palace built by Diocletian, which became his residence after his abdication; subsidiary buildings and grounds were enclosed by walls, within which now a considerable part of the town stands; the noblest portions of the palace are still extant; the

modern town carries on trade in grain, wine, oil, and cattle; is noted for its liqueurs. Pop. 35,300.

Splügen, an Alpine pass in the Swiss canton of the Grisons; the roadway 24 m. long, opened in 1822, crosses the Rhetian Alps from Chur, the capital of Grisons, to Chiavenna in Lombardy, and reaches a height of 6,595 ft.

Spode, a kind of porcelain named after Josiah Spode who owned pottery works at Stoke-on-Trent at the end of the 18th Century. His son, Josiah, made a porcelain composed of felspar, china clay and bone ash which has long been the common type in England. Its patterns are frequently imitations of Oriental designs.

Spohr, Ludwig, German musical composer and violinist, born in Brunswick; produced both operas and oratorios, *Faust* among the former, the *Last Judgment* and the *Fall of Babylon* among the latter, as well as several violin concertos and symphonies; for many years he was Court conductor at Cassel; wrote a handbook for violinists. (1784-1859).

Spokane, city of Washington, U.S.A., on the R. Spokane, 230 m. E. of Seattle. It has a large timber industry, machine-shops, foundries, and numerous manufactures, for which the near-by waterfalls provide power. Pop. 115,500.

Spoleto, an ancient city of Central Italy, built on the rocky slopes of a hill, in the province of Umbria, 65 m. N.E. of Rome; is protected by an ancient citadel, and has an interesting old cathedral with frescoes by Lippo Lippi, an imposing 7th Century aqueduct, and various Roman ruins; was capital of a Lombard duchy, and from 1220 to 1860 was joined to the Papal States. Pop. c. 10,000.

Spondee, a metrical foot consisting of two successive long or accented syllables.

Sponges, a group (Porifera) of simple structure, aquatic animals of cellular structure, the outer coating of whose bodies is perforated to allow the entrance of water, which provides the animal with food and oxygen; they do not swim freely, but are always attached to some external object. The sponges of commerce are dived for mainly in the Mediterranean Sea and off the coast of Florida, U.S.A.

Spoonbill, a family (Plataleidae) of there are three genera and a number of species.

They are allied to the storks and herons, are also long-legged but have the bill flattened at the base like a spoon. One species, the Common Spoonbill (*Platalea leucorodia*) formerly bred in Britain, but now occurs only as a straggler. They breed in colonies, and build their nests in trees or reed-beds.

Sporades, a group of islands in the Greek Archipelago, in the Aegean Sea; there are two groups, the Northern, including Skyros, Lemnos, Chios, and Lesbos or Mitylene, belonging to Greece; the Southern, including the Dodecanese, to Italy.

Spores, in non-flowering plants, minute reproductive cells which develop when they fall on damp soil or moist food-containing substances. In the case of ferns, each spore sends out a delicate rhizoid which grows downwards into the soil and a green thread which grows along the surface, and gradually changes into a multicellular layer or prothallus out of which develops the young leaf.



SPONBILL

Sporozoa, a class of unicellular parasitic Protozoa, fitted to live in water, and like other Protozoa, may be taken to represent the earliest animals. Reproduction is by means of spores (q.v.). The class includes the disease germ of malaria, which is developed in the Anopheles mosquito.

S.P.Q.R., Roman official initials standing for *Senatus Populusque Romanus* (the Senate and Roman People); were inscribed on the Roman military standards.

Sprain, violent straining or twisting of parts around the joints, but without dislocation; generally attended with swelling and some inflammation of the sprained part. The ankle, wrist and knee are the joints most frequently affected.

Sprat, a small smooth-scaled fish, *Clupea sprathus*, common in all parts of the European Atlantic coasts; it is caught in large numbers as a food fish, being usually sold dried and salted; those exported from Norway in tins are sold as brisling. The average length is about 3 inches.

Spree, a river of Germany, rises in E. Saxony close to the Czechoslovakian border, follows a winding and generally N. and NW. course of 227 m. till its junction with the Havel at Spandau; chief towns on its banks are Bautzen, Kottbus, Lübben, and Berlin; is connected with the Oder by the Friedrich Wilhelm Canal.

Spring, an uprush of water from the ground at a single point. Springs are always found at a lower level than the ground from which their supply is derived. They are met with in valleys, near hilltops, on hillsides, in caverns and even under water. Some flow forth naturally, while others have been formed after artificial boring through the superficial strata. Where the water issues from a great depth it is warm, and as warm water can dissolve more mineral matter than cold, hot springs are always richer in dissolved salts than cold ones.

Springbok (*Gazella suchore*), a South African antelope about 30 in. in height, yellow or dun coloured, white beneath; two folds of skin rise from the root of the tail and terminate near the middle of the back. It is remarkable for its power of leaping, being able to jump several times its own height when alarmed.

Springfield, (1) capital of Illinois, U.S.A., situated in a flourishing coal district, 185 m. SW. of Chicago; has an arsenal, two colleges, and a handsome marble capitol; coal-mining, foundries, and flour, cotton, and paper mills are the chief industries; the burial-place of Abraham Lincoln. Pop. 72,000. (2) city of Massachusetts, U.S.A., on the Connecticut R., 90 m. W. of Boston; settled in 1636; has important manufactures of textiles, motor-cars, paper, and a variety of other articles, besides the United States armoury. Pop. 150,000. (3) capital of Greene County, Missouri, 232 m. WSW. of St. Louis; has rapidly increasing manufactures of cottons, woollens, and machinery; in the vicinity was

COLUMBIA, OHIO, ON ABBOTT'S CLOVER LEAF BEETLE 217.
70 m. N.E. of Cincinnati; is an important railway centre, and possesses numerous factories of machinery, bicycles, and paper. Pop. 69,000.

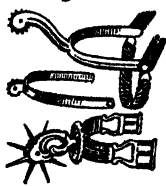
Springtail, a sub-order of minute wingless insects (*Collembola*), whose chief characteristic is their power of suddenly leaping when alarmed. They are soft-bodied and are commonly seen on decaying vegetable matter, herbage, and on stagnant water, one species at least being equally at home on land and on the surface of ponds.

It sometimes causes trouble in cisterns as it can live under water. Springtails are probably surviving representatives of the most primitive insects. They do not undergo a metamorphosis.

Sprocket, a toothed gear wheel used in chain-drives, e.g., the wheels of the pedal shaft and rear hub of pedal cycles.

Spruce, the common name of a number of coniferous trees, applied especially to the Spruce-fir, or Norway Spruce (*Picea excelsa*), a native of the mountains of N. and Central Europe. It was introduced thence into Britain in the 17th Century and has been extensively cultivated. In some countries it may grow to nearly 200 ft. high. The bark is smooth and reddish-brown. The wood—called white deal—is much used for rough carpentry. It also yields resin and turpentine. *Picea moranda*, the Himalayan Spruce, is also a valuable timber tree.

Spur, of a horseman, having a rowel or wheel of points to prick a horse's flank. The spur was the peculiar badge of knighthood, whence the phrase "to win one's spurs." All cavalry soldiers and horse-artillerymen wear spurs, rather for ornament than use. The hard, pointed projection on a cock's leg, which serves for defence and attack, is also so called.



SPURS

Spurge (*Euphorbia*), a genus of plants, the typical one, of the natural order Euphorbiaceae, comprising 750 species chiefly found in sub-tropical and warm climates, but 17 native to Britain. Some are shrubs, but all British species are herbs. The species found in dry climates resemble Cacti. Besides those found wild in Britain, including the Caper Spurge, *Euphorbia lathyris*, reputed to have been introduced by the Romans but now naturalized, a few only are grown as stove and greenhouse plants, the rest being valueless in cultivation.

Spurgeon, Charles Haddon, English preacher, born at Kelvedon, Essex; began preaching at Cambridge when a boy, and was only 17 when he was appointed to a pastorate. In 1861, a large chapel was built for him in Southwark, London, around which he established a number of institutions in the interest of humanity and religion. His sermons were also widely circulated in printed form. (1834-1892).

Spurn Head, a low headland of E. Riding of Yorkshire, England, at the eastern extremity of the N. shore of the Humber.

Spy, a person who, acting clandestinely or on false pretences, seeks to gather information in the zone of operations of a belligerent in order to communicate it to the adverse party. By international law he may be shot if captured. Soldiers who have openly penetrated into such a zone are not treated as spies, nor are soldiers or civilians openly conveying dispatches for their own or the enemy's army. A spy cannot be punished without trial and cannot be treated as a spy if captured after he has rejoined his own army. See also Secret Service.

Squadron, a division of a cavalry regiment consisting of two "troops"; four squadrons compose a regiment, each under a captain. Also a number of warships grouped into a temporary unit under an officer of flag rank; battleships and battle cruisers are usually grouped into squadrons of four. In the Royal Air Force,

a squadron is the smallest number of machines under a single command; a "flight" is equivalent to half a squadron.

Square Root, a quantity which, when multiplied by itself, produces the number of which it is the square root; thus the square root of 49 is 7, and $\frac{1}{2}$ is the square root of $\frac{1}{4}$.

Squash Racquets, a variety of ordinary racquets, but played in a smaller court. It originated in England and is said to have been played first at Harrow. It is played with a hollow rubber ball about the size of a golf ball. In 1922 the game was standardized and a Central Squash Racquets Committee formed.

Squatter, one who settles on new or uncultivated land. In Australia the term was formerly used for a liberated or ticket-of-leave man who built a bark-hut on vacant ground and lived either by sheep-stealing or illicit liquor selling.

Squid, a class of cephalopod (g.t.) cuttlefish, of the order Dibranchia. The common squid, *Loligo vulgaris*, about 18 in. long, is found round the Devon and Cornish coasts and is used as bait. It is blue in colour, with dark spots, and white beneath and, like the cuttlefish, secretes an inky fluid which it ejects to cover its retreat when attacked. The shell of this mollusc has been replaced by a horny structure called a pen, which is frequently found on beaches. Some tropical species, such as *Archileuthis princeps*, may reach a span of 40 ft. with extended tentacles.

Squill (*Urginea Scilla*), a lilaceous plant growing on the shores of the Mediterranean. Its large round bulbs contain a substance known as scillitoxin, which is used in medicine as a powerful expectorant because of its power of increasing the flow of saliva. It acts as an irritant on the stomach and other organs, however, and in some circumstances cannot be used. It gives the bulbs a bitter taste.

Squinting, or Strabismus, a defect of the vision due to the optic axes of the eyes not being parallel. Squinting may affect one or both eyes, and may be upwards, downwards, inwards or outwards. The cause is usually a defect in the nerves or muscles of the eyeball, though convulsions, ophthalmia and even teething may predispose to it.

Squire, in the military organization of the Middle Ages, a young man in attendance on a knight, awaiting his own opportunity to receive knighthood. In England, it came to mean a landed proprietor, who was also a justice of the peace, and practically equivalent to the lord of the manor. The "squirearchy" indicated the body of such country gentlemen, who, prior to the Reform Bill of 1832, were the dominant political force in the Commons.

Squire, Sir John Collings, English man of letters, born at Plymouth. His early work was in comic and satirical vein: *Imaginary Speeches*, 1912; *Sleeps to Parnassus*, 1913. Parodies collected, 1921. In 1919 he founded the famous literary review, *The London Mercury*, remaining its editor until 1934. He has edited several collections of verse, and received a knighthood in 1933. (1884-).

Squirrel, genus (*Sciurus*) of tree-dwelling rodents, of wide distribution. *Sciurus vulgaris*, the common "red" squirrel of England and Europe generally, is characterized by its pointed and tufted ears, long bushy tail, furry coat and bright eyes. It has found a competitor in the Grey Squirrel, a species introduced from N. America, which in recent years has spread rapidly in Britain at the expense of its relative. Other species show a great variety of size, the Pigmy Squirrel of Borneo being only the size of a

mouse, the Purple Giant of India being as big as 12 in.

Srinagar, capital city of Kashmir, India, on the R. Jhelum; has metal-working, wood-carving, and carpet-weaving industries. Pop. 174,000.

Stability, the property by which a body tends to keep its original position, or a moving system to recover its typical configuration when slightly disturbed. The tendency of the centre of gravity to occupy the lowest possible position creates three kinds of equilibrium—stable, unstable, and neutral. In stable equilibrium, the body when disturbed tends at once to return to its original position; in unstable equilibrium, it tends to depart farther from that position; in neutral, it simply remains in its new position. The degree of stability is a matter of the highest importance in the design and use of ships and aircraft. A "stabilizer," in aircraft, is the fixed horizontal tail-plane intended to reduce the pitching motion in the air.

Stabilization, efforts to counteract the large fluctuations in the relative value of monetary units. The economic depression of 1930-32 brought the subject into prominence and it was discussed, but without practical results, at the World Economic Conference, 1933. Normally, monetary units have a known value which is based on the gold standard, and stabilization in its current sense means giving a monetary unit, such as the pound, franc, or mark, a new value in relation to gold, which value is expressed by the exchange value of one currency in terms of another. Speculative elements and the movements of capital tend to obscure the problems of stabilization, and some economists believe that no *de facto* stabilization is possible while emergency exchange restrictions exist and until gold bloc currencies have been effectively devalued.

Stachys, a widely-distributed genus of plants, of the order Labiales, including the betony (*q.v.*).

Stack, Sir Lee Oliver Fitzmaurice, British general, who in 1919 became Governor-General of the Sudan and Sirdar of the Egyptian army, and was murdered in Egypt in November, 1924. (1868-1924).

Stadium, the course on which were (foot-racing, wrestling, etc.), of ancient Greece, held at Olympia, Athens, and other places; the most famous was that laid out at Olympia; length 600 Greek feet, which was adopted as the Greek standard of measure, and equalled 606½ English feet.

Stadtholder, an anglicized form of (*f.s.* stead-holder), a title conferred on the governors of provinces in the Low Countries, but chiefly associated with the rulers of Holland, Zealand, and Utrecht. In 1544 the title was held by William the Silent and continued to be the designation of the head of the new republic of the United Provinces of the Netherlands until 1802. The name in its German form of Statthalter has been revived in Nazi Germany, where the old Federal States are each under the rule of a Reichstatthalter, who is the Führer's personal representative.

Stael, Anne Louise, Madame de, French writer, born in Paris, daughter of Necker, a woman of eminent ability, and an admirer of Rousseau; wrote *Letters* on his character and works; married the Baron de Stael-Holstein, Swedish ambassador in Paris, where she lived all through the events of the Revolution. In 1795 her *salon* became the centre of the literary and political activity of the time. She was ordered by Napoleon to leave Paris; soon after she went to Weimar, where she met Goethe and Schiller, and then to Berlin. Her great work on Germany, *L'Allemagne*, was seized by the French

censors. After this she again quitted France, to which she had returned; and settled in Switzerland, at Coppet, where she died. (1766-1817).

Staffa ("pillar island"), an uninhabited islet of basaltic formation off the W. coast of Scotland, 84 m. W. of Oban; 1½ m. in circumference, and girt with precipitous cliffs, except on the sheltered N.E., where there is a shelving shore; is remarkable for its caves, of which Fingal's Cave is the most famous, having an entrance 42 ft. wide and 66 ft. high, and penetrating 227 ft. See also *Basalt*.

Staff College, a military college for selected officers in staff duties and in the higher branches of the art of warfare. Camberley in Surrey and Quetta in India are the two colleges for the British Army. The Naval Staff College is at Greenwich, that for the Air Force at Andover.

Stafford, county town of Staffordshire, England, 29 m. NNW. of Birmingham; has manufactures of boots and shoes, motor-cars, machinery, and cutlery. Pop. 31,000.

Staffordshire, a midland mining and manufacturing county of England, wedged in on the N. between Cheshire (W.) and Derby (N.), and extending southward to Worcester, with Shropshire on the W., and Leicester and Warwick on the E.; with the exception of the wild and hilly "moorland" in the N. consists of an undulating plain crossed by the Trent, and intersected in all directions by canals and railways; embraces two rich coal-fields, one in the "Black Country" of the S., where rich deposits of ironstone are also worked, and one in the N., including the district of the "Potteries"; famous breweries exist at Burton. Stoke-on-Trent is the largest town; others are Wolverhampton, Walsall, and Smethwick. Area 1,154 sq. m. Pop. 1,434,000.

Stag, the male of the red-deer (*q.v.*). As applied to a person who applies for an allotment of shares not wishing to hold them but in the hope of selling the allotment at a premium; if he fails in this, he abstains from paying the amount due on his allotment and his deposit is forfeited.

Stag Beetle, the common name of a insect, family of coleopterous insects (the Lucanidae), characterized by an enlargement of head and jaws in the males having a resemblance to stag's horns. The male of the British species, *Lucanus cervus*, is as much as 2 in. long.

Stage Coach, for over a century era the principal European public passenger vehicle for journeys between towns; it was drawn usually by two or four horses. Luggage was stored in a so-called "boot," between the coachman's seat and the passenger portion of the vehicle. See also *Coaches* and *Coaching*.

Staghound, the Scotch deer-hound, also called the wolf-dog, a breed resembling, but larger than, the greyhound; used for deer-stalking and hunting mostly by sight. It is wiry-coated and shaggy, the best breed being iron-grey with white chest.

Stained Glass, used in windows for purposes of decoration, especially when forming pictorial scenes. The ecclesiastical stained glass of the Middle Ages, carried to its highest point in the windows of such buildings as Chartres Cathedral, are among the most wonderful productions of medieval art. Good English examples are the glass panels in the choir at Canterbury Cathedral representing Biblical subjects, set in a blue or ruby ground, and

framed in brilliantly coloured scroll work. Later, stained glass lost its early mosaic character, and became translucent in tone and freer in design. York Minster, Tewkesbury Abbey, and Merton College, Oxford, and the church of Fairford, Gloucestershire, all have examples of such windows glowing with luminous coloured pictures, of figures in architectural canopies with borders of ivy and vine. Modern stained glass work is on the whole far inferior to that of the 13th to 15th Centuries, the secret of producing certain colour effects having been lost.

Stainer, Sir John, English musical composer and organist, born in London; professor of music at Oxford. Among his works are the oratorio *The Crucifixion* and two sacred cantatas, *The Daughter of Jarius* and *Mary Magdalen*. (1840-1901).

Staines, town of Middlesex, on the Thames, 6 m. S.E. of Windsor; has breweries, mustard-mills, and other factories; is developing as a residential town for London workers. Pop. 21,300.

Stainless Steel, an alloy of iron and chromium, with about 16 per cent. of chromium so as to resist corrosion. It was invented in Sheffield in 1913. The Brearley patented stainless steel contains over 12 per cent. of chromium and a small percentage of carbon. The Gordon process gives ordinary steel a coating of stainless steel which makes the whole absolutely rustless. Sheets of ordinary steel are given a coating of one-thousandth of an inch or less.

Stair, John Dalrymple, 1st Earl of, Scottish jurist and politician, called to the bar in 1672; got into trouble with Claverhouse, and was fined and imprisoned, but in 1687 was received into royal favour, became Lord Advocate, a Lord Ordinary in the Court of Session, and subsequently as Secretary of State for Scotland was mainly responsible for the massacre of Glencoe (q.v.); was created an earl in 1703, and later was active in support of the union of the English and Scottish Parliaments. (1648-1707).

Stair, John Dalrymple, 2nd Earl of, second son of preceding; entered the army at 19, and fought at Steinkirk; studied law for some time at Leyden, but went back to the army, and fought with distinction under Marlborough at Venlo, Ramillies, Oudenarde, the siege of Lille and at Malplaquet; was active in support of the Hanoverian succession, and subsequently in the reigns of George I. and II. filled important diplomatic and military posts. (1673-1747).

Stalactite, a cone of carbonate of lime the roof of a cavern, and formed by the dripping of water charged with the carbonate from the rock above; the cone formed on the floor by the dripping from a stalactite above is called a stalagmite.

Stalin, Josef Vissarionovich (Djugashvili), Russian statesman, son of a peasant shoemaker, born in Georgia, intended for the Church and trained at a theological college; became a revolutionary propagandist, was arrested in 1902 and exiled to Siberia in 1903, a fate which he suffered again in 1909, having in the meantime escaped, his final period of political activity in Northern Siberia from 1913 to 1917.

He was one of the leaders of the plot to overthrow Kerensky in Nov., 1917, fought in various campaigns in 1919 and 1920, became secretary of the Russian Communist Party and Commissar for Outer Nationalities. When Lenin died he stepped into his place, expelled from the party any who opposed him, even the



STALIN

redoubtable Trotsky, whose banishment he eventually secured, and finally became autocratic dictator of Soviet Russia. He is the author of a book on *Leninism*. The name "Stalin," originally a nickname, means "man of steel." (1879-).

Stalinabad (formerly Dushanbe), but renamed in honour of Stalin, the capital of Tajikistan S.S.R., Central Asia. Pop. 60,000.

Stalingrad (formerly Tsaritsyn), a town of Russia, on the Volga, 110 m. S.W. of Kamishin. It is a transshipment station, and has important manufactures of metalware, tractors, machinery, and wool. Pop. 388,000.

Stalybridge, manufacturing town of Cheshire, England, on both banks of the Tame, 7½ m. E. of Manchester; is of modern growth, and noted for its large cotton-yarn and calico factories, iron-foundries, and machine-shops. Pop. 24,000.

Stamboul, or **Stambul**, the city of Turkey in Europe formerly known as Constantinople. See *Istanbul*.

Stamen, the male or pollen-bearing organ of a flower. The stamens may equal the petals in number and alternate with them, or be twice as numerous and arranged in a circle. They rise from the space between the base of the petals and that of the ovary; and they may be on different flowers or plants from the pistils.

Stamford, town in Lincolnshire, England, on the Northamptonshire and Rutland borders, 12 m. W.N.W. of Peterborough; was one of the five Danish burghs. Near by is Burghley House, a noble specimen of Renaissance architecture. The district is mainly agricultural, but the town has breweries and a coachbuilding industry. Pop. 9,350.

Stamford Bridge, a village of the Derwent, 9½ m. N.E. of York; the scene of Harold's victory over the invading forces of Harold Godwinson on Sept. 25, 1066.

Stamfordham, Sir Arthur George, came under the notice of Queen Victoria in the Zululand campaign, when the French Prince Imperial served under him. In 1895 he became her Private Secretary, and after her death filled the same office for the future King George V., remaining in his service after his accession. He became a peer in 1911. (1849-1931).

Stammering, hesitation in speech or inability to pronounce certain syllables or endless repetition of the same syllable or word. It does not indicate any defect of the brain or speech organs, but is rather nervous in origin, or a functional disorder due to faulty co-ordination between the parts concerned with speech. It may be due to confusion, shyness, or actual fear, especially in childhood.

Stamp, Josiah Charles, 1st Baron, English economist. He entered the Inland Revenue department in 1896, becoming Assistant Secretary in 1916. Secretary and director, Nobel Industries, 1919-1926; director, Imperial Chemical Industries, 1927-28. He is a director of the Bank of England, and since 1927 has been chairman of the London, Midland and Scottish Railway. He was made a peer in 1938. Frequently examiner in Economics for universities of Cambridge, London, Edinburgh, and Glasgow; he has served on numerous commissions and courts of inquiry, and is author of several works on Economics. (1880-1941).

Stamp Act, a measure passed by Grenville's Ministry in 1765 enacting that all legal documents used in the colonies should bear Government

stamps. The Americans resisted on the ground that taxation without representation in Parliament was unjust. Riots broke out, and the stamped paper was carefully avoided. In 1766 Pitt championed the cause of the colonists, and largely through his eloquence Government in that year was induced to repeal the Act, which, however, was one of the grievances that led to the War of Independence.

Stamp Duties, duties imposed, mainly for revenue purposes, on various kinds of legal documents or instruments, and collected by means of impressed or adhesive stamps. The law governing the duties payable and the methods of payment is contained in the Stamp Act, 1891, and various subsequent Finance Acts. Duties range from 2d. on a receipt (q.v.) or 6d. on a simple contract or bill of lading up to a 10s. deed stamp or an ad valorem stamp, which may run to any amount, on a share transfer or an issue of capital by a joint stock company. Unless forbidden by statute any instrument may be stamped after execution on payment of a penalty of £10 and the duty, together with interest.

Stamp Mill, or **Stamping Mill**, an apparatus for crushing ores by means of a pestle or series of pestles operated by machinery; or an oil-crushing mill similarly constructed. Usually, as in the Cornish "tin stampers," the stampers, which are very heavy, are arranged in a row and lifted by cams on a revolving shaft turned by water-power. The stampers descend in turn on to the ore which is lying in chambers so constructed that the refined ore escapes while a constant stream of water carries away the slime.

Standards Department, a department of the Board of Trade, which secures uniformity in weights and measures. It has the custody of the legal standards to which they should conform, and its inspectors examine the weights and measures of traders to see that the law regarding them is observed.

Standard Time. Until the latter part of the 19th Century each nation generally used the time of its own capital, but since 1883 the system of Standard Time Zones has been gradually accepted, and now Standard Time differing from that of Greenwich by an integral number of hours, either fast or slow, is used almost throughout the world. Time 1 hour fast on Greenwich, known as Mid-European time, is used in Scandinavia, Germany, Italy, and many other countries; United States time varies between 4 and 8 hours slow on Greenwich, according to the region of the country concerned.

Standing Order, in British parliamentary procedure a resolution of either House made for the guidance and order of its proceedings. These orders are conventions of the Constitution framed like written laws, but either House can suspend them at will. Every corporate body or assemblage of persons has the power to make its own standing orders for the regulation of its proceedings.

Standing Stones, rude unhewn stones standing singly or in groups in various parts of the world, and erected at remote periods as burial-places or with some prehistoric religious significance. They sometimes take the form of circles or avenues. Examples are those at Stonehenge, and at Carnac in Brittany.

Standish, Father, of Lancashire birth; served in the Netherlands as a soldier, went to America in the *Mayflower* in 1620, and was helpful to the colony in its relations both with the Indians and the mother-country;

U.S.

is the hero of a poem by Longfellow. (c. 1694-1658).

Stane Street (from "Stone Street"), a name applied to several Roman roads in England, but chiefly to one in Sussex and Surrey running from Chichester to London, and still traceable for a great part of the way.

Stanford, Sir Charles Villiers, Irish composer, born in Dublin, where from 1873 to 1892 he was organist of Trinity College. From 1889 he was professor of composition at the Royal College of Music, and from 1887 of Music at Cambridge. His operas include:—*The Velled Prophet of Khorassan*, performed 1881; *Shamus O'Brien*, 1896; *The Travelling Companion*, 1926. (1852-1924).

Stanislawow, southernmost county of Rumania (Area, 6,590 sq. m.; pop. 1,480,000); also its chief town, 75 m. S.W. of Lwów, with tanneries, dyeworks, and a trade in agricultural produce. Pop. 60,000.

Stanley, urban district of county Durham, England, 6 m. N.W. of Chester-le-Street. It is a coal-mining district. Pop. 52,000. (2) urban district of the W. Riding of Yorkshire, 2 m. N.E. of Wakefield. Coal-mining is carried on. Pop. 15,800.

Stanley, Arthur Penrhyn, English ecclesiastic and historian, born at Alderley, Cheshire; published his *Life of Dr. Arnold* in 1844, his *Sinai and Palestine* in 1855, after a visit to the East; held a professorship of Ecclesiastical History in Oxford for a time, and published lectures on the Eastern Church, the Jewish Church, the Athanasian Creed, and the Church of Scotland; became Dean of Westminster in 1863; wrote *Historical Monuments of Westminster Abbey and Christian Institutions*. (1815-1881).

Stanley, Sir Henry Morton, British explorer, born at Denbigh, Wales; served in America in the Confederate army; became a newspaper correspondent, and was ordered by the *New York Herald* to go and "find Livingstone." After many an impediment he did so, on Nov. 10, 1871, at Ujiji, Lake Tanganyika, and after accompanying him in explorations, returned to England. In 1874 he set out again at the head of an expedition across Central Africa, traversing the lakes and tracing the course of the Congo, returning home to publish *Congo and its Free State* and *In Darkest Africa*; made his last visit to Africa in 1887 at the head of the Emin Pasha relief expedition, and discovered Mt. Ruwenzori and the Albert Edward Nyanza. (1841-1904).

Stannaries, Court of the, an ancient English court for the administration of justice amongst those connected with the tin mines of Cornwall and Devon; the heir to the British throne holds the title of Lord Warden of the Stannaries; and his vice-warden presides over the courts. Up to 1752 representative assemblies of the miners, called Stannary Parliaments, were held. Appeals from the Stannary Courts may be made to the higher courts of England.

Staple, Merchants of the, merchants who in the Middle Ages traded in such commodities as wool, tin, and leather. They enjoyed a monopoly of purchase and export, and all such goods imported or exported had to pass through their hands at the officially appointed "Staple towns," such as London, Norwich, and Bristol, where duties were collected and goods assessed.

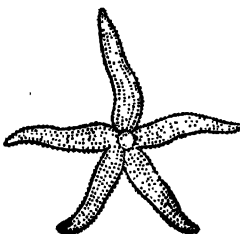
Starch, a carbohydrate found in most plants, especially rice, cereals, and potatoes. It is a foodstuff of great importance to man and animals, being changed into sugar by the operation of certain

enzymes and digestive juices. It is also used as an adhesive, and in industry for stiffening clothing, sizing textiles, etc.

Star-Chamber, a court which originated in the reign of Edward III., and consisted practically of the king's ordinary council, dealing with such cases as fell outside the jurisdiction of the Court of Chancery. It was revived and remodelled by Henry VII., and since in that age the ordinary courts were often intimidated by powerful offenders, often rendered much service to the cause of justice. By the reign of James I., it had acquired jurisdiction as a criminal court over a great variety of misdemeanours—perjury, riots, conspiracy, high treason, etc. In the reign of Charles I. it became an instrument of the grossest tyranny, supporting the king in his absolutist claims, and in 1641 was swept away by the Long Parliament.

Starfish,

name for any sea animal of the star-shaped family Asteridae of the order Echinodermata. The common starfish, *Asterias rubens*, which is familiar off British coasts, has five or more lobes radiating from a central disc, and containing prolongations of the viscera. The star-fish is voracious, and very destructive to fishermen's bait.



STARFISH

Starhemberg, Ernst Rudiger Camillo Marie, Prince, was born at Eberding Castle; in 1934 the Heimwehr, under his command, with the connivance of Dollfuss, suppressed Socialism in Austria by a sanguinary coup d'état. He became Vice-Chancellor and tried to establish a Fascist Austria in close touch with Italy but lost all power in 1938 when he was forced by Schuschnigg to resign and his Heimwehr was disbanded (1899).

Starling (Sturnidae), a family of birds found in the old world only, where they are very common. They are characterised by their gait on the ground, which consists of walking instead of hopping as do most other birds, and by the fact that in their first year their plumage is streaked. The Common Starling (*Sturnus vulgaris*), a common English bird, is small and glossy black with metallic undertints and brown legs and feet, buff wing-tips and yellowish bill. Its length is 8 to 9 in., and it generally haunts fields and meadows, though it is frequently seen in urban districts where it is credited with damage to mortar, presumably in its search for insects, its chief food. In rural districts it can be destructive to fruit.

Star-of-Bethlehem, the popular name of the lilaceous plants of the genus *Ornithogalum*, a number of species of which are grown in Britain as hardy or greenhouse plants, the most important species being *Ornithogalum umbellatum*, a hardy plant bearing star-shaped white flowers. It is a common English garden

of India, the Most Exalted Order of the, instituted in 1851; Grand Master, the Viceroy of India; ribbon, light blue with white edges; motto, "Heaven's Light our Guide"; G.C.S.I., Knight Grand Commander; K.C.S.I., Knight Commander; C.S.I., Companion.

Stars, general name for all celestial bodies, other than comets, including the sun and planets as well as those commonly

called stars. They are at enormous distances from the earth; they are of unequal brightness, and are classified as of the 1st, 2nd, down to the 16th magnitude. Those visible to the naked eye include stars from the 1st to the 6th magnitude, and number about 4,500, while several million are visible by the telescope; of those in the Milky Way (q.v.) alone there may be from 50 to 100 millions. They have from ancient date been grouped into constellations of the northern and the southern hemispheres and of the zodiac (q.v.). Recent astronomical theories suggest that the Milky Way, or Galaxy, is a "self-contained" system of stars.

Stars and Stripes, the flag of the United States, the 13 stripes representing the original States of the Union, the 48 stars the total number of States.

State, the personification of the inhabitants of a defined territory as a single political unit. Until the Middle Ages it was based on territory rather than race, but since the Renaissance it has tended towards the form of the nation-state, comprising all or as many as possible of the human beings sharing a common language, culture, and tradition. With increasing civilisation the state occupies more and more of the functions previously left to the enterprise of private citizens, and political science is largely concerned with the extent to which interference by the state with the liberty of the subject is permissible. This depends largely on the form of the state; thus, in modern totalitarian or Fascist states, that interference is much greater than in a democratic state. See also Sovereignty.

Staten Island, an island belonging to the borough of Richmond, part of the city of New York; is a picturesque island (14 m. long), separated from Long I. by the Narrows and from New Jersey by the Kill van Kull and Staten I. Sound; it includes a number of residential villages. Pop. 158,000.

States-General, name given to an assembly of the representatives of the three estates of nobles, clergy, and bourgeoisie, or the *Tiers Etat* as it was called in France prior to the Revolution of 1789; first convoked in 1302 by Philip IV. They dealt chiefly with taxation, and had no legislative power; they were convoked by Louis XIII. in 1614, and dismissed for looking into finance, and not convoked again till the last time in 1789. The same name was borne by the sovereign assembly of the Netherlands from 1593 to the French Revolution, and is still applied to the Netherlands legislature.

Statics, that branch of mechanics which deals with bodies at rest or in uniform motion, with forces in equilibrium and with similar problems. The principal elementary theorems in statics are those of the triangle, the parallelogram and the polygon of forces according to which any three or more forces acting in different directions can be represented by proportionate straight lines and the resultant force found.

Stationers' Hall, the hall of the old Company of London Stationers, incorporated in 1557, who till the Copyright Act of 1643 enjoyed the sole right of having registered at their offices every pamphlet, book, and ballad published in the kingdom. Although no longer compulsory, the practice of entering books at Stationers' Hall was generally continued until the Copyright Act of 1909 made other provision for securing copyright.

Stationery Office, the department responsible for the preparation, publication and sale of all official reports, statistics, and other matter

issued on behalf of the British Government, including the daily report of Parliamentary debates known as *Hansard* from its original publisher. It also manufactures and supplies all kinds of stationery for the use of Government offices.

Stations of the Cross, incidents in the passage of Jesus from the hall of judgment to Calvary; in Roman Catholic and some Anglican churches pictures of them—14 in number—are frequently placed for devotional purposes.

Statistics, tabulated summaries of information on such matters as the number, age and occupation of the population of a country, its trade, commerce, health, etc. The preparation of such information is an important part of the work of all modern governments, and in Great Britain the Stationery Office issues year by year large numbers of collections and reports in which they are contained, a useful summary of the most important being the *Statistical Abstract for the United Kingdom*. Similar collections are issued by most local government authorities, public corporations, and so forth, covering their own special fields of work.

Statius, Publius Papinius, Latin poet, born at Naples; lived at Rome at the court of Domitian, but retired to his native place after defeat in a competition. His chief work is the *Thebais*, an epic in 12 books, embodying the legends connected with the war against Thebes. A collection of short pieces named *Silvae* is also extant. (61-96).

Statute, an enactment of the legislature, or written law; in Great Britain, an Act of Parliament made by the Sovereign, by and with the advice of Parliament. The "Statute Book" is the complete body of legal enactments. The Statutes of a corporation or body of persons are, similarly, the permanent rules governing its operations, limiting its competence, and defining its purposes.

Statute Law, law based on or contained in Acts of Parliament, as opposed to Common Law, or the law based on tradition, precedent, and judicial decisions of the past. All Statutes remain in force until they are repealed by the authority that made them, though in some cases they are allowed, when no longer in accord with the spirit of the times, to fall into desuetude.

Stavanger, port of Norway, on a fiord of Bergen; is of modern aspect, having been largely rebuilt; has two excellent harbours, a fine 11th Century Gothic cathedral, and important fisheries and manufactures. Pop. 47,000.

Stave, in music, a term applied to the wooden, five horizontal and parallel lines upon which the notes or rests are written. A great stave has 11 lines, formed by the ordinary treble and bass staves, connected by a dotted line on which Middle C is written.

Staveley, village of Derbyshire, England, situated on an eminence close to the valley of the Rother R., 4½ m. from Chesterfield. The parish is rich in coal and iron; there are large iron-works, and a manufacture of brushes. Pop. 17,000.

Stead, William Thomas, British journalist; after editing a Durham paper, succeeded Morley in the editorship of the *Pall Mall Gazette* in 1883; he made the paper famous for its sensational news stories, and his revelations regarding the traffic in girls between England and the Continent led to the Criminal Law Amendment Act. Founded the *Review of Reviews* in 1890; wrote among other books, *If Christ Came to Chicago*, and *Satan's Invisible World*. He was drowned when the *Titanic* sank, and having been a convinced Spiritualist, was believed by many

to have communicated from the after-life to his fellow-believers. (1849-1912).

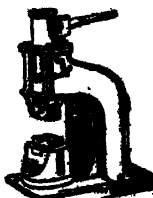
Steam is water vapour at a temperature of 100°C. or above. It is a colourless, invisible gas; the so-called "steam" appearing as a cloud at the spout of a kettle is really a cloud of minute droplets of liquid water formed by the condensation of true steam. It is used as a source of power (see *Steam Engines*), as a means of conveying heat from one place to another, and as a raw material in many chemical operations, e.g., the manufacture of hydrogen. Superheated steam is steam whose temperature has been raised to the required degree, as for example by passing it through red-hot tubes. At normal pressure (760 mm. of mercury) steam condenses to liquid water at 100°C. At increased pressure, however, it may be so condensed even at higher temperatures; in other words, the boiling-point of water is raised. Above 374°C. steam cannot be condensed to liquid water by any applied pressure, however great; hence 374°C. is described as the critical temperature of steam.

Steam Engines, machines which enable heat energy to be converted into mechanical energy, using steam as the working substance. Steam engines are of two chief types: (a) the cylinder and piston type, and (b) the steam turbine. For the latter see *Turbines*.

In the former type of steam engine, steam at high pressure flows from a boiler into a cylinder containing a movable piston. The steam forces the piston back along the cylinder. When the piston has moved a short distance the steam supply is cut off, but the steam which is already in the cylinder continues to expand, and to exert a force on the piston until the latter reaches the end of its stroke. That end of the cylinder which contains the steam is now connected to the exhaust port, through which the steam can escape, and at the same time steam from the boiler is admitted to the other end of the cylinder to force the piston back to its initial position. The other end of the cylinder is now connected to the exhaust port, and the cycle of changes is repeated over and over again.

If the steam leaves an engine at a given temperature the efficiency of the machine can be increased by increasing the temperature at which steam is supplied to it. It is therefore an advantage to use steam at the highest possible temperature. This involves using steam at high pressure, and the use of superheated steam (see *Steam*). Moreover, the steam which passes out of the engine, after having done its work, should be at the lowest possible temperature. Hence, when practicable, a condenser is fitted at the exhaust end of the engine. In the condenser the steam is cooled by means of cold water, and condenses to form water, which is removed by a pump.

Steam Power is usually applied through the medium of steam engines (q.v.), but is also used in steam hammers and other devices. In a simple steam hammer, the hammer block is raised by admitting steam under pressure into a cylinder, the block being attached to the piston-rod. When the steam is allowed to escape through an adjustable valve, the piston, with its block, falls under the force of gravity. By manipulation of the valve, the hammer may be made to descend as far and as fast as desired. By admitting steam to another cylinder on the same



STEAM HAMMER

ward journey, the force of gravity can be aided, and the magnitude of the blow increased.

Stearic Acid, a fatty acid which occurs in most fats and oils, in some plants, and in some waxes. When pure, it is waxy and colourless, insoluble in water, and forms salts with alkalis. It is liberated from palmitic acid by fractional precipitation with magnesium acetate.

Stearin, commercial name for a mixture of stearic and palmitic acids, which, with paraffin, is used for making candles. Also the name given to glycerides of stearic acid.

Steatite, or Soapstone, a magnesium silicate, or talc, with a soapy surface, found in serpentine rock generally in association with magnetite and chromite. It is used in porcelain manufacture, and sometimes for carved ornaments.

Steel, Henry Wickham, British journalist; served as correspondent of *The Times* at Berlin, Rome, and Vienna, becoming foreign editor of the paper in 1914 and its editor from 1919 to 1922, after which he became proprietor and editor of the *Review of Reviews*. His books include *Through Thirty Years* (1924); *The Antecedents of Post-War Europe* (1932); and a number of other volumes on current events and foreign affairs. (1871-).

Steel, iron containing a small quantity of carbon; a small change in the carbon content gives rise to a large change in the properties of the steel, which also depend upon the method by which it is cooled. Sudden cooling or chilling produces a hard, brittle metal, whilst if it is slowly cooled, or annealed, soft ductile steel is produced. Properties intermediate to the two extremes may be obtained by tempering the steel. Special steels for certain purposes are made containing manganese, chromium, tungsten or nickel. See also *Stainless Steel*.

Steele, Sir Richard, English essayist, born at Dublin; enlisted (1694) as a cadet in the Life Guards; in the following year received an ensigncy in the Coldstream Guards, and continued in the army till 1706, by which time he had attained the rank of a captain; while still a soldier, he wrote *The Christian Hero* and several comedies; appointed Gazetteer (1707), and for some two years was in the private service of the Prince Consort, George of Denmark; began in 1709 to issue the famous tri-weekly paper, the *Tatler*, where his essays constituted a fresh departure in literature. Aided by Addison, he developed this form of essay in the *Spectator* (q.v.) and *Guardian*; sat in Parliament as a Whig, and in George I.'s reign received various minor court appointments. (1672-1729).

Steelyard, a balance or weighing machine, consisting of a lever

with unequal arms. In the "Roman" steelyard the article is suspended from the shorter arm, while a weight slides along the longer arm until equilibrium is reached. The "Danish" steelyard is the inverse of the "Roman"; the weight and load are suspended at the respective ends, and a suspension loop is shifted along the beam till equilibrium is secured.



ROMAN STEELYARD

Steen, Jan, Dutch painter, born in Leyden; was a genre painter of the style of Rembrandt, and his paintings display severity with sympathy and a playful humour. (1636-1678).

Steenbok (Steinhok), a genus (*Nanotragus*) of South African antelopes, including the tiny *Nanotragus*

pygmaeus, the smallest of the deer family, sometimes only 10 in. in height. The commonest species, *Nanotragus campestris*, is a swift, reddish animal about 2 ft. in height, with short, forward-curving horns.

Steeplechase, a race across a stretch of country which involves jumping over ditches, hedges, walls or other obstacles. The name probably originates from the fact that church steeples offered the most conspicuous landmarks. The name is extended to cover horse races in which similar obstacles are encountered on the course. The principal British steeplechase is the Grand National, run annually at Aintree, Liverpool. Racehorse steeplechasing is controlled by the National Hunt Committee.

Stefansson, Vilhjalmur, explorer. Of Icelandic parentage, he was born in Canada and educated in the United States; after expeditions in Iceland and Alaska, he travelled N. in 1908 and discovered the so-called "blond Eskimos"; between 1913 and 1918 he was again in the Arctic, discovering Prince Patrick Land. In 1924 he undertook an expedition in Central Australia. He has issued accounts of his travels, among them *Hunters of the Great North*. (1879-).

Stegosaurus, a species of dinosaur found in the upper

Jurassic beds of N. America; some 30 ft. in length, its back was covered with heavy bony plates, and its head was remarkably small in comparison with its unwieldy body and heavy



STEGOSAURUS

tall: like the Brontosaurus, it was herbivorous. It is included in the Sub-Order Stegosauria or Armoured (plated) Dinosaurs.

Stein, Sir (Marc) Aurel, archaeologist, of Hungarian parentage, born at Budapest. From 1888 to 1899 he was Principal of the Oriental College, Lahore; thereafter he undertook exploring expeditions in Turkestan, W. China and Persia, making artistic and archaeological discoveries of the highest importance, on which he has published many books and essays, including *Innmost Asia* and *On Ancient Central-Asian Tracks*. (1862-).

Stella, the name given by Swift to Hester Johnson, the daughter of a lady-companion of Lady Gifford, the sister of Sir William Temple, to whom he wrote the *Journal to Stella*, which has been called "the most faithful and fascinating diary the world has ever seen." (1681-1728).

Stellenbosch, a town of Cape Colony, South Africa, 31 m. E. of Cape Town; one of the earliest European settlements in the Colony. It has a university, formerly Victoria College, and schools of agriculture and mining. Pop. c. 13,000.

Stem, in botany, the herbaceous or woody axis of a tree or plant; usually erect, but sometimes creeping, climbing or procumbent. It is the channel of communication between roots and leaves, and one of its functions is to raise the latter, and the flowers, into the sunlight and fresh air.

Stencilling, a process of printing on designs. The characters are cut out in thin plates of metal or cardboard, which are then laid on the surface to be imprinted, and the colour, by means of a brush, rubbed through the cut spaces.

Stentor, a Greek herald who accompanied the Greeks in the Trojan War, and whom Homer describes as "the great-hearted, brazen-voiced Stentor, whose

shout was as loud as that of fifty other men"; hence the epithet *stentorian*.

Stephen, king of England from 1135 to 1154, nephew of Henry I., his mother being Adela, daughter of William I.; acquired French possessions through the favour of his uncle and by his marriage; in 1137 swore fealty to his cousin Matilda, daughter of Henry I., as his future sovereign, but on the death of his uncle usurped the throne, an action leading to a violent civil war, which brought the country into a state of anarchy. The Scots invaded on behalf of Matilda, but were beaten back at Northallerton (the Battle of the Standard, 1138). Foreign mercenaries introduced by the king served to embitter the struggle; the clergy, despoiled by the king, turned against him, and in the absence of a strong central authority the barons oppressed the people and fought with one another. In 1141 Matilda won the battle of Lincoln and for a few months ruled the country, but, "as much too harsh as Stephen was too lenient," she rapidly became unpopular, and Stephen was soon again in the ascendant. The successes of Henry, son of Matilda, led in 1153 to the treaty of Wallingford, by which it was arranged that Stephen should retain the crown for life, while Henry should be his heir. Both joined in suppressing the turbulent barons. (c. 1094-1154).

Stephen, the name of ten Popes: *S. I.*, Pope from 254 to 257, signalized by his zeal against the heresies of his time; *S. II.*, Pope in 752; *S. III.*, Pope from 752 to 757, in whose reign, under favour of Pápin le Bref, began the temporal power of the Popes; *S. IV.*, Pope from 768 to 772, sanctioned the worship of saints and images; *S. V.*, Pope from 816 to 817; *S. VI.*, Pope from 885 to 891, distinguished for his charity; *S. VII.*, Pope from 896 to 897, strangled after a reign of 18 months; *S. VIII.*, Pope from 929 to 931, entirely under the control of his mistresses; *S. IX.*, Pope from 939 to 942; *S. X.*, Pope from 1057 to 1058, vigorously opposed to the sale of benefices and the immorality of the clergy.

Stephen, *St.*, protomartyr of the Christian Church, who was stoned to death in A.D. 33. His death is a frequent subject of the old painters; when the saint himself is depicted, he is represented usually in a deacon's dress, bearing a stone in one hand and a palm-branch in the other, or both hands full of stones.

Stephenson, *George*, English inventor, born, the son of a poor colliery engineman, at Wylam, near Newcastle; worked in his youth as a cowherd and colliery fireman; in 1815 invented a safety lamp for miners, which brought him a public testimonial of £1,000; turned his attention to the application of steam to machinery, and thus constructed his first locomotive in 1814 for the colliery tram-road; superintended the construction of the Stockton and Darlington Railway (1821-1825), the Liverpool and Manchester Railway (1826-1829), over which he ran his locomotive, the "Rocket," at a maximum rate of 35 m. per hour; became principal engineer on many of the new railways. (1781-1848).

Stephenson, *Robert*, English engineer, son of preceding, born at Willington Quay; began in 1823 to assist his father, and after several years' engineering work in S. America assisted in the construction of the "Rocket," and as joint-engineer with his father of the London and Birmingham line was mainly responsible for its construction; he constructed the Britannia and Conway Tubular bridges, besides many others, including those over the Nile, St. Lawrence, etc.; entered Parliament in 1847. (1803-1859).

Stepney, metropolitan borough of London, adjoining the "City" on the E. There is a number of small industries, and extensive docks and wharves. It includes the distinctively Jewish quarter of Whitechapel. Pop. 208,060.

Steppes, the name given to the wide, treeless plains, barren except in spring, of the S.E. of Russia and S.W. of Siberia.

Stereochemistry, that branch of chemistry which studies the three-dimensional arrangement of atoms in molecules. Its foundations were laid by Pasteur, van't Hoff, and Le Bel, and more recently important advances were due to Sir W. J. Pope and his pupils. It is mostly concerned with the carbon compounds, and depends on the fact that the four valencies or combining bonds of a carbon atom are not in one plane, but are directed towards the corners of a tetrahedron imagined as surrounding the atom.

Stereoscope, a simple optical apparatus which, when two

photographs of an object taken from slightly different standpoints (so as to secure the appearance it presents to either eye singly) are placed under its twin magnifying lenses, presents to the eyes of the observer a single picture of the object standing out in natural relief.



STEREOSCOPE

Stereotype, a device for reproducing the original type has been broken up. It consists of a plate cast from a papier-mâché or plaster mould or matrix, on which is a facsimile of the page of type as set up by the compositor, from which impressions may be taken in the same way as with movable type.

Sterilization, in bacteriology, the killing of the spores of bacteria by dry or moist heat. Surgical instruments, glass apparatus, bedding, etc., are sterilized by dry heat in an oven, a temperature of 150° C. being maintained for about 30 minutes. Sterilization may also be effected by prolonged heating in boiling water. Milk is sterilized by "pasteurization," which is also a heating and cooling process. The word is used also of methods for incapacitating the mentally or physically unfit from propagation. In this sense sterilization by State or voluntary action is practised with the approval of the law in Germany, certain of the United States, and elsewhere, and a section of opinion is seeking its legalization in Great Britain.

Sterling, a term applied to the British coinage, denoting that it is in accordance with the established standard of purity, fineness and value. The word is a corruption of *Esterling*, a name applied to the Hansa merchants, who were "the first moneyers in England."

Sterne, *Laurence*, English humorist, born at Clonmel, Ireland; educated at Halifax and Cambridge, and took orders; in 1759 appeared the first two volumes of *Tristram Shandy*, and in 1767 the last two; in 1768 his *Sentimental Journey*, and in the interim his *Sermons*. (1713-1768).

Stethoscope, a medical instrument used to listen to the action of the heart and chest organs, invented by Dr. Laennec in France in 1816.

Stettin, town and river-port in Germany, capital of Pomerania, on both banks of the Oder, 30 m. from its entrance into the Baltic, and 60 m. N.W. of Berlin; lies contiguous to the smaller towns of Breslau, Grabow, and Sülchow; principal buildings

are the royal palace (16th Century) and two Gothic churches. The industries include ship-building, the manufacture of machinery and chemicals and bricks. By the Treaties after the World War Czechoslovakia was given certain rights in the use of wharves there. Pop. 271,000.

Stevenson, Robert, Scottish engineer, born at Glasgow; for 47 years was engineer to the Board of Lighthouses, and built as many as 23 lighthouses round the coast of Scotland, his most noted erection being that on the Bell Rock; introduced the catoptric system of illumination and other improvements; was also much employed as a consulting engineer in connection with bridge, harbour, canal and railway construction. (1772-1850).

Stevenson, Robert Louis Balfour, British son of the preceding, born at Edinburgh; turned from law to literature, and in 1878 appeared his first book, *An Inland Voyage*, quickly followed by *Travels with a Donkey, a Virginibus Puerisque, Familiar Studies*; with *Treasure Island* (1883) found a wider public as a writer of adventure and romance, and established himself permanently in the public favour with *Kidnapped* (1886). *The Master of Ballantrae*, Dr. R. L. STEVENSON *Jekyll and Mr. Hyde*, etc.



His versatility in letters was further revealed in his charming *A Child's Garden of Verses*, *Ballads*, *Memories and Portraits* and *A Foot-note to History* (on Samoan politics). In 1890 failing health induced him to make his home in the island of Samoa, where he wrote *The Bottle Imp*, *The Ebb Tide*, *The Wrecker*, and the unfinished *St. Ives*, all these being South Sea stories, and where he died. (1850-1894).

Stevenston, a parish on the shore of the Firth of Clyde, Ayrshire, Scotland, 2 m. S.E. of Ardrossan. Chemicals and munitions of war are manufactured. Pop. c. 11,000.

Steward, Lord High, in early times the highest officer of state in England, ranking next to the sovereign. Hereditary during many centuries, the office lapsed in the reign of Henry IV., and since has been revived only on special occasions, e.g., a coronation or a trial of a peer, at the termination of which the office is demitted, the Lord High Steward himself breaking in two his wand of office.

Stewart, Balfour, Scottish physicist, born at Edinburgh; became director at Kew Observatory, and professor of Natural Philosophy at Owens College, Manchester; made discoveries in radiant heat, and was one of the founders of spectrum analysis. (1828-1887).

Stewart, Dugald, Scottish philosopher, born at Edinburgh, where from 1785 he held the Moral Philosophy chair for 25 years, lecturing on a wide range of subjects connected with metaphysics and the science of mind. He wrote *Elements of the Philosophy of the Human Mind*, *Philosophical Essays*, etc. (1755-1828).

Stibnite, the most important natural source of antimony, of which it is the sulphide.

Stick-Insects (Phasmidae), a family of insects of the order Orthoptera, popularly so-called on account of their close resemblance in their natural surroundings to sticks, twigs, leaves, etc. By means of this mimicry (q.v.) they are enabled to remain unobserved by their foes. In most species the male has wings, the female none.

Stickleback, a sub-order (Gasterosteidae) of small generally fresh-water fish, deriving their popular



name from the spines which take the place of the dorsal fin. The common English species include the Three-spined Stickleback (*Gasterosteus aculeatus*) ranging from 2 to 3 in. long, the Ten-spined (*Gasterosteus pungitius*) and the Fifteen-spined (*Gasterosteus spinachia*), the last two being found on the coast as well. All the species are active, voracious, pugnacious and very destructive to the fry of other fishes. One peculiarity is their habit of building nests, the male taking a part in the attention to nest and eggs.

Stiff Neck, or Wry-neck, a form of muscular rheumatism caused by sitting in a draught or by exposure to wet. The neck muscles become very painful, and, to relax them the patient bends the head to the affected side, when they tend to become rigid. Torticollis or congenital stiff-neck is due to some defect of the sternomastoid muscle, generally through an injury at birth.

Stigand, English ecclesiastic, favourite of Edward the Confessor, who advanced him to the bishoprics of Elmham and Winchester and to the Archbishopric of Canterbury in 1052; his appointment was popularly regarded as uncanonical, and neither Harold nor William the Conqueror allowed him to perform the ceremony of coronation; through William's influence was deprived by the Pope of his office and condemned to imprisonment; d. 1072.

Stigma, the pistil of a plant to which situated at the upper end of the style. It is a glandular body, secretes a viscid matter, and varies greatly in form.

Stigmata, impressions of marks corresponding to the wounds received by Christ at His crucifixion, with which certain holy persons are said to have been supernaturally marked in memory of His. St. Francis of Assisi is the most famous case, but many others are recorded, including that of a Bavarian girl, Therese Neumann, in the 20th Century.

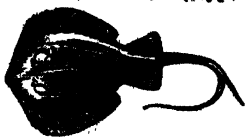
Stilicho, Flavius, a Roman general, son of a Vandal captain under the emperor Valens; on the death of Theodosius I., under whom he served, became the ruler of the West, and by his military abilities saved the Western Empire; defeated Alaric the Goth in a decisive battle and compelled him to retire from Italy, as he did another horde of invading barbarians afterwards; aspired to be master of the Roman empire, but was assassinated at Ravenna (c. 369-408).

Stilt, a long-legged wading bird of the plover family (*Himantopus candidus*), common in the marshy districts of the Rhone valley, and an occasional visitor to the Lincolnshire fen districts. It has white plumage with black wings and back.

Stilton, village of Huntingdonshire, England, which gives its name to an English cheese. It is on the Great North Road, 75 m. from London. Pop. 500.

Stimson, Henry Lewis, American jurist and statesman, born in New York. He was War Secretary in President Taft's cabinet from 1911 to 1913; served with the American forces in France during the World War; in 1927 he became Governor of the Philippines, and in 1929 Secretary of State under President Hoover. From 1936 he was one of the Judges of the Permanent Court of International Justice. (1867-

Sting Ray, a family (Trygonidae) of tremata) order, fish of the Ray (Hypotremata) order, having no dorsal fin and in most species a serrated spine on the tail capable of inflicting a severe wound. They are mostly tropical fish, only one species (*Trygon pastinaca*) being found in British waters in autumn.



STING RAY

Stinnes, Hugo, German industrialist and financier. Inheriting a fortune from his father, he was an official government contractor in the World War, and subsequently acquired control of the German coal, iron, and steel industries, besides several newspapers and shipping companies, making himself the most powerful man in the country. (1870-1924).

Stint, the name of certain of the smaller sandpipers, the best known in Britain being the Little Stint (*Eringa minuta*), a small wading bird no more than 6 in. in length, frequently seen as a winter visitor on the coast. It has reddish brown upper parts, a reddish brown breast and white belly.

Stipendiary Magistrate, a salaried whole-time magistrate who in London and certain large towns exercises the powers and performs the duties carried out in the provinces by Justices of the Peace. The term includes London Police-Court Magistrates and Borough Recorders. A stipendiary magistrate has all the powers that can be exercised by two or more Justices of the Peace at Petty Sessions.

Stipple, a mode of engraving by dots instead of lines, each dot when magnified showing a group of small ones.

Stirling, the county town of Stirling-shire, Scotland, one of its most ancient and historically interesting cities; on the Forth, 36 m. NW. of Edinburgh and 29 m. NE. of Glasgow; most prominent feature is the rocky castle hill, rising at the westward end of the town to a height of 420 ft., and crowned by the ancient castle; has manufactures of tartans, tweeds, carpets, etc., and a trade in agricultural and mining products. Pop. 22,600.

Stirlingshire, a midland county of Scotland, stretching E. and W. from Dumbarton (W.) to the Forth (E.); between Lanark (S.) and Perth (N.) it forms the border-land between the Lowlands and the Highlands; Loch Lomond skirts the western border, and on the northern Loch Katrine, stretching into Perthshire; Ben Lomond and lesser heights rise in the NW.; main streams are the Avon, Carron, Bannock, etc.; between Alloa and Stirling stretches the fertile and well-cultivated plain, "The Carse of Stirling"; in the W. lies a portion of the great western coal-field, from which coal and ironstone are largely extracted; principal towns are Stirling (q.v.), Falkirk, and Kilsyth; interesting remains of Antonine's Wall, from Forth to Clyde, still exist; within its borders were fought the battles of Bannockburn, Sanchieburn, Stirling Bridge, and Falkirk. Area 451 sq. m. Pop. 166,500.

Stirrup Cup, a "parting cup" given to guests when they are leaving and have their feet in the stirrups. The custom originated among the Scottish Highlanders.

Stitch, a pain in the side, occurring suddenly and often disappearing as suddenly. It is usually due to cramp in the muscles, and rubbing may give relief, but

it may be associated with pleurisy or other respiratory troubles.

Stitchwort (*Stellaria Holostea*), an English hedge-plant of the natural order Caryophyllaceae, so named because used in some places as a remedy for stitch in the side; its star-shaped flowers are white.

Stoat, an alternative name for the Ermine (q.v.) (*Putorius ermineus*), especially when clothed in its white winter fur, which is used by peers of the realm for their ceremonial robes. It is a bloodthirsty little beast, which preys mainly on rats, rabbits and water voles.



STITCHWORT

Stock, an abbreviation of stock gilly-flower (*Matthiola incana*), a herb native to Britain, from which has been derived garden stocks, of which there are many sub-varieties. The ten-weeks-stocks have been developed from *Matthiola annua*, a Mediterranean species. The best known are Brompton stocks, the variety of colours and tints of which is practically inexhaustible, both double-flowered and single-flowered heads of bloom being produced, all deliciously scented. The night-scented stock surpasses all in its pervasive perfume at night, though it is a rather insignificantly-flowered single stock.

Stockade, a defensive barrier of stakes or piles across a piece of water or around a building; or a barricade for entrenchments made of stout timbers planted in the ground so as to touch each other, and loopholed for rifle or machine-gun fire. It may have a ditch in front and a banquette in rear. The name is applied by engineers to a row of piles serving as a break-water or protection for an embankment.

Stock Exchange, buying and selling of Government stocks, company shares and various securities, carried on usually by the members of an associated body of brokers having certain rules and regulations. Such associations exist now in most of the important cities of the United Kingdom, and the commercial world generally (on the Continent they are known as *Bourses*). The London Stock Exchange, transacting business in handsome buildings in Capel Court, facing the Bank of England, was established in 1801, stock exchange transactions previous to then being carried on in a loose, ill-regulated fashion by private parties chiefly in and around Change Alley, the scene of the memorable South Sea Bubble (q.v.) speculation. Its members are either brokers, who buy and sell shares on commission on behalf of the public, or jobbers (q.v.). Provincial Stock Exchanges exist in Birmingham, Manchester, Liverpool, Bristol, and at Glasgow and Edinburgh in Scotland, and Belfast and Dublin in Ireland.

Stockholm, capital of Sweden; occupies a charming site on the channel leading out of Lake Mälar into a bay of the Baltic; stands partly on the mainland and partly on nine islands, communication between which is facilitated by handsome bridges and a busy service of boats. Its wooded and rocky islands, its winding waterways, peninsulas, crowded wharves, and outlook over the misted lake, with its handsome ancient and modern buildings, including the famous City Hall, perhaps the most successful architectural achievement of recent times, make it one of the most picturesque cities of Europe. Town L., the nucleus of the city is occupied by the royal palace, principal wharf, etc., while on Knights' L. stand the House of Parliament, law-courts, and other public buildings. Norrmalm, with the Academy

of Science, National Museum, Academy of Fine Arts, Hop Garden, etc., is the finest quarter of the city; manufactures embrace sugar, tobacco, silks, linen, and cotton, besides which there are flourishing ironworks and a busy export trade in iron and steel, oats, and tar, despite the hindrance caused by the ice during three or four months in winter. Pop. 544,980.

Stockport, town of Cheshire, England, now almost continuous with Manchester; occupies a site on the slopes of a narrow gorge overlooking the confluence of the Thame and Goyt (forming the Mersey), 37 m. E. of Liverpool; a handsome viaduct spans the river; has an old grammar-school, free library, technical school, etc.; during last century grew to be a busy centre of cotton manufactures, and has besides iron and brass foundries, machine-shops, and breweries. Pop. 131,900.

Stocks, or **PNiery**, a timber frame with holes for the wrists and feet, in which malefactors were exposed to the jeers and missiles of the mob. Used until mid-19th Century for petty offenders such as vagrants and tree-passers, it was previously a favourite means of punishing State criminals, and many famous men, such as Defoe, Prynne, and other Puritan pamphleteers, were pilloried. Stocks are still to be found in position on village greens in many parts of England.



STOCKS

Stocks and Shares. A share is a part of the capital of a company entitling its holder to receive a part of the profits of the company. The distinction between stocks and shares is that a share represents a minimum amount, as, say, £1 or £100, and cannot be divided, while stock may be held for any uneven or fractional amount. Shares are bought and sold through the Stock Exchange (*q.v.*), and are classed as *ordinary*, *preference*, *deferred*, etc., according to the nature of the right to dividends which they confer on their holder.

Stockton-on-Tees, town and port of co. Durham, England, on the Tees, 4 m. from its mouth; an iron bridge spanning the river connects it with Thornaby-on-Tees; steel and iron, ship-building, foundries, machine-shops are the principal industries; the first public passenger railway in England, opened in 1823, ran from hence to Darlington. Pop. 86,900.

Stoicism, the philosophical system instituted by the Athenian Zeno (336-264 B.C.), whose followers, called Stoics, derived their name from the *stoa* or portico in Athens where their master taught. The doctrines of the school were completely antagonistic to those of Epicurus, and among its disciples are to be reckoned some of the noblest spirits of the heathen world immediately before and after the advent of Christ. Its moral teaching was of a specially high order; the principle of morality was defined to be conformity to reason, and the duty of man to lie in the subduing of all passion and a composed submission to the will of the gods. It was popular in the Roman Empire, producing the two noble figures of the Emperor Marcus Aurelius (*q.v.*), whose *Meditations* have made its principles familiar to many later disciples, and the slave Epictetus, whose *Enchiridion* is one of the most remarkable in spirit of the extant works of classical

spens of Gray's *Elegy in a Country Churchyard*. The poet is buried there, and a monument to him, standing in 13 acres of adjoining ground, is the property of the National Trust. Pop. 1,900.

Stokes, Sir George Gabriel, British physicist, mathematician and physicist, born at Skreen, co. Sligo, Ireland; carried out many researches in physics, especially relating to hydrodynamics and wave motion, and the theory of light. He opened up new fields of investigation and supplied later experimenters with valuable hints. He was one of the foremost physicists of his day; president of the British Association at Exeter in 1889. (1819-1903).

Stoke-upon-Trent, city of Staffordshire, England, on the R. Trent, 15 m. S.E. of Crewe, the chief town of the area known as the Potteries. The city was formed in 1912 by the amalgamation of Stoke, Hanley, Burslem, and some adjoining smaller towns. It is of modern growth, and is engaged in the manufacture of all sorts of porcelain ware, earthenware, encaustic tiles, etc., besides which there are flourishing iron-works, machine-shops, and coal-mines. Pop. 273,100.

Stole, a long silken scarf worn by bishops and priests in the administration of the sacraments of the Church, and sometimes when preaching. Its colour varies according to the nature of the feast or fast that is being celebrated.

Stomach, in vertebrates, a membranous sac, formed by a dilatation of the alimentary canal, in which food is received and subjected to the processes of digestion. The human stomach is an elongated, curved pouch, from 10 to 12 in. long, and 4 to 5 in. in diameter at its widest part, lying almost immediately below the diaphragm. The food enters it through the oesophagus by the cardiac orifice, and, after having been acted on by the gastric juice, is passed on in a pulpy state through the pylorus into the small intestine. It is subject to ulceration, perforation, cancer, and other diseases.

Stone, a market town of Staffordshire, England, 7 m. S. of Stoke-upon-Trent. The Mersey canal runs through the town. Shoe-making is the principal industry; there are also breweries. Pop. 6,400.

Stone, Marcus, English draughtsman and Dickens' painter; illustrated several of Dickens' works, and painted numerous domestic and other scenes of extreme popularity in Victorian days. He exhibited at 68 consecutive Academy shows. R.A., 1837. Died at Kensington. (1840-1921).

Stone Age, a period in the history of man, when the discovery and utilization of metals, when the weapons of war and the chase and the implements of industry were made of stone, either roughly chipped and flaked, or at a higher stage polished; is divided into two periods, the Palæolithic (*q.v.*), or Early Stone Age, and Neolithic (*q.v.*) or New Stone Age.

Stonechat (*Saxicola torquata*), a small bird of the thrush family, brown above and buff below, with a collar of white, frequenting heaths and commons in Britain and various European countries. It is so named from its note resembling the clack of two pebbles. The name is often improperly applied to the wheatear and the whinchat.

Stone Circles, circles of standing stones (*q.v.*) found in various parts of Great Britain, N. Europe generally, and also in N. India. They were set up in most cases to mark the circular boundary of a place of burial. They have been erroneously ascribed in this country to the Druids. Most interesting of those still remaining in Britain are those at Stonehenge, in Wiltshire, with a circumference of 244 ft.

Stoke Poges, village in Buckinghamshire, England, 3 m. N. of Slough. Its churchyard is famous as the

Arebury, in Wiltshire, and **Stonehenge** (*q.v.*) **Stonecrop**, a popular name for the perennial plants of the natural order Crassulaceae, so named because they grow wild on stone walls and have dense crops of flowers, amongst the most important species being *Sedum acre*, common stonecrop, a summer-blooming yellow-flowered herb.

Stonehaven, a fishing port and county town of Kincardineshire, Scotland, situated at the entrance of Carron Water (dividing the town) into South Bay, 16 m. S.W. of Aberdeen; has a small harbour, and is chiefly engaged in herring and haddock fishing. Pop. 4,200.

Stonehenge, a large and well-preserved stone circle (*q.v.*) situated on Salisbury Plain, Wiltshire, 7 m. N. of Salisbury; "consists of two concentric circles, enclosing two ellipses"; the diameter of the space enclosed is 100 ft.; the stones are from 13 ft. to 28 ft. high; it is generally supposed to have some connexion with sun-worship. Since 1918 it has been a national possession.

Stonehouse, a mining village of Lancashire, Yorkshire, Scotland, on Avon Water, 8 m. S.E. of Hamilton. Pop. 3,700.

Stonyhurst, a Roman Catholic college in E. Lancashire, 10 m. N. of Blackburn; established in 1794 by certain Jesuit fathers who, after the suppression of their seminary at St. Omer, in France, by the Bourbons, took up their residence at Bruges and then at Liège, but fled thence to England during the Revolution. It is generally considered the most important of English Roman Catholic schools.

Stool-Ball, an old-time sport which is still a popular pastime; is a primitive form of cricket, the bat having a short handle and a short, broad blade, and the wicket being an upright stick with a square of wood at the top.

Stool of Repentance, an elevated seat in a Scottish Presbyterian church allotted in former times to those guilty of sins of the flesh, who were there exposed to public reprobation.

Stopes, *Marie Carmichael*, English propagator of birth control; born at Edinburgh. She was instructor in paleobotany at Manchester University from 1904, being the first woman to be appointed to its scientific staff. With her husband, H. V. Roe, she founded the Mothers' Clinic for Constructive Birth Control, and is the President of the Society for Constructive Birth Control and Racial Progress. She has written a novel, plays, and several works on love, marriage and contraception. (c. 1880-).

Storage Cells. See *Accumulators*.

Stork, the common name of three related families of birds, viz., the

Balenictipidae or Shoe-billed Storks, the *Scopidae* or Hammer-headed Storks and the *Ciconiidae* or true Storks. The most peculiar of all is the Whale-headed Stork or Shoe-bill (*Baleniceps rex*), the only representative of the family, a large bird with a tremendous head and a hooked bill adapted to ripping open its food, which consists of fish and reptiles. It is found only in the marshlands of the Upper Nile. There is also only one Hammer-head Stork, the *Scopus umbretta*, found in Madagascar



WHALE-HEADED STORK

car and Abyssinia. The true Storks include the Adjutant (*q.v.*), the Jabiru (*q.v.*), and also the White Stork (*Ciconia alba*), and the Black (*C. nigra*), occasionally seen in Britain. The White Stork is a tall, wading bird, resembling the heron, but stouter, with a larger bill and shorter toes. It often nests on house-tops; the plumage is a dirty white with black wing-coverts. The Black Stork, from Central and East Europe, has the upper surface black and lower parts white.

Stormont, the seat of the Northern Ireland Parliament, opened in 1932. It is adjacent to the boundary of the city of Belfast.

Storms, Cape of, name originally given Hope by the Portuguese navigator Bartholomew Diaz.

Storms, Magnetic, irregular variations in the earth's magnetic field, in the opinion of some connected with the spots on the sun's surface. They are frequently coincident with appearances of the Aurora Borealis (*q.v.*).

Stornoway, a fishing port, the capital of Lewis, Scotland, and the chief town in the Outer Hebrides. Pop. c. 4,000.

Storting (*i.e.*, great court), the national Parliament of Norway, composed of two chambers, the Lagting or Upper Chamber, and the Odelsting or Lower.

Stour, the name of several rivers of England; (1) a river forming part of the boundary of Essex and Suffolk, at the mouth of which is Harwich; (2) a river rising in Wiltshire, following S.W. into Dorset, thence S.E. into Hampshire, joining the Avon at Christchurch; (3) a river of Kent, which rises near Hythe, passes close to Canterbury, thence to Stourmouth, where it receives the Lesser Stour and flows to Sandwich and Pegwell Bay; (4) a river of Staffordshire and Worcestershire, which joins the Severn at Stourport.

Stourbridge, a manufacturing town in Worcestershire, England, on the R. Stour; its staple products are glass, pottery, and fireclay. Pop. 84,600.

Stourport-on-Severn, a town of Worcestershire, England, 22 m. from Birmingham, at the junction of the R. Stour and Severn. It has an important power station which supplies electricity to three counties. The manufactures include porcelain ware. Pop. 7,300.

Stow, John, English antiquary, born in London; by profession a tailor; wrote several works on antiquities, the chief and most valuable being his *Survey of London and Westminster*. He ended his days in poverty. (1525-1605).

Stowe, Harriet Beecher, American author, whose fame rests on one book, *Uncle Tom's Cabin*, a novel that did a great deal to awaken American public opinion to the evils of the slave trade in the southern cotton plantations. (1811-1896).

Stowmarket, town of East Suffolk, England, 12 m. N. of Ipswich on the R. Gipping. It has a corn exchange, chemical works, motor works, and a trade in cattle. Pop. 8,400.

Stow-on-the-Wold, market town of Gloucestershire, England, on the Fosse Way, 36 m. N.E. of Gloucester. The town was the scene of conflicts during the Civil War of 1642-1645. Pop. 1,390.

Strabane, a market town of co. Tyrone, Ireland, 102 m. W. of Belfast, on the R. Mourne. Pop. 5,300.

Strabo, Ammianus, in Ptolemy; Strabo, an ancient geographer, born at Ammaia, in Pontus; flourished in the reign of Augustus, and the early part of

that of Thucydides; lived some years in Rome, and travelled much in various countries; wrote a history in 43 books, all lost, and a work on geography, in 17 books, which has come down to us almost complete. The work is in general not descriptive; it comprehends principally important political events in connection with the countries visited, with a notice of their illustrious men, or whatever seemed to him characteristic in them or was of interest to himself; born about 63 B.C.

Strachey, G. H. Lytton, British author and biographer of Queen Victoria, for which he is perhaps best remembered. *Eminent Victorians* and *Elizabeth and Essex* are other well-known books of his. (1860-1932).

Strachey, John St. Lee, British man of letters; born in 1896 he edited the *Cornhill Magazine*, and in 1897 became editor of the *Spectator*; was author of several books on social and religious questions. (1860-1927).

Stradivari, Antonio, Italian musician. Born in Cremona, best studied under Amati, and is famous as a maker of "Stradivarius" violins, specimens of which have in recent years changed hands for as much as £3,000. (1644-1730).

Strafford, Thomas Wentworth, Earl of, English statesman, born in London; after some months' travel on the Continent entered Parliament in 1614, but took no active part in affairs till 1621. He took sides at first with the party for freedom, but in 1622 felt compelled to side with the king, with the result that he acquired greater and greater influence as his counsellor. His policy, which he called "Thorough," was to establish a strong Government with the king at the head, and to put down with a firm hand all opposition to the royal authority. Appointed Lord-Deputy in Ireland in 1633, he did all he could to increase the royal resources, and was at length, in 1640, exalted to the Lord-Lieutenancy, being at the same time created Earl of Strafford. He had risen by this time to be the chief adviser of the king, and was held responsible for his arbitrary policy. After the meeting of the Long Parliament he was impeached for high treason; the impeachment seemed likely to fail, when a Bill of Attainder was produced. To this the king refused his assent, but he had to yield to the excitement his refusal produced, and as the result Strafford was beheaded on Tower Hill. (1593-1641).



EARL OF STRAFFORD

Straits Settlements, British, Crown Colony in Malaya, comprising Singapore (with Christmas I. and the Cocos Is.), Penang, Malacca and Labuan. The bulk of the inhabitants are Chinese; about a quarter are Malays, the rest mainly Indians, Europeans or Eurasians. Rubber, coconuts, rice, pineapples, and other fruits are grown, and in addition to these, tin, copra, motor spirit and areca nuts are exported. Singapore is an important British naval and air base. Raffles College at Singapore is an educational institution of university standard. The total area of the Settlements is 1,356 sq. m. Pop. 1,349,000.

Stralsund, a seaport of N. Prussia, on the island of Rügen, in the Baltic, and 66 m. NW. of Stettin, forms of itself an inlet, and is connected with the mainland (Pomerania) by bridges; is a quaint old town, dating back to the 13th Century; figured often in the wars of Prussia. It has manufactures of sugar, leather, and oil, and a considerable shipping. Pop. 44,000.

Strang, William, British artist and etcher. Born at Dumbarton, he came to London as a boy of 16 and studied under Legros at the Slade School, where his drawings attracted attention. Portraits and imaginative book illustrations were his chief work. (1859-1921).

Strangford, seaport of co. Down, N. Ireland, situated immediately opposite Portlerry on the western shore of Strangford Narrows, and at the mouth of Strangford Lough, a large inlet of the sea, with many small islands, extending between Downpatrick and Newtownards.

Stranraer, a royal burgh and seaport, finely situated at the southern extremity of Loch Ryan, 73 m. W. of Dumfries; has an interesting 16th-Century castle and a handsome town hall and court-house. There is some shipping in agricultural produce, and steamers ply daily between Stranraer and Larne, in Ireland. Pop. 6,400.

Straparola, Giovanni Francesco, Italian author; compiled the collection, *Placochi Notti*, after the style of Boccaccio's *Decameron*, partly borrowed and partly genuine folk-stories, which ranks as an Italian classic and has been translated into various European languages; flourished in the 16th Century.

Strasbourg, city of dept. Bas-Rhin, France, and its chief town, on the Ill, a few miles above its confluence with the Rhine, 89 m. N. of Basel; is a city of Gothic origin, and contains a magnificent Gothic cathedral (11th Century) with a famous astronomical clock, an imperial palace, and university; manufactures embrace leather, cutlery, machinery and jewellery; Strasbourg pies are famous among epicures; there is also a busy transit trade. A free town of the German empire in the 13th Century, it fell into the hands of the French in 1681, and was captured by the Germans, after a seven weeks' siege, on Sept. 28, 1870, after which it became the capital of German Alsace-Lorraine, until it was restored to France in 1919 by the Versailles Treaty. Pop. 193,000.

Strategy, the science, as distinguished from the art, of war, or the general direction of a campaign. Strategy is distinct from tactics (*q.v.*), which concern the minor operations by which it is sought to execute the general plan of the campaign. The end of strategy may sometimes even be the avoidance of a pitched battle, as in the classic instance of Fabius against Hannibal. It is, however, the main task of the strategist to endeavour to ensure victory by the careful disposition of his troops. He must secure every possible advantage of numbers, ground, supplies and morale. In all strategy the element of surprise is of the utmost importance; this, combined with mobility, is often an effective counter to the strategy of force.

Stratford, district on the R. Lea, borough of West Ham; manufactures candles, paint, chemicals, soap, perfumes, etc.; there are large railway workshops. Pop. c. 40,000.

Stratford de Redcliffe,

Sir Stratford Canning, first Viscount, British diplomat, born in London, cousin of Canning the statesman; entered the Foreign Office in 1807; 3 years later became minister-plenipotentiary at Constantinople, where he speedily gave evidence of his remarkable powers as a diplomatist by arranging unaided the Treaty of Bucharest (1814) between Russia and Turkey, and so settling free the Russian army to fall upon Napoleon, then retreating from Moscow; as

minister to Switzerland aided the Republic in drawing up its constitution, and in the same year (1815) acted as commissioner at the Congress of Vienna; was subsequently employed in the United States and various European capitals, but his unrivalled knowledge of the Turkish question brought him again, in 1842, to Constantinople as ambassador; exerted in vain his diplomatic skill to prevent the rupture between Turkey and Russia, which precipitated the Crimean War; resigned his embassy in 1858; was raised to the peerage in 1852. (1786-1880).

Stratford-on-Avon, market town of Warwickshire, England, on the right bank of the Avon, 8 m. SW. of Warwick; famous as the birth and burial place of Shakespeare, with whom all that is of chief interest in the town is associated; the house he was born in, his old school, Anne Hathaway's cottage at Shottery (q.v.) near by, the fine early English church (14th Century) in which he lies buried, museum, and the Shakespeare Memorial Theatre, the present building replacing one opened in 1879, and destroyed by fire in 1926. Pop. 11,600.

Strathclyde, an ancient kingdom of the Britons, which originated in the 8th Century, and comprised the W. side of Scotland between the Solway and the Clyde, and at times a part of NW. England covering the modern Cumberland, Westmorland, and part of Lancashire; the Scottish portion was permanently annexed to Scotland by David I.

Strathcona and Mount Royal, Donald Smith, first Baron, Canadian politician and business man. Born in Scotland he emigrated to Canada as a young man and served with the Hudson Bay Company, of which he later became general manager and finally governor. He took a hand in quelling a rebellion in the Red River territory in 1869, and later sat in the Dominion Parliament. He was a pioneer of the Canadian Pacific Railway in 1881, and in 1888 was knighted. In 1896 he became Canada's High Commissioner in London and was raised to the peerage. (1820-1914).

Strathmore ("Great Valley"), the great plain of Scotland stretching for 100 m. (5 to 10 m. broad), in a north-easterly direction from Dumfries-shire to Stonehaven, in Kincardineshire, between the great mountain barrier of the Highlands, the Grampians, and the Southern Lennox, Ochil, and Sidlaw Hills; in a more restricted sense denotes the plain between Perth and Brechin. The father of Queen Elizabeth, consort of King George VI, takes his title of Earl of Strathmore from this area.

Strathpeffer, a watering-place in Scotland, 5 m. W. of Dingwall, a health resort much frequented on account of its mineral waters and bracing air. Pop. c. 1,000.

Strathspey, a Scottish national dance, taking its name from the valley of the R. Spey, where it is said to have originated. It is always followed by a reel. Strathspey tunes were frequently used by Robert Burns as the basis of his verses.

Stratum, the geological name for a bed of rock when such beds are found in roughly parallel layers (see Rock). When beds or strata lie parallel to each other they are said to be "conformable," but if one set of beds rests on the upturned and worn edges of another there is "unconformable" stratification. Such an arrangement indicates a great lapse of time since the rocks in question were deposited. Even where the strata have not been disturbed, but lie horizontally as deposited, they have often been carved out

in hills and valleys by the action of rain, rivers and other atmospheric agencies.

The relative ages of the various stratified rocks have been determined in several ways, e.g., by observing their relative position, their mineral composition, and, above all, the fossil animals and plants they contain. On this basis the various strata have been divided into three groups: Primary or Palaeozoic (subdivided into Permian, Carboniferous, Devonian, Silurian, Cambrian and Azoic); Secondary or Mesozoic (subdivided into Cretaceous, Jurassic or Oolitic, and Triassic); and Tertiary or Cainozoic (subdivided into Pliocene, Miocene, Oligocene, and Eocene). A fourth period, called Post-Tertiary, or Quaternary, which consists of alluvial and glacial deposits, is also often added.

Stratus, a cloud formation, a widely increasing from below upwards. It is generally a fine-weather cloud, and appears low down in the evenings and early mornings of the brightest days.

Strauss, David Friedrich, German theologian and Biblical critic, born at Ludwigsburg, Württemberg; studied at Tübingen under Baur, was ordained in 1830, attended the Berlin lectures of Hegel and Schleiermacher, and, returning to Tübingen, gave lectures on Hegel in 1832, meanwhile maturing his famous theory published in his *Life of Jesus* in 1835 that, while the life of Christ has an historical basis, all the supernatural element in it and the accounts of it were simply and purely mythical. (1808-1874).

Strauss, Johann, Austrian musical composer, pöser, born in Vienna; is chiefly remembered for his dance music, including numerous waltzes, and the *Radeletsky March*. (1804-1849).

Strauss, Johann, composer and son of the preceding, famous as composer of the *Blue Danube* waltz. His opera *Die Fledermaus* is still popular. (1825-1899).

Strauss, Richard, German musical composer, pöser. He conducted at the Munich opera house, and afterwards at Berlin. His tone-poems and operas include *Ein Heldenleben*, *Electra*, *Salome*, *Till Eulenspiegel*, and *Ariadne in Naxos*. His musical innovations have exerted considerable influence on later composers. (1864-).

Stravinsky, Igor Fedorovich, Russian composer, "futurist" composer, born at Oranienbaum. He was induced to follow music as a career by Rimsky-Korsakov. His ballets *L'Oiseau de Feu*, *Petrushka* and *Le Sacre du Printemps* are his best-known works. (1882-).

Strawberry, trailing plant of the genus *Fragaria*, with soft, sweet, pink fruits. The method of reproduction is by natural rooting of runners. The flower is a small white star-like blossom. The name strawberry is also commonly (and properly) used of the fruit. *Fragaria vesca*, the wild strawberry, of which there are both wood and Alpine varieties, is the origin of the cultivated strawberry; others are *Fragaria virginiana*, the Virginian or scarlet strawberry, and the Chilean strawberry. Particularly fruiting varieties have recently been much improved and are used for gardens where little space is available. King George V., the Royal Sovereign, Sir Joseph Paxton and the London are all good varieties. Strawberry culture for the markets is extensively carried on in certain counties in the S. of England (very



WILD STRAWBERRY

like a warm mild climate), particularly in Hampshire. It requires considerable attention as to soil, manure, etc., and in unfavourable seasons the crop may fail. The fruit of the wild strawberry, though similar in all respects to that of the cultivated, never attains the succulence of the cultivated species.

Strawberry Tree. See *Arbutus*.

Street, George Edmund, English architect, born in Essex; he was trained under Gilbert Scott, and became an R.A. in 1871. His works include the Law Courts in London and the nave of Bristol Cathedral. (1824-1881.)

Streptococcus. See *Bacteria*.

Stresemann, Gustav, German politician, born in Prussia. He entered the Reichstag at the age of 29 as a National Liberal; throughout the early days of the World War was a supporter of ruthlessness, and in 1917 became leader of his party. In 1918 he founded the People's Party, and in 1923 became Chancellor of Germany. The same year he was made Foreign Minister, a post he held till his death, and his tenure of which was marked by efforts for international peace, notably the Locarno Pact and the entry of Germany into the League of Nations. (1878-1929).

Stress and Strain. The deformation of shape or bulk, which a body experiences when forces are impressed upon it, is termed "strain." The equilibrating system of forces which produces a strain is termed a "stress." Thus, the ratio of stress to strain is a measure of the elasticity of the body. All substances resist changes in volume, and so possess what is termed bulk elasticity, but only solids have elasticity of shape; no fluid, whether liquid or gas, can offer a permanent resistance to change of shape.

Strickland, Sir Gerald Strickland, first administrator, born in Malta; after occupying posts in the Maltese administration, became Governor of the Leeward Islands (1902-4), Tasmania (1904-9), Western Australia (1909-13), and New South Wales (1912-17); from 1921 was head of the Constitutional Party in the Malta Legislature, and from 1927 to 1932 head of the Ministry there; ennobled 1928; is proprietor of several Maltese newspapers. (1861-).

Stricture, in medicine, a morbid constriction of some mucous canal or duct of the body, as the œsophagus, intestines, or urethra, generally necessitating artificial dilatation with a bougie.

Strike, a withdrawal of workers from their work in order to obtain better conditions of labour for themselves or others. Among great British strikes of the present century were the railway strikes of 1911 and 1919, the transport and dockworkers' strike of 1912, and the miners' strikes of 1921 and 1925. In 1926 a coal miners' strike developed into a General Strike of the members of the leading trades unions, which lasted for 12 days, after which legislation was passed to make general strikes and "sympathetic" strikes of workers in an industry not directly affected by a trade dispute illegal. Picketing during strikes, though if unaccompanied by violence still legal, is now closely regulated by law.

Strindberg, Johan August, Swedish novelist and short story writer; born at Stockholm; accumulated stores of valuable experience during various early employments, which he utilised in his first successful work, *The Red Room* (1879), a satire on social life in Sweden. *The New Kingdom* (1884), equally bitter in its attack on social conventions, got him into trouble,

and after that his life was spent abroad. *Married Life*, a collection of short stories, brought upon him a charge of "outraging Christianity." *The Confession of a Fool*, an autobiographical novel issued in 1887, is his best-remembered work. He was strongly anti-feminist, and his later books display religio-mystical tendencies. (1849-1912).

Stroke, the length of rectilinear motion of the piston or plunger of a steam or other engine; the stroke of a valve is termed its throw. In a four-stroke cycle, one stroke of the piston is required for each of the four stages of induction, compression, power and exhaust; in the 2-stroke cycle, these four stages are completed in two strokes of the piston, thus giving an impulse or working-stroke per cycle every complete revolution of the crankshaft.

Stroke, in medicine, sun conditions sometimes resulting from exposure to the heat of the sun the body does not or cannot dissipate heat so acquired through the skin and glands. It is naturally more frequent in hot climates than in mild (though often in hot climates more care is taken to avoid undue exposure) and the symptoms may vary from a mere headache to delirium. The name "stroke" is also given to a paralytic attack.

Stromboli, one of the Lipari Is., NW. of Sicily; its almost constantly active volcano, whose summit is 3,020 ft. high, is its outstanding feature. Pop. c. 1,000.

Strontium, a metallic chemical element belonging to the same group as calcium, barium, and radium. Symbol Sr, atomic number 38, atomic weight 87.63. It is a hard yellowish substance, of little importance in itself, but certain of its compounds are widely used in pyrotechny for imparting a crimson-red colour to flares. Other strontium compounds are used in the refining of sugar.

Stroud, town of Gloucestershire, England, 10 m. SE. of Gloucester; former centre of the West of England woollen manufacture, and still seat of cloth factories and dyeworks; brewing is also carried on. Pop. 13,250.

Strychnine, a vegetable alkaloid of the plant *Strychnos nuxvomica* of the order Loganiaceae, native to India and Ceylon, etc. It is colourless, odourless, crystalline, and extremely bitter. It is used in medicine as a stimulant, but if taken in more than a minute quantity is a powerful poison, producing agonizing muscular contractions followed by death.

Stuart Dynasty, a dynasty of finally English kings, Scottish and commenced with

Robert II., who was the son of Marjory, Robert Bruce's daughter, who married Walter, Lord High Steward of Scotland, hence the name, his successors being Robert III., James I., James II., James III., James IV., James V., Mary Queen of Scots, and James VI. in Scotland, the last becoming, on the death of Elizabeth, King of England also as James I.; the line continued to reign over both countries in the persons of Charles I., Charles II., and James II. (VII.), and after his expulsion in 1688 was continued by the "Pretenders," James II.'s



PRINCE JAMES
STUART

son James, the latter's son Charles Edward, and finally Henry Benedict Stuart, Cardinal Duke of York, brother of Charles Edward, whose death in 1807 brought the succession to a close.

Stubbs, William, English historian, born at Knaresborough; became a Fellow of Trinity and of Oriel, professor of Modern History at Oxford in 1868, and finally bishop; was author of *Constitutional History of England*, an epoch-making book in three volumes, and editor of a collection of medieval Chronicles, with valuable prefaces. (1825-1901).

Stucco, building material of cement or plaster used as a facing material for walls and sometimes ceilings. In vogue in Italy in the 16th Century, it was copied in England later, the Adam brothers using it freely; Nash's Regent Street, London, recently demolished, was a notable example of its use.

Sturdee, Sir Frederick Charles Doveton, British admiral. He entered the navy in 1871, and first saw service in the Egyptian War. At the start of the World War he was made chief of the war staff, and he was in charge of the British vessels in the battle off the Falkland Is. in December, 1914, when the Germans suffered a heavy defeat. At Jutland he was in charge of the 4th battle cruiser squadron. He was created a baronet in 1914, and made an Admiral of the Fleet in 1921. (1859-1925).

Sturgeon, a genus (*Acipenser*) of fishes, some of them reaching a length of 10 or 12 ft. and a weight of 500 lb. The common sturgeon (*Acipenser sturio*), found in European waters, and the Russian sturgeon, or beluga (*Acipenser huso*) furnish caviar, a foodstuff made from the salted roe. Isinglass is also made from the fish's air bladder. See *Fish*, *Royal*.

Stuttgart, capital of Württemberg, Germany, stands amid beautiful vine-clad hills in a district called the "Swabian Paradise," on an affluent of the Neckar, 127 m. SE. of Frankfurt; is a handsome city with several royal palaces, a 16th Century castle, interesting old churches, a royal library, a museum, a splendid royal park, conservatoire of music, picture gallery, and a famous technical school; ranks next to Leipzig as a book mart, and has manufactures of textiles, beer, pianofortes, chemicals, tobacco, and jewellery. Pop. 415,000.

Stye, a small inflammatory tumour of the eyelid, particularly near the inner angle of the eye, forming around the follicle of one of the eyelashes. It may be due to local infection or be a symptom of poor health, and is especially common at puberty.

Styria, province of Austria, NE. of Carinthia, stretching from the neighbourhood of Salzburg to the Yugoslavian frontier. It is a mountainous district with many fertile river valleys; a large part is under forest, and there is considerable mineral wealth in coal, iron, salt and copper. The capital is Graz. Area, 6,320 sq. m. Pop. 1,015,000.

Styx, among the ancient Greeks the name of the principal river of the nether world, round which it flows sluggishly seven times. All who after death sought to enter the spirit world had to cross it, being taken over in the boat of the celestial ferryman, Charon; Greek bodies were buried with a coin in their mouths to be given to him as payment for his services. In their solemn engagements it was by this river the gods took oath to signify that they would forego their godhood if they swore falsely. The Styx was a branch of the Great Ocean which was supposed to girdle the universe.

Suakim or *Sueik*, a seaport of the Anglo-Egyptian Sudan, on the Nubian coast of the Red Sea; stands on a rocky islet, and is connected with El Keff on the mainland by a causeway. It is the place of embarkation of African pilgrims to Mecca; there are pearl fisheries, and a trade in ivory, gums, etc. Pop. c. 5,000.

Subconscious, a name applied to supposed to occur "below the threshold of consciousness" and not directly observable by their subject. In the view of orthodox psychologists the subconscious does not reveal any new function of the mind, but merely indicates action on the part of the mind without awareness of the stimuli that lead to the action. The psychoanalytical school prefer to attribute the phenomena in question to the "unconscious" mind, which is supposed to contain memories and impressions produced by inherited earlier racial experience.

Subjectivism, the philosophical doctrine that knowledge of external reality is unattainable, and that the mind can only apprehend that which is contained within itself, which may or may not bear some relation to the content of the outside world.

Sublimation, the change of a solid gas without passing through the liquid stage, owing to the melting point of the solid being, at the pressure acting in the particular case, higher than the boiling-point of the liquid form. In psycho-analysis the term has been adopted to describe the process of transference to other mental fields of the lower urges for sexual satisfaction, self-preservation, power and so forth.

Submarine, a fighting vessel able to move under water; its chief weapon is the torpedo, and observation

of the surface is maintained by means of a periscope. The first British submarine was launched in 1901, and they were used extensively in the World War, particularly by Germany, in a ruthless campaign against enemy and neutral shipping. In the World War some submarines were fitted with wireless apparatus and equipped for mine-laying. Modern submarines are submerged by flooding specially constructed ballast tanks fitted with electric pumps for discharging the water again in an emergency. Ocean-going submarines are now built up to over 2,700 tons surface displacement with 6-in. guns. France possesses the submarine with the largest surface displacement as yet completed for any Power (the *Surcouf*); it is equipped with 14 tubes to fire a 21.7 in. torpedo, and has a radius of action of 10,000 miles.

Subpoena, a writ commanding the attendance in court of a witness, under penalty (sub poena) of a fine for failure to do so, unless prevented by serious illness. A witness who has no legal excuse for failure to attend may also be sued for damages. Secondary evidence of the contents of a document may be given on proof that the person possessing the document has been duly served with a writ of subpoena duces tecum, requiring him to attend and produce the document in question, and has refused to do so.

Subsidy, in English constitutional history, a tax on property of the rate of 1s. in the pound for land, and 2s. 6d. for goods, first voted in the time of Richard II.; it later came to be fixed sum of £10,000. In 1880 a subsidy on wool and leather was



SUBMARINE

granted to Richard II. for life. Subsidies were discontinued after 1683. The term also applies to any material assistance by one state to another to secure its assistance against an enemy in war, as when England subsidised Austria against Napoleon. Grants to rulers in protectorates or spheres of influence to secure their good will, as in the case of the British subsidy to the Emir of Transjordan to-day, are also so called. But the term is now mostly used for government grants-in-aid to any industry or commercial concern, e.g., the subsidy to the beet sugar industry, and the grants made to shipping or airways companies for carrying mails.

Succession Acts, the statutes which regulate the succession to the British Crown. They were passed between 1701 and 1709, and settle the succession on the Protestant heirs of the Electress Sophia (q.v.) of Hanover provided they retain the Protestant faith.

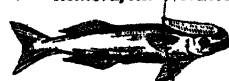
Succession Duty, a duty payable of property at death by which a person becomes entitled to gratuitous transfer. It is chargeable on freehold and leasehold property situated in the United Kingdom, and on all personal property not liable to Legacy Duty (q.v.), passing under a will or intestacy, or under some other disposition. The rates of succession duty are the same as for legacy duty, and there are important exemptions. No succession duty is payable where the principal value of all the successions on the same death does not amount to £100.

Succession Wars, the general title of several European wars which arose in the 18th Century consequent on a failure of issue in certain royal lines, most important of which are (1) *War of the Spanish Succession* (1701-1713). The death (1700) of Charles II. of Spain without direct issue caused Louis XIV. of France and the Emperor Leopold I. (the former married to the elder sister of Charles, the latter to the younger sister, and both grandsons of Philip III. of Spain) to put forth claims to the crown, the one on behalf of his grandson, Philip of Anjou, the other for his second son, the Archduke Charles. War broke out on the entry of Philip into Madrid and his assumption of the crown, England and the United Netherlands uniting with the emperor to curb the ambition of Louis. During the long struggle the transcendent military genius of Marlborough asserted itself in the great victories of Blenheim, Ramillies, and Oudenarde, but the lukewarmness of England in the struggle, the political fall of Marlborough, and the Tory vote for peace prevented the allies from reaping the full benefit of their successes. The Treaty of Utrecht left Philip in possession of his Spanish kingdom, but the condition was exacted that the crowns of Spain and France should not be united. The emperor (the Archduke Charles since 1711) attempted to carry on the struggle, but was forced to sign the Treaty of Rastadt (1714), acknowledging Philip king of Spain. Spain, however, ceded her Netherlands, Sardinia, etc., to the emperor, while Gibraltar, Minorca and part of N. America fell to England. (2) *War of the Austrian Succession* (1740-1748) followed on the death (1740) of the Emperor Charles VI. without male issue. His daughter, Maria Theresa, entered into possession of Bohemia, Hungary, and the Archduchy of Austria, but was immediately attacked by the Elector Charles Albert of Bavaria and Augustus of Saxony for the imperial crown, while Frederick II. of Prussia seized the opportunity of Maria's embarrassment to annex Silesia. France, Spain, and England were drawn into the struggle, the last in support of Maria. Success oscillated from side to side, but the

Treaty of Aix-la-Chapelle, which brought the war to a close, left Maria in possession of most of her inheritance save Silesia, which was left to Frederick.

Sucker, a branch which proceeds from the surface, and, as it emerges from the earth, becomes erect, immediately producing leaves and branches, and subsequently sending down roots from its base. A rapidly growing sucker is called a shoot. In gardening suckers should be removed as soon as they appear, though with a few plants, as the raspberry, they are used for propagating.

Sucking Fish, Shark Sucker, or Remora, the common



SUCKING FISH

names of the fish of the order Discopcephali, distinguished by having a flat oval sucker of complicated structure situated on the flat upper surface of the head, by which they attach themselves to sharks and other floating objects. They were formerly supposed to impede the navigation of ships by fastening themselves to the keel.

Suckling, Sir John, English poet, born at Whitton, Middlesex; quitted Cambridge in 1628, and for a time served in the army of Gustavus Adolphus in Germany; returning to England about 1632, he became a favourite at court; supported Charles I. in the Bishops' Wars against the Scots; sat in the Long Parliament; was involved in a plot to rescue Strafford and to bring foreign troops to the aid of the king, but, discovered, had to flee the country; died, probably by his own hand, in Paris; wrote several forgotten plays, a prose treatise on *Religion by Reason*, and miscellaneous poems, amongst which are his charming songs and ballads, his title to fame, (1609-1642).

Sucrose, the chemical name for cane sugar, derived from the sugar-cane, or from the root of the sugar-beet.

Sudan, Anglo-Egyptian, a large territory in Africa, in the region of the Nile, extending from the frontiers of Egypt and Libya on the N. to Kenya, Uganda, and the Belgian Congo on the S., and between French Equatorial Africa on the W. and Italian East Africa on the E.; it has a coastline on the Red Sea between Egypt and Eritrea. Egyptian rule gradually spread over the area during the 19th Century, but in 1889 a serious revolt, headed by the Mahdi (q.v.) broke out, ending in the rout of the Egyptian forces under Hicks Pasha and Baker Pasha. An attempt at relief by General Gordon ended with his death at Khartoum, but between 1896 and 1898 an Anglo-Egyptian army under Kitchener recovered the lost provinces, which since 1898 have been ruled as a condominium under the joint sovereignty of Great Britain and Egypt, the Governor-General being appointed by Egypt with British consent. The majority of the people are Moslems, and many of them nomads; large quantities of cotton are grown; other important exports are gum-arabic, millet, sesame, hides and skins, salt, gold, cattle, dates and fruits. The capital is Khartoum; other towns are Omdurman, Wadi Halfa, Suakin, Port Sudan, and El Obeid. Area 969,000 sq. m. Pop. 5,960,000.

Sudan, French, an African colony of France, covering the area between Algeria, Mauritania, the Niger Colony and Libya, including a great part of the desert of the Sahara. Cattle, sheep, camels and asses are raised, and millet, maize, rice, cotton and ground-nuts grown. The capital is Bamako (pop. 22,000); other towns include Kayes, Sikasso, and Timbuktu. Area, 386,600 sq. m. Pop. 3,569,000.

Sudbury, a borough of W. Suffolk, England, on the Stour, close to the Essex border, 58 m. N.E. of London; has three old churches and remains of a 13th Century friary. Pop. 7,000. Also a town of Ontario prov., Canada, in the district of Lake Nipissing, famous for its nickel mines, from which a great part of the world's supply is obtained. Pop. c. 9,000.

Sudermann, Hermann, German playwright and novelist, born at Matschen, E. Prussia. His chief plays are *Marriage (Die Ehre)*, produced in 1888; *Sodom's Ende*, 1890; *Heimat* (English translation called *Magda*), 1893. A famous novel is *Frau Sorge*, 1888. (1887-1928).

Sudeten Deutsche or Sudetan Germans, the German minority in Bohemia (Czechoslovakia), concentrated chiefly near the German frontier formed by the Sudetic mountain range. They are largely descended from the German colonists invited by the last rulers of the Premyslid dynasty in the Middle Ages. They numbered 3,232,000, or over one-fifth of the total population of Czechoslovakia, and controlled 40 per cent. of its industries. This German minority were bitterly opposed to their inclusion in the new state of Czechoslovakia as provided for by the Treaty of Versailles; hence their deputies to the National Assembly have consistently pursued a policy of obstruction, though later one section, the German Clericals, joined the Government bloc.

Herr Henlein, their present leader, succeeded the trade union extremist, Kaspar, in 1936, the latter's followers disagreeing with the constitutional methods adopted by Henlein. President Beneš, though acknowledging that the Germans had grievances, refused to entertain the idea of giving them national autonomy within the state—an ambition which, however, was brought appreciably nearer realization by reason of the German annexation of Austria in 1938, after which the demands of Henlein were increasingly pressed, with German backing, until they extended to the complete transfer to the German Reich of the Sudeten areas by a specified date, a demand refused by Czechoslovakia, with British and French support; her refusal was countered by a German threat to occupy the areas in question on Oct. 1, 1938—with the risk of a European war. But in the interim a joint pact was signed at Munich, between Germany, Great Britain, France, and Italy, for the orderly taking over of the Sudetenland by Germany. The boundaries of admittedly Sudeten areas were to be determined by an International Commission; while, in the case of other areas, plebiscites were to be held under impartial supervision on the Saar model.

Sudetic (Sudeten) Mountains

stretch in irregular broken masses and subsidiary chains for 120 m. across S.E. Germany, separating Czechoslovakia from Saxony and Prussian Silesia, and forming a link between the Carpathians and mountains of Franconia; highest and central position is known as the Riesengebirge (g.v.).

Sudras, the fourth and lowest of the Hindu castes; traditionally sprung from the feet of Brahma.

Sue, Marie-Joseph-Rugene, French novelist, born in Paris; was for some years an army surgeon, and served in the Spanish campaign of 1833. On his father's death (1839) he retired from the army to devote himself to literature. His reputation as a writer rests mainly on his well-known works, *The Mysteries of Paris* (1845) and *The Wandering Jew* (1845), which, displaying little skill on the artistic side, yet rivet their readers' attention by a wealth of exciting incident and plot; was elected to the Chamber of Deputies in 1850,

but the *coup d'état* of 1851 drove him an exile to Annecy, in Savoy, where he died. (1804-1867).

Suez, city of Egypt, stands at the edge of the desert at the head of the gulf of the same name and at the S. end of the Suez Canal, 75 m. E. of Cairo, with which it is connected by railway; as a trading place, dating back to the times of the Ptolemies, has had a fluctuating prosperity, but since the completion of the canal has grown greatly in importance; is still for the most part an ill-built and ill-kept town; has a large English hospital and ship-stores. Pop. 50,000.

Suez Canal, a great artificial channel cutting the isthmus of Suez, and thus forming a waterway between the Mediterranean and the Red Sea; was planned and undertaken by the French engineer de Lesseps, through whose untiring efforts a company was formed and the necessary capital raised; occupied 10 years in the construction (1859-1869), and cost some 80 million pounds; from Port Said on the Mediterranean to Suez at the head of the Red Sea the length is about 103 m., a portion of which lies through Lakes Menzaleh, Ballah, Timmah, and the Bitter Lakes; as widened and deepened in 1886 it has a minimum depth of 28 ft., and varies from 150 ft. to 300 ft. in width; traffic is facilitated by electric light during the night, and the passage occupies about 16 or 17 hours; has been neutralized and exempted from blockade, vessels of all nations in peace or war being free to pass through; now the highway to India and the East, shortening the voyage to India by 7,600 m. An annual toll is drawn of close on three million pounds, the net profit of which falls to be divided amongst the shareholders, of whom since 1875 the British Government has been one of the largest. It is governed by a French directorate, including several English members, with one from the Netherlands. By agreement with Egypt it is guarded by a British force of 10,000 men with the help of an air detachment.

Suffocation, the sensation of choking the respiration, impeding the utterance, or whenever the air is denied access to the lungs. It may be produced by strangulation, drowning, choking, or by such diseases as tetanus, which restricts the respiratory muscles, or by false membranes obstructing the larynx.

Suffolk, easternmost county of England, fronts the North Sea between Norfolk (N.) and Essex (S.); is a pleasant undulating county with pretty woods and eastward-flowing streams (Waveney, Aisle, Orwell, Stour, etc.); long tracts of heathland skirt the coast; agriculture is still the staple industry, wheat and beet-sugar the principal crops; it has many fine churches and other antiquities. For administrative purposes it is divided into E. Suffolk (county town, Ipswich; area, 871 sq. m.; pop. 295,000) and W. Suffolk (county town, Bury St. Edmunds; area, 611 sq. m.; pop. 106,100), each with its own County Council.

Suffragan, a bishop with no separate suffrage to assist another bishop (or "ordinary") in the administration of his diocese, of which a special portion is generally put in his care; the term is also used to describe the relation of any bishop to the archbishop who is his superior.

Suffrage, the right of voting in elections for Members of Parliament. The Reform Act of 1832 first enfranchised the 410 occupier throughout the country and made franchise qualifications everywhere the same; the household franchise was created in 1867; in 1918 women were first admitted to the franchise. Under the present law a person is entitled to be registered as an elector when over 21, and is not legally incapable of any

the franchise if he or she has resided for three months in the same constituency or in another constituency, borough or county, contiguous thereto, or occupies business premises of a yearly value of at least £10, or is the wife or husband of a person so qualified. In a University constituency the taking of a degree or its equivalent is the necessary qualification.

Suffragettes, feminists who agitated actively before the World War for the extension of the franchise in England to women. Led by the Women's Social and Political Union, they tried militant methods when peaceful ones failed; the Premier, Asquith, was publicly assaulted, an attempt was made to stop the Derby, women chained themselves up in public places, and pillar-boxes and a church were destroyed. Several leaders were imprisoned and went on hunger strike.

Sufism, the doctrine of the Sufis, a sect of Mohammedan mystics. Their beliefs are those of the mystical followers of all religions, adapted to some extent to their Islamic setting; they are pantheistic in many respects, and their writings, among which are to be numbered many of the higher flights of Persian and Arabic verse, frequently symbolize the mystical union under the form of alcoholic intoxication or female beauty. Sufi schools are especially prominent in Persia and N. Africa; the Persian poets Hafiz, Al-Ghazali and Omar Khayyam were all Sufis. They gave rise to the various Dervish sects of N. Africa.

Suggestion, the process by which an another idea by association or natural connexion. In hypnotism suggestion implies the introduction by another person of a belief or impulse into the mind of a subject through the use of words, gestures or the like. The theory of suggestion asserts that all symptoms of so-called trance or hypnotism are results of that mental susceptibility, which all persons possess in greater or less degree, of yielding assent to outward suggestion, and acting in accordance with what they are made to expect, though there may be peculiar physiological or nervous conditions during which the subject's susceptibility to outward suggestion is greater than at ordinary times. The technique of self-suggestion, or auto-suggestion, has made progress in recent times. See *Cosm.*

Suicide, the act of killing oneself. In English law suicide is a felony, formerly punished by the forfeiture of the criminal's property to the Crown, and his burial in the highway with a stake through his body. The suicide, unless he is found—as he usually is—at the coroner's inquest to have been in a disturbed mental state at the time of his act, is called *felo de se*, and is deprived of the privilege of Christian burial. An attempt to commit suicide is a common law misdemeanour triable at quarter sessions. If two people make a suicide pact whereby one dies, the survivor is guilty of murder. The number of suicides in England and Wales averages about 5,000 a year; two-thirds of these are males.

Suir, a river of Eire (Ireland), rising in Tipperary and enters Waterford Harbour after a course of 100 m., passing Clonmel, Carrick and Waterford.

Sukkur, town in Sind, British India, on the Indus, 38 m. SE. of Sukkarpar; has rail communication with Quetta, and considerable trade in various textiles, opium, saltpetre and sugar; a great irrigation dam, 2 m. in length, was opened here in 1933. Pop. 38,000.

Suliman, or Sulaiman, Mountains, a bare and rugged range, stretching E. and S. for upwards of 350 m. Higher Pass almost to the Arabian

forming the boundary between Badkshstan and the Punjab, India.

Sulla, Lucius Cornelius, a Roman of patrician birth; leader of the aristocratic party in Rome, and the rival of Marius (q.v.), under whom he got his first lessons in war; rose to distinction in arms afterwards, but during his absence the popular party gained the ascendancy, and Marius, who had been banished, was recalled. The blood of his friends had been shed in torrents, and himself proscribed; on the death of Marius he returned with his army, glutted his vengeance by the sacrifice of thousands of the opposite faction, celebrated his victory by a triumph of unprecedented splendour, and caused himself to be proclaimed at 81 B.C. He ruled with absolute power two years after, and then, resigning his dictatorship, retired into private life. (138-78 B.C.).

Sullivan, Sir Arthur Seymour, English musical composer, born in London; completed his musical education at Leipzig; in 1862 composed incidental music for *The Tempest*, then became a prolific writer of all kinds of music, ranging from hymns and oratorios to popular songs and comic operas. His oratorios include *The Prodigal Son* (1868), *The Light of the World*, and *The Golden Legend*; but it is as a writer of light and tuneful operas (librettos by Sir W. S. Gilbert, q.v.) that he is best known. These began with *Cox and Box* (1866), and include *Trial by Jury*, *The Sorcerer* (1877), *H.M.S. Pinafore*, *Patience* (1881), *Mikado* (1885), *Yeoman of the Guard* (1888), and *The Gondoliers* (1889), in all of which he displays great gifts as a melodist, and wonderful resource in clever piquant orchestration; received the Legion of Honour in 1878, and was knighted in 1883. (1842-1900).



SIR ARTHUR SULLIVAN

Sully, John Lawrence, American pugilist; born at Boston, Mass.; won the world championship in 1887 by beating Kilrain and held it till defeated by Corbett at New Orleans, 1892. (1858-1918).

Sully, Maximilien de Béthune, Duke of, minister of Henri IV. of France, born at the Château de Rosny, near Mantes, whence he was known at first as the Baron de Rosny. At first a ward of Henry IV. of Navarre, he joined the Huguenot ranks along with him, and distinguished himself at Coutras and Ivry, and approved of Henry's policy in changing his colours on his accession to the throne, remaining ever after by his side as his most trusted adviser, directing the finances of the country with economy, and encouraging the peasantry in the cultivation of the soil. On the death of the king he retired from court, and occupied his leisure in writing his celebrated *Memoirs*, which, while they show the author to be a great statesman, give no very pleasant idea of his character. (1560-1641).

Sully-Prudhomme, René François, French poet, born at Paris; published a volume of poems in 1865 entitled *Stances et Poèmes*, which commanded instant regard, and were succeeded by others which deepened the impression, entitling him to the highest rank as a poet; was elected to the Academy in 1881. (1839-1907).

Sulphates, salts of sulphuric acid. The acid and normal, are known, among the latter being the important minerals gypsum, anhydrite, barites, celestine, glauberite and kieserite. They are mostly crystalline and soluble in water.

Sulphonal, a white crystalline solid acetone upon ethyl hydrosulphide (ethyl

mercaptan), used as a sleep-producing drug. It is especially valuable owing to the fact that it has no disagreeable after-effects and is unlikely to lead to habit formation.

Sulphur, sometimes popularly known as brimstone, is a non-metallic chemical element belonging to the same group as oxygen, selenium, tellurium and polonium. Symbol S; atomic number 16; atomic weight 32.06. The free element is found in many parts of the world, especially volcanic districts, but is mostly obtained from two localities, viz., Sicily and the states of Louisiana and Texas. In Sicily the sulphur is first separated from earthy impurities by melting it and running it off, and is then purified by a process of distillation. When rapidly cooled, the sulphur vapour omits to assume the liquid phase, and passes direct to the solid, in the form of minute powdery crystals ("flowers of sulphur"). If cooled more slowly, the vapour condenses to liquid sulphur, and this is allowed to solidify in cylindrical moulds, forming the so-called "roll sulphur." Sulphur is also obtained to some extent by distilling iron pyrites in the absence of air, and as a by-product in several manufacturing processes, e.g. the coal-gas industry. Sulphur readily burns in air or oxygen, forming sulphur dioxide (q.v.); it also combines directly with many metals to give sulphides. It is widely used industrially, e.g., in the manufacture of sulphuric acid, in making matches, and in vulcanizing rubber.

Sulphur Dioxide, a compound of sulphur and oxygen, formed when sulphur is burned in air or oxygen, and also obtained by roasting many metallic sulphides in a current of air. It is a heavy, colourless, poisonous gas with a characteristic pungent smell of burning sulphur. It may readily be liquefied at ordinary temperatures by the application of slightly increased pressure, and since the liquid is very volatile and absorbs considerable heat when vaporizing, many refrigerators employ it as the working substance. When moist it has mild bleaching properties, and is used to bleach delicate materials (e.g., silk) that would be destroyed by more vigorous bleaching agents such as chlorine. It is also employed as a fumigant, since it quickly kills fungi and the lower forms of animal life; but its principal use is in the manufacture of sulphuric acid (q.v.).

Sulphuretted Hydrogen,

a heavy, colourless, poisonous gas with the characteristic smell of rotten eggs, which indeed contain it, since it is one of the products of the putrefaction of albuminous substances. It is a compound of sulphur with hydrogen. It is an inflammable gas, burning with a blue flame to form sulphur dioxide and water when the supply of air or oxygen is sufficient, but yielding water and free sulphur if the air or oxygen is in inadequate quantity. It is extremely poisonous, and since it is liable to occur in sewers, etc., this fact is of practical significance. Large doses cause a sudden collapse, and death without paroxysms follows in a short time; smaller doses over a more prolonged period produce coma and finally death, but in this case there are frequently convulsive spasms as well. The intoxication and mental excitement of the priestesses at Delphi were due to their inhalation of natural sulphuretted hydrogen given off from crevices in the earth there. Certain spa waters (e.g., Harrogate) contain sulphuretted hydrogen, and are frequented by sufferers from rheumatism, arthritis, neuralgia, skin diseases and bronchitis.

Sulphuric Acid, or O_2S of Vriest, is perhaps the most important of industrial chemicals. It is manufactured by two processes, the English

or lead-chamber process, and the German or contact process, the latter giving a purer product at a higher cost. It is used in many branches of the dye industry, in food manufacture, and in electrical accumulators.

Sultan, an Arabic word meaning ruler or Mohammedan sovereign; the ordinary title of a Mohammedan sovereign; it was formerly applied particularly to the sovereign of pre-War Turkey. Sultana is the feminine form. Among the many sultans in the British colonial empire are those of Johore and Zanzibar; the ruler of Oman bears the title, and from 1914 to 1922 it was used by the ruler of Egypt.

Sultana, a small, seedless, sun-dried in Asia Minor and exported in great quantities from Izmir (Smyrna).

Sulu Islands, an archipelago of 169 lying to the NE. of Borneo, and extending to the Philippines, to which they are politically attached. The trade in pearls and edible nests is mainly carried on by Chinese. Pop. c. 100,000.

Sumac(h),

a tan obtained from the dried leaves and shoots of *Rhus coriaria*, a shrub of the natural order Anacardiaceae, native to S. Europe. It is used especially in preparing morocco leather; also in calico printing. When combined with mordants it produces iron-grey or black and yellow; a brownish yellow is produced by using zinc sulphate.



SUMAC

Sumatra, after Borneo the largest of the East Indian islands, stretches SE. across the Equator between the Malay Peninsula (from whose SW. coast it is separated by the Strait of Malacca) and Java (Strait of Sunda separating them); has an extreme length of 1,115 m.; is mountainous, volcanic, covered in central parts by virgin forest, abounds in rivers and lakes, and possesses an exceptionally rich flora and peculiar fauna; rainfall is abundant; some gold and coal are worked, but the chief products are rice, tobacco, maize, gold, tin, pepper, etc.; the island is under Dutch control. Padang is the capital. Area, 163,100 sq. m. Pop. 7,605,000.

Sumbawa, one of the Dutch Sunda Is., lying between Lombok (W.) and Flores (E.); mountainous and dangerously volcanic; yields quinine, timber, tobacco and rice; the largest town is Bima. Area, 5,400 sq. m. Pop. 182,000.

Sumer, an early name for the country later called Babylonia, the lower part of Mesopotamia, one of whose chief cities was Ur of the Chaldees, mentioned in the Biblical book of Genesis and largely excavated in recent years by Sir Leonard Woolley; the Sumerian culture reached great heights c. 3500-2500 B.C.; the language appears to have been a non-Semitic tongue considerably influenced by Semitic elements.

Summary Jurisdiction,

a court in which minor offenders may be tried and sentenced without a jury. It may be held either by a stipendiary magistrate or by two or more Justices of the Peace. A person charged with any offence, other than assault, for which he is liable on summary jurisdiction to more than 3 months' imprisonment may elect to be tried by a jury, and if he does so the charge is treated as an indictable offence. An appeal lies to quarter sessions (q.v.), but only where some statute expressly

gives the right. The convicted person may also apply in writing to the justices to "state a case" for the decision of a Divisional Court, where he believes the conviction to be erroneous in law or in excess of jurisdiction; but he must enter into recognizances (q.v.) to prosecute the appeal.

Summer Time. See Daylight Saving.

Summons, in English legal procedure a document addressed to a person charged with some offence specified in the document, commanding him to appear before justices of the peace to answer the charge. It is served by a constable on the accused personally, or at his last known or usual place of abode. If disobeyed, on proof of its service, the justices may issue a warrant for the arrest of the person concerned.

Sumptuary Laws, laws passed in various lands and ages to restrict excess in dress, food and luxuries generally; appear in English statutes at various times down to the 18th Century. The food rationing during the World War, though differing in object, was in essence the application of a sumptuary law.

Sumter, Fort, a fort on a shoal in Charleston harbour, South Carolina, U.S.A., 3½ m. from the town; occupied by Major Anderson in the interest of the secession of South Carolina from the Union. The attack on it by General Beauregard on April 12, 1861, was the commencement of the Civil War; it held out against attack and bombardment till the month of July following.

Sun, the centre of the solar system, round which the earth and all the planets revolve. It is a globe of incandescent vapour about 700 times as large as all the planets put together; about 870,000,000 miles in diameter; it is 92,500,000 m. from the earth. Its temperature is estimated at 6,000° C.; its surface is marked by dark spots called *sunspots* (q.v.), and by watching these as they move over the sun's disc it was found that it revolves on its axis once in 24 to 33 days. The spectroscope shows that the sun is composed of hydrogen and a number of vaporized metals. Its luminous exterior surface is called the photosphere; outside this is the reversing layer, and outside this again the reddish chromosphere, observable at total eclipses. Beyond this is the corona, or solar atmosphere.

Sun-Bird, a family (Nectarinidae) of brilliantly-coloured passeriform birds, not unlike humming-birds, found in N. Africa, S. Asia, New Guinea, and Australia. They have long, slender, curved beaks, and the nests of several species are built to hang from the ends of branches of trees.

Sun-Bittern, (Eurypygidæ) comprising only two known species of birds, found in Central America and Colombia. The chief species is *Eurypyga helias*, a heron-like bird with a black head and white stripe over the eye, the rest of the plumage being variegated black, chestnut, grey, and buff, and the whole speckled, mottled and streaked, producing a coloration of rare beauty. It is native to South America, living by river banks.

Sunda Islands, a name sometimes applied to the long chain of islands stretching S.E. from the Malay Peninsula to N. Australia, including Sumatra and Timor, but more correctly designates the islands Bali, Lombok, Sumbawa, Flores, and Bandaflower I., which lie between Java and Timor, are under Dutch



SUN-BIRD

suzerainty, and produce East Indian products. **Sunday,** the first day of the week, once sacred to the sun, substituted at the beginning of Christianity for the Jewish sabbath as the weekly day of rest and special devotion. See also *Sunday Closing*.

Sunday Closing. The Lord's Day Observance Act of 1877 forbade tradesmen and workmen from pursuing their ordinary calling on a Sunday; but "works of necessity or charity" were excepted. An Act of 1871 to the effect that no prosecution under the former Act might be begun without the consent of a stipendiary, two justices, or the chief of police, long rendered the law practically nugatory. The opening of places of entertainment on Sunday is governed by the Sunday Observance Act of 1780, though its provisions may be circumvented by admitting the public free and charging only for reserved seats; cinemas may be opened on Sundays only with the permission of the local authority, which must be granted on the demand of a majority of ratepayers at a plebiscite. In 1937 a new Sunday Closing Act regulated the hours during which refreshments, tobacco, and perishable foodstuffs might be sold on Sundays, and forbade the sale of most other articles except in certain districts with a large Jewish population where Saturday closing is general. See also *Permitted Hours*.

Sunday Schools were started in England in 1780 by the Revs. D. Blair and J. Alleine, and were soon copied by churches in all parts of the country; the system of religious education was overhauled and improved by R. Ralke in 1780.

Sunderbunds, or *Sundarbans*, a great tract of jungle, swamp and alluvial plain, forming the lower portion of the Ganges delta; extends from the Hooghly on the W. to the Meghna on the E., a distance of 165 m.; rice is cultivated on the upper part by a sparse population; the lower part forms a dense belt of wild jungle reaching to the sea, and is infested by numerous tigers, leopards, buffaloes, pythons, and cobras.

Sunderland, county borough and seaport, situated at the mouth of the Wear, 12 m. S.E. of Newcastle-upon-Tyne. It includes the ancient township of Monkwearmouth, but as a commercial town entirely developed within the last century, and is of quite modern appearance, with the usual public buildings; owes its prosperity mainly to the neighbouring coalfields, the product of which it exports in large quantities. There are ship-building yards, large ironworks, glass and bottle works, and roperies. Pop. 184,000.

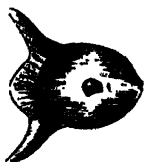
Sundew, a popular name in Britain of the three native species of *Drosera* of the natural order Droseraceae, the best known being *Drosera rotundifolia*, the Common Sundew, a marsh plant, common in bogs and remarkable for its capacity of capturing and absorbing insects, by means of its numerous closely inflected tentacles whose glands contain a thick acid secretion.

Sundial, an instrument for measuring time, consisting essentially of a rod on the edge of a piece of metal, called the style, which is placed parallel to the earth's axis, and casts a shadow on a plate called the dial. The plate is graduated to indicate hours and the shadow cast by the sun passing over it indicates the time of day. The sundial indicates "true solar time," the clock mean solar time.



SUNDEW

Sun-Fish, the common name of a N. chidae) of prettily-coloured nest-building fresh-water fishes, some species being in demand for aquaria. The Truncated sun-fishes of the family Apollidae are queerly-shaped oceanic fishes having a truncated, almost spherical body, a very small mouth, high dorsal and anal fins and a caudal fin extending the length of the truncated posterior part of the body. At least one species, the Common or Round-Tailed Sun-fish (*Mola mola*) is found in British waters.



SUN-FISH

Sunflower (*Helianthus annuus*), a plant of the order Compositae, bearing a large yellow daisy-shaped flower, and sometimes called turnsol from the ancient belief that its blossoms always turn towards the sun. It is native to Peru, where it was used in religious ceremonies on account of the resemblance of its flower to a sun with golden rays. It reaches a height of 10 to 15 ft., and the flowers may be as much as 1 ft. in width. The seeds are a favourite food of cage-birds and Russian peasants.

Sung, a Chinese dynasty which reigned from 960 to 1280 A.D., with its capital at Kaifeng. It came to an end with the Mongol invasion under Kublai Khan (q.v.). The Sung period was one of the greatest Chinese cultural epochs, especially in painting, and was remarkable for the social experiments of the reformer Wang An-Shih (1021-1086), who inaugurated a kind of State socialism which did not survive him.

Sungari, river of Manchukuo, a tributary of the Amur; rising in the White Crooked Mts. on the Korea border, it has a length of 800 m.; it is joined by the Nonni, flowing thence past Harbin to Tungkiang.

Sunn-Hemp (*Crotalaria juncea*), an annual leguminous plant 8 to 12 ft. high, with silvery leaves and yellow flowers; cultivated throughout India for the hemp-like fibres of its stem, which are used in making canvas and ropes. It is also known as Bombay hemp.

Sunnites, the orthodox Mohammedans, a name given to them because they accept the *Sunna*, i.e., traditional teaching of the Prophet, as of the same authority as the Koran, in the matter of both faith and morals. They are divided into four recognized sects, and include the greater part of the world of Islam except in Persia, which is mostly Shiite (q.v.).

Sunspots, dark, irregular markings upon the sun's disc, showing a distinct periodicity of about 11 years. It has been found that magnetic storms are more frequent at periods of sunspot maximum and that there is a relation between sunspots and the Aurora Borealis. Attempts have been made to connect the sunspot cycle with the variations in the weather.

Sunstroke, or Heatstroke. See Stroke.

Sun-Worship, the worship of the sun, with that of fire as its earthly symbol, the basis of the religion of the ancient Peruvians, and of first importance among the Zoroastrians of Persia and the Mexican Aztecs. The early Aryan religion was based on sun-worship, and some have traced the origin of the Christian festival of Christmas to a feast in honour of the reviving sun.

Sun Yat-Sen, Chinese statesman. Born near Canton, he became a doctor, and, taking to politics, was a leader of the 1905 rising in his native city.

Afterwards he was an exile in Japan, England, and America, but after the success of the 1911 revolution he became China's first President, resigning the following year. He again retired from the country and was behind revolutions in 1913 and 1915; on the formation of the Cantonese government in 1917 he held the Presidency till 1918; was out of office for three years, but in 1921 was again President; later his party met with reverses at the hands of the northern or Peking government. After his death he became the symbol of Chinese reawakening, and almost an object of worship to the Kuomintang. (1866-1925).

Superannuation, the name given to a pension payable to a public servant on his or her compulsory retirement at a fixed age-limit. In Great Britain contributory superannuation schemes are in force for all established civil servants, for teachers and most other employees of municipal authorities and local bodies, generally providing for the payment of allowances at the rate of one-half or two-thirds of their normal salaries after their retirement at the age of 65 or sometimes 60.

Superheater, an apparatus for superheating its temperature and volume beyond their saturation values, or increasing its temperature to the amount it would lose on its way from the boiler until exhausted from the cylinder. This is accomplished by passing the steam through a series of small tubes several times across the uptake of the chimney before it enters the steam-pipe. The superheater is used especially for supplying turbines, its value being that it economizes steam and obviates its corrosive action on the pistons and valves. See Steam Engine.

Superior, Lake, the largest fresh-water lake between the United States and Canada, the boundary line passing through the centre; area, 31,200 sq. m.; length, 410 m.; maximum depth, 1,008 ft.; St. Mary's R., the only outlet, a short rapid stream, carries the overflow to Lake Huron; receives upwards of 200 rivers, but none of first-class importance, largest being the St. Louis; is dotted with numerous islands; water is singularly clear and pure, and abounds with fish; navigation is hindered in winter by shore-ice, but the lake never freezes over. The towns on its banks include Duluth, Marquette, and Superior, the latter in Wisconsin, U.S.A., with a ship-building industry, and a grain and metal trade. Pop. c. 36,000.

Superphosphates, artificial manures obtained by the action of sulphuric acid on phosphate of lime.

Superstition, credulity regarding the supernatural; it is usually, or often, a relic of some magical or religious belief of a past age. The superstition that the number thirteen is unlucky probably derives either from the fact that, including Judas, the number of persons present at Christ's last supper was thirteen, or that thirteen was the traditional number of members of a witches' meeting or coven; that regarding Friday from its being the day of the Crucifixion; and many popular superstitions are found on examination to have similar explanations.

Suprarenals. See Adrenals; Endocrine Glands.

Supreme Council, an organization allied powers in the World War after the defeat at Caporetto in November, 1917; it consisted of military and political representatives of the Allies, and met at Versailles with the aim of co-ordinating and unifying plans of campaign. After 1919 it existed for a time to enforce the Peace treaties.

Supreme Court, in England, the Supreme Court of Judicature, constituted in 1875 by the consolidation of the Courts of Queen's Bench (now King's Bench), Chancery, Common Pleas, Exchequer, and the Court for Admiralty, Probate, and Divorce and Matrimonial Causes. There are now two permanent Divisions, the High Court of Justice (divided into the Chancery, King's Bench, and Probate Divorce and Admiralty Divisions), and the Court of Appeal. See *Justice, Royal Courts of, King's Bench; Chancery, etc.* In the U.S.A. the Supreme Court is constituted of a Chief Justice and eight Associate Justices, whose authority extends over all cases of law and equity; all cases affecting ambassadors; admiralty and maritime cases; and interstate controversies. Its appellate jurisdiction extends to most of these heads. It also pronounces on the constitutionality of acts passed by Congress, and is thus the guardian of the Constitution. The functions of the U.S.A. Supreme Court were the subject of considerable controversy in 1935 and thereafter, several of its decisions being adverse to the constitutionality of laws and decrees issued by the Roosevelt government in pursuance of its reconstruction policy; and the President proposed to initiate legislation to modify its constitution and functions, until, an opportunity arising for the making of a new appointment, the balance of opinion in the Court veered round to the President's support.

Surabaya, (Soerabaja), a seaport on the NE. coast of Java, is the headquarters of the military, naval and air forces in the Dutch East Indies; there is a considerable trade in rice, coffee, tobacco, etc. Pop. c. 120,000.

Surat, a city of India, Bombay Presidency, on the Tapti, 14 m. from its entrance into the Gulf of Bombay; chief exports are cotton and grain, and carpets and other textiles are manufactured. The English erected here their first factory on the Indian continent in 1612, and, with Portuguese and Dutch traders added, it became one of the principal commercial centres of India. In the 18th Century the removal of the English East India Company to Bombay drew off a considerable portion of the trade of Surat, which it has never recovered. Pop. c. 110,000.

Surbiton, borough of Surrey, England, Thames opposite Hampton Court Palace. It is a rapidly growing residential suburb of London. Pop. 48,600.

Surcouf, Robert, a French privateer, born in St. Malo, who figured in several notable exploits, capturing the British vessels *Triton* and *Kent* in 1785 and 1800. (1773-1827).

Surd, in mathematics, an irrational quantity, or one incommensurable with unity, and which cannot therefore be expressed accurately as a decimal fraction taken to any number of places. Thus the cube root of 7 or the square root of 6 are surds.

Surety, a person who goes bail for the performance by another of some act, under pain of the payment of a sum of money, and, in case of the other's default, is liable to pay the sum for which he is bound. See also *Recognizance*.

Surface Tension. If a liquid can wet a surface it will spread over the surface indefinitely, but if—as with water on a greasy dish—it cannot wet the surface, it tends to form itself into more or less spherical drops. Again, if a liquid is free to take up any shape, it always assumes the form of spherical drops, a fact turned to useful account in making shot by pouring a melted alloy of lead and antimony from a high tower into a cold-water tank at the base. Such

behaviour indicates that a drop of liquid tries to shape itself so as to have the smallest possible surface, a condition fulfilled when it has become spherical. A liquid behaves, therefore, as if it were covered with an elastic "skin," and the strength of this—quite imaginary—skin is a measure of the surface tension of the liquid.

Surgeon, a practitioner of that branch of the healing art in which wounds, fractures, deformities and disorders are treated by manual operation. Until the end of the Middle Ages the profession of surgeon was not distinguished from that of barber, and not until 1745 were the two callings separated. On the establishment of the Royal College of Surgeons in London in 1800, surgery became an art on the same level as medicine. The College gives diplomas of membership and fellowship, but not doctorates. The degree in surgery corresponding to M.D. in medicine is M.S. or M.Ch.—master in surgery.

Surgeons, Royal College of, formed in 1800 and chartered in 1843, has its headquarters in Lincoln's Inn Fields, London; it was built in 1813 and contains the famous Hunterian Museum. The College is the successor of a surgical guild dating back to the 14th Century.

Surgery, manual treatment of injuries or disorders of the body, or operative therapeutics. "Cutting" operations are only a part of surgery; operative intervention more often consists of manipulative treatment. A very high order of dexterity is needed for the many instruments which may be used both in the diagnosis of disease and in its treatment.

There are three main obstacles to the safe performance of operations: bleeding, shock and infection of the wound. To-day bleeding during operations is less than in the average "nose-bleed." Formerly infection was the rule, and in view of the prevailing ignorance of bacteriology it was remarkable that any wounds escaped infection. It was the work of Pasteur on fermentation and putrefaction, applied by Lister (q.v.) to the problem of wound infection, that has wrought the marvellous change in surgical methods and outlook to-day.

Surinam. See *Guiana, Dutch*.

Surplice, a linen robe with wide sleeves worn by officiating clergymen and chorists, originating in the rochet or alb of early times. It is sometimes trimmed at the bottom and sleeves with lace, and is then frequently called a cotta.

Surrey, an inland county of England, in the S.E. between Kent (E.) and Hampshire (W.), with Sussex on the S., separated from Middlesex on the N. by the Thames. The North Downs traverse the county E. and W., slope gently to the Thames, and precipitously in the S. to the level Weald. Formerly, and still in part, a beautiful region of hill and heather and adorned with splendid woods, it is rapidly being built over in view of its proximity to London. The Wey and the Mole are the principal streams. Hops are extensively grown round Farnham. The largest towns are Croydon, Sutton and Cheam, Merton and Morden, and Mitcham, all suburbs of London; Kingston-on-Thames is the county town, but the assizes are held at Guildford, where a cathedral is being built. Area, 721 sq. m. Pop. 1,181,000.

Surrey, Henry Howard, Earl of, English poet, son of the third Duke of Norfolk. Early attached to the court of



SURPLICE

Henry VIII., he attended his royal master at the "Field of the Cloth of Gold," and took part in the coronation ceremony of Anna Boleyn (1533); was created a Knight of the Garter in 1542, and two years later led the English army in France with varying success. Imprisoned along with his father on a charge of high treason, for which there was no adequate evidence, he was condemned and executed. As introducer of the sonnet and originator of blank verse, he deservedly holds a high place in the history of English literature. (1516-1547).

Surrogate, a person appointed to act for another, especially the deputy of an ecclesiastical judge, most commonly of a bishop or his chancellor; his most important duty is the issuing of licences for marriage.

Surtax, a tax, additional to income tax at the standard rate, payable by any person whose total income (including his wife's) exceeds £2,000. Its present maximum rate is 7s. 6d. in the £, plus 10 per cent. of that rate, but the rate is graduated from a minimum of 1s. in the £ plus 10 per cent. on incomes between £2,000 and £2,500. The number of surtax payers in 1936 was about 85,000, and the receipts about £49,000,000.

Surtees, **Robert Smith**, British sporting novelist. A solicitor in London, he helped to found the *New Sporting Magazine*, wherein in 1831-1834 appeared the hero of *Jorrocks's Jaunts and Jollities*, 1838. His other famous works are *Handley Cross*, 1843; *Ask Mamma*, 1858; *Mr. Facey Romford's Hounds*, 1865. (1803-1864).

Surveying, the measurement of a portion of the earth's surface, generally with a view to the production of a map or chart. The principal instruments used are the chain of fixed length, for measuring base lines, from which other distances can be calculated by trigonometry, and the theodolite, a telescope whose motions can be calculated from a circular scale on which it is rotated. Since the development of aviation these methods of surveying have largely given place in the case of large areas to air photography, a number of photographs being taken from different positions and their results incorporated in a scale plan.

Susanna, *The History of*, a section of the *Apocrypha*, where it forms part of the book of Daniel, being taken from the Greek Septuagint version; no Hebrew original has been discovered. It is the story of a woman who had been accused of adultery by two elders and condemned to death, but was acquitted on Daniel's examination of her accusers, who were confounded and condemned to death in her stead.

Susquehanna, a river of the U.S.A., formed by the junction at Northumberland, Pennsylvania, of the North Branch (350 m.) flowing out of Schuylar Lake, central New York, and the West Branch (250 m.) rising in the Alleghany Mts.; flows in a shallow, rapid, partly navigable course S. and S.E. through beautiful scenery to Port Deposit, at the N. end of Chesapeake Bay; length, 160 m.

Sussex, a S. maritime county of England, fronts the English Channel between Hampshire (W.) and Kent (E.), with Surrey on its northern border; is traversed E. & W. by the South Downs, which afford splendid pasturage for sheep, and terminate in Beachy Head; in the N. lies the wide, fertile, and richly-wooded plain of the Weald; chief rivers are the Arun, Adur, Ouse, and Rother, of no great size; is a fine agricultural county, more than two-thirds of its area being under cultivation; was the scene of Caesar's landing (55 B.C.), of Ælla's, the leader of the South Saxons (whence the name Sussex), and of William the Conqueror's

(1066). It is divided for administrative purposes into East Sussex (county town, Lewes; largest towns, Brighton, Eastbourne and Hastings; area, 829 sq. m.; pop. 547,000) and West Sussex (county town, Chichester; largest towns, Worthing and Bognor; area, 628 sq. m.; pop. 223,190).

Sutcliffe, *Herbert*, **William**, cricketer, born at Pudsey, playing since 1909. In Yorkshire eleven, 1919, made five centuries; 1922, four centuries. He was a leading batsman, played in the test matches in Australia, 1924, and in subsequent test matches opened the batting with Hobbs. In 1932 he made a score of 313 against Essex. (1894-).

Sutherland, a maritime county of N. Scotland, presents a N. and a W. shore to the Atlantic, between Ross and Cromarty (S.) and Caithness (N.), and faces the North Sea on the S.E., whence the land slopes upwards to the great mountain region and wild, precipitous, loch-indented coasts of the W. and N. There is very little cultivation, but large numbers of sheep and cattle are raised. There are extensive deer forests and grouse moors, while valuable salmon and herring fisheries exist round the coasts; is the most sparsely populated county in Scotland. Dornoch is the county town. There are no other towns of any size. Area, 2,028 sq. m. Pop. 16,100.

Sutlej, the easternmost of the five rivers of the Punjab; its head-waters flow from two Tibetan lakes at an elevation of 15,200 ft., whence it turns NW. and W. to break through a wild gorge of the Himalayas, thence bends to the SW., forms the eastern boundary of the Punjab, and joins the Indus at Mithankot after a course of 900 m.

Sutro, **Alfred**, British playwright, chiefly famous for *The Walls of Jericho*, *John Gayde's Honour*, and his translations of Maeterlinck. (1863-1933).

Suttee, a Hindu widow who immolates herself on the funeral pyre of her husband; the term is also, though wrongly, applied to the practice itself, which is properly called *satyagriha*. The practice was of very ancient date, but the custom was proclaimed illegal in 1829 under Lord William Bentinck's administration, and it is now very seldom that a widow seeks to violate the law. In 1823, in Bengal alone, 575 widows gave themselves to be so burned, of whom 109 were above 60, 226 above 40, 209 above 20, and 32 under 20.

Sutton and Cheam, *town of* Surrey, England, 11 m. S. of London, of which it is a residential suburb. Pop. 85,000.

Sutton Coldfield, *borough of* Warwickshire, England, 7 m. N.E. of Birmingham, of which it is a residential suburb. Pop. 33,900.

Sutton-in-Ashfield, *town of* Nottinghamshire, England, 12 m. NW. of Nottingham. The chief industries are mining, cotton thread, silk, and wool manufacturing. Pop. 38,650.

Suture, in anatomy, the joint or seam of the skull. A serrated suture is one in which the two bones concerned have saw-like edges which fit each other. The word is also used of the methods employed for sewing together surfaces of flesh separated by wounds—for which the materials employed are usually catgut, silk, or silver wire.

Suvla Bay, a bay in the Gallipoli Peninsula, on the W. side of the Dardanelles, where British troops under the command of Sir F. W. Stopford landed in August, 1915, in support of the Australian forces acting against the Turks; it was evacuated in the following December.

Svishtov, town of Bulgaria, formerly known as Sistova: it is on the Danube, 33 m. SW. of Ruse (Rustchuk), and has trade in wine, leather and cereals; near by are ruins of a Gothic palace. Pop. 15,000.

Swabia, an ancient duchy in the SW. of Germany, so called from the Suevi, who in the 1st Century displaced the aboriginal Celts: was separated by the Rhine from France and Switzerland, having for capital Augsburg, and is now comprised in Württemberg, Bavaria, Baden, and Liechtenstein.

Swadlincote, urban district of Derbyshire, England, 6 m. SE. of Burton-on-Trent. The manufactures are sanitary earthenware, firebricks, fireclay, ironstone, and Rockingham ware. Pop. 20,600.

Swahili, a people of mixed Bantu and Arab stock occupying Zanzibar and the adjoining territory from Mombasa to Mozambique. They are an enterprising race, and are dispersed as traders, hunters, carriers, etc., far and wide over Central Africa. Their language is the common medium of communication in E. Central Africa, and is an official language in Kenya and Tanganyika.

Swale, a river in the N. Riding of Yorkshire, uniting, after a course of 60 m., with the Ure to form the Ouse.

Swallow, the popular name of the birds of the family Hirundinidae,

distinguished by having long narrow wings, forked tail, short, wide bill, and weak feet. The colour varies from purplish-black to true black, with white or buff beneath. Swallows are found



HOUSE-SWALLOW

over almost the entire world. The summer migrant to England is *Hirundo rustica*, the House-Swallow, which sometimes arrives as early as April; the house-martin and sand-martin are also included under the general name. Sea-Swallow is another name for the Terns (q.v.) of the Laridae family.

Swan, the common name for any species of bird of the genus *Cygnus* of the family Anatidae (ducks). The swan has an exceedingly long, flexible neck, and short legs placed rather far back; the plumage (except in the case of the Black Swan) is mainly white in the adult stage. At least two species, the Whooper or Whistling Swan (*Cygnus musicus*), an Arctic species, and Bewick's Swan (*C. bewicki*), are winter visitors to Britain. The Mute Swan (*C. olor*) with a relatively long and wedge-shaped tail is best known as a domesticated bird. The Swan was formerly considered in Great Britain as a royal bird, none but the king being allowed without special permission to keep one. The birds dwelling on the Thames and other British rivers are still annually examined and marked by their owners, mostly City companies, the process being known as "swan-upping."

Swan, Sir Joseph Wilson, English inventor, born at Sunderland; with his partner, John Mawson, made numerous improvements in photography, introducing the lenscap for half-tones. In 1897 he invented the Swan incandescent electric lamp with strong filament; and also invented an electric lamp for miners. (1828-1914).

Swanage, watering place in the Isle of Poole, Dorset, England. It is quarried in the district. Pop. 6,300.

Swan River, a river in Western Australia, which was formerly known as the Swan River Settlement. It rises near Narrogin and flows N. and

W. to the Indian Ocean. Fremantle, the ocean port, stands at its mouth, and Perth, the capital of the State, 13 m. upstream.

Swansea, the second town of Wales, in Glamorganshire, and an important seaport, on the Tawe into Swansea Bay; has a splendid harbour, with large docks, and exports coal, iron, oil from the neighbouring refineries at Llandarcy, and the products of its great tinplate and steel works. Pop. 164,000.

Swarajists, a political party in India, advocating national independence. The word "swaraj" means "government of self," and was originally used as an ethical term for self-control. Politically the term started in a presidential address of Dadabhai Naoroji to the Indian Congress in 1906, but Gandhi was responsible for its adoption by the native party in 1919, and the formation of the Swarajist Party under the leadership of C. R. Das and Pandit Moti Lal Nehru. Complete independence became the party slogan, and non-co-operation with the British one of the methods of securing it. See Indian National Congress.

Swastika, or *Fyftet*, a cross-like symbol formed of equal arms with rectangular clockwise continuations. It is possibly connected with sun-worship, and is found as a symbol among the people of many early cultures; it plays a large part in Indian Buddhist symbology, and has recently become notorious (in its left-handed or anti-clockwise form) as the symbol of the German Nazis, appearing on the German national flag.

Swatow, a seaport of China, at the Canton; mouth of the Han, 225 m. E. of Canton; has large sugar-refineries, factories for bean-cake and grass-cloth; it was a scene of fighting with the Japanese in 1928-29. Pop. 179,000.

Swaziland, a small South African native State to the E. of the Transvaal, governed as a British protectorate; is mountainous, fertile, and rich in minerals; gold and tin are mined, and ground-nuts, tobacco and other crops raised. Capital, Mbabane. Area, 6,705 sq. m. Pop. 157,000, including 2,750 Europeans.

Sweating, a term first used about 1848 to describe the iniquitous conditions of workers employed by subcontractors in the tailoring trade. The term is now used in reference to all trades in cases where the conditions imposed by masters tend to grind the rate of payment down to a bare living wage and to subject the workers to insanitary surroundings by overcrowding, etc., and to unduly long hours. In 1890 an elaborate report by a committee of the House of Lords was published, and led in the following year to the passing of the Factory and Workshops Act and the Public Health Act, while a Parliamentary enquiry in 1906 led to the passing of the Trade Boards Acts, the operation of which has done a great deal to mitigate and repress the evil.

Sweating Sickness, an epidemic of extraordinary malignity which swept over Europe, and especially England, in the 15th and 16th Centuries, attacking with equal virulence all classes and all ages, and carrying off enormous numbers of people; was characterized by a sharp sudden seizure, high fever, followed by a torrid perspiration; first appeared in England in 1485, and for the last time in 1851, though small epidemics occurred later on the continent of Europe.

Swede (*Brassica campestris*), a yellow variety of turnip, distinguished by a thickening near the stem. The leaves are usually bluish-grey in colour, and the root is also tinged with blue. It is widely culti-

vated, mainly as a cattle food for use in combination with dry fodder, owing to its high percentage of water.

Sweden, a kingdom of Northern Europe, occupying the eastern portion of the great Scandinavian Peninsula, bounded W. by Norway, E. by Finland, the Gulf of Bothnia; and the Baltic, and on the N. stretches across the Arctic Circle between Norway (NW.) and Russia (NE.), while its southern serrated shores are washed by the Skager-Rak, Cattegat, and Baltic. From the mountain-barrier of Norway the country slopes down in broad terrace-like plains to the sea, intersected by many rivers and diversified by numerous lakes, of which Lakes Wener, Wetter, and Mälär (properly an arm of the sea), are the largest. Much of it is under forest.

It has three great divisions: (1) Norrland in the N., a wide and wild tract of mountainous country, thickly forested, infested by the wolf, bear, and lynx, and sparsely inhabited by Lapps. (2) Svealand occupies the centre, and is the region of the great lakes and of the principal mineral wealth (iron, copper, etc.), of the country. (3) Gethland, the southern portion, embraces the fertile plains sloping to the Cattegat, and is the chief agricultural district, besides possessing iron and coal.

Agriculture (hay, fodder, sugar beet, potatoes, oats and grain) is the principal industry; mining for iron, silver, copper, arsenic and sulphur, and lumbering, are of first importance. Chief industries are paper manufacture, machinery, wood, porcelain, textiles and matches, etc.; principal exports timber (much the largest), paper, minerals and machinery. Transit is greatly facilitated by the numerous canals and by the rivers and lakes. The national religion is Lutheranism. Government is vested in the king, who with the advice of a council controls the executive, and two legislative chambers which have equal powers, but the members of the one are elected for eight years by provincial councils, while those of the other are elected by universal suffrage for four years.

In the 14th Century the country became an appanage of the Danish crown, and continued as such until freedom was again won in the 16th Century by the patriot king, Gustavus Vasa. By the 17th Century Sweden had extended her rule across the seas into certain portions of Germany, but, selling these in the beginning of the 18th Century, fell from her rank as a first-rate power. In 1814 Norway was annexed, the two countries each enjoying complete autonomy, but the union was dissolved in 1905, and Norway became independent. The capital is Stockholm; other large towns are Göteborg and Malmö. Area, 175,400 sq. m. Pop. 6,267,000.

Swedenborg, Emanuel, Swedish religious leader and scientist, founder of the "New Church," born at Stockholm, attended the university of Uppsala and took his degree in philosophy in 1709; visited England, Holland, France, and Germany; on his return, after four years, was appointed by Charles XII. assessor of the Royal College of Mines; in 1731 went to examine the mines and smelting-works of Europe; from 1716 spent 30 years in the composition and publication of scientific works; from about 1734 became interested in the relation of soul and body, and from 1743 began the publication of the numerous theological works in which his special contributions to religious thought are embodied, including *Heaven and Hell*, *The True Christian Religion*, *Divine Love and Wisdom*, etc. He visited England several times in his later years, and died in London of apoplexy. The religious system founded by him is known as Swedenborgianism (q.v.). (1688-1778).

Swedenborgianism, or the New Jerusalem, the Christian religious system founded to propagate and uphold the teachings of Emanuel Swedenborg (q.v.). It holds that man can place himself in direct communion with the world of spirits, that the Trinity in God is not one of Persons but of operations, and that the revelations made to Swedenborg are the key to the understanding of the Scriptures and the Christian revelation in general. It has a following in Great Britain, the U.S.A., and the Scandinavian countries.

Swedish Drill, system of bodily movements, originated by Pehr Henrik Ling (1776-1839) and designed to promote muscular development. It is the basis of most later systems of physical drill, except those used for military training.

Sweepstake, strictly a lottery (q.v.) the proceeds of the sale of tickets are divided among the winners; but the name is often applied to any lottery, especially one held in connection with a sporting event, such as a horse race. Sweepstakes, like other lotteries are illegal in Great Britain; but private sweepstakes are not generally interfered with if the sale of tickets is strictly confined to members of the organisation holding the sweepstake. The Calcutta Turf Club holds annually the well-known "Calcutta Sweep" on the result of the Derby; and in Eire sweepstakes in aid of the country's hospitals are held several times a year under the control of the Government on the results of British races.

Sweetbread, the name given to certain glands of calves and other animals when used as food, the pancreas being known as stomach sweetbread, the thymus as breast sweetbread.

Sweetbriar, or *Eglantina*. See *Briar*.

Sweet Flag (*Acorus*

calamus), a hardy perennial marsh and riverside plant of the order Araceae, with long sword-shaped leaves and fragrant roots, introduced into Europe from Asia about 500 years ago. Its branching rootstock is a popular remedy for ague and children's complaints.

Sweet Pea (*Lathyrus*

odoratus), an annual plant of the order Leguminosae, bearing sweet-scented flowers of a great variety of colours. It is best cultivated in a light rich soil and should be supported by sticks. The plants are improved if the flowers are gathered at frequent intervals.

Sweet Potato (*Ipomoea batatas*), a perennial plant of the order Convolvulaceae, having white and mauve funnel-shaped flowers and a tuberous root; like the ordinary potato, but longer in shape and sweet to taste. It is cultivated in the United States and parts of the East for food.

Sweet William (*Dianthus barbatus*), a hardy perennial plant, related to the pink, of the order Caryophyllaceae; also known as *Jove's Flower*, or *London Pride*. See also *Dianthus*.

Sweyn, Danish ruler and son of Canute the Great. After conquering part of Norway and Sweden, he raided England in 982 and 984, and after becoming king of Denmark again invaded Britain, receiving the sub Saxons and causing Eibbe the White to flee the country. Died at Gai



SWEET FLAG

Swift, the common name of a family (Cypselidae) of birds outwardly similar to, but with no other affinities with, the swallow. They are of wide distribution. Nearly all species have four very small toes pointing forward, this resulting in their being awkward on the ground and preferring to cling to walls. The Common Swift (*Cypselus apus*) is a summer migrant to the British Isles from Africa, from May to August. Larger than a swallow and remarkable for its great speed in flight, it has black plumage with a white patch under the chin. The birds' nest soup of the Chinese is made from the nests of a related genus found in the countries round the Indian Ocean.



SWIFT

Swift, Jonathan, Irish satirist, born at Dublin, and educated at Kilkeny and Trinity College, coming to England in 1688, where he became amanuensis to Sir William Temple, remaining in his service with intervals until his death in 1699, mastering the craft of politics, and falling in love with Stella (q.v.); shortly afterwards became secretary to Lord Berkeley, one of the Lord-Deputies to Ireland, and settled in the vicarage of Laracor, West Meath. In 1704 appeared his famous satires, the *Battle of the Books* and the *Tale of a Tub*; various squibs and pamphlets followed, *On the Inconvenience of Abolishing Christianity*, etc., but politics more and more engaged his attention. He turned Tory, attacked with deadly effect, during his editorship of the *Examiner* (1710-1711), the war party and its leader Marlborough, crushed Steele's defence in his *Public Spirit of the Whigs*, and after the publication of *The Conduct of the Allies* was easily the foremost political writer of his time. Disappointed of an English Bishopric in 1713, he reluctantly accepted the deanery of St. Patrick's, Dublin, a position he held until the close of his life; eloquently voiced the wrongs of Ireland in a series of tracts, *Drapier's Letters*, etc., and crowned his great reputation by the publication (1726) of his masterpiece, *Gulliver's Travels*, the most daring, savage and amusing satire contained in the world's literature. "Stella's" death and the slow progress of a brain disease, ending in insanity, cast an ever-deepening gloom over his later years. (1667-1745).

Swilly, Lough, a narrow inlet of the Atlantic, on the coast of Donegal, Eire (Ireland), running in a S. direction between Dunaff Head (E.) and Fanad Point (W.), a distance of 25 m.; is from 3 to 4 m. broad.

Swimming, a method of propelling oneself through the water, while keeping the body afloat. In the breast-stroke, the simplest method, the swimmer lies horizontally in the water, arms and legs stretched out. The arms are moved in a semi-circle so that they are on a level with the shoulders, and then brought together, hands under the chin, elbows into the body. At the same time the legs are widened at the knees and the feet drawn up towards the body. Arms and legs are then shot out simultaneously. Swimming on the back is accomplished by a similar action with the legs, with a swing of the arms backwards in a circular motion. Speed-strokes are the over-arm (developed from the side stroke), the trudgion, and the Australian crawl. In the last of these the face is submerged, the swimmer periodically turning the head sideways to breathe. The arm-action is circular, while the legs perform the scissor stroke, a quick thrusting of the water with the lower part of the legs,

the knees being together. Swimming as a sport is governed by the Amateur Swimming Association (founded 1869, its authority universally recognised by 1889).

Swinburne, Algernon Charles, English London; educated at Balliol College, Oxford; after some time spent in Florence, his first productions were plays, followed by *Poems and Ballads*; his later *A Song of Italy*, an essay on *William Blake*, *Songs Before Sunrise*, *Studies in Song*, *Studies in Prose and Poetry*, etc. His verse is remarkable for its daring metrical experimentation. (1837-1909).

Swindon, a town in Wiltshire, 77 m. W. of London; it centres upon the works and engineering shops of the Great Western Railway, though the town is still a centre for the local agricultural interest. Pop. 60,200.

Swine Fever, an infectious disease peculiar to pigs, the cause being often traced to unclean conditions in the sty. Symptoms are lassitude and loss of appetite, accompanied by coughing and fever. The infection usually settles in the feet. It must be notified to the local authorities, and infected animals destroyed.

Swinton (1) (and Fandisbury), town of Lancashire, England, 4½ m. NW. of Manchester, of which it is a suburb. It has cotton manufactures and engineering works. Pop. 39,000. (2) urban district of W. Riding of Yorkshire, 5 m. NE. of Rotherham. It has manufactures of glass bottles, stoves and mineral waters. Pop. 13,800.

Swiss Guards. See *Gardes Suisses*.

Swithin, St., bishop of Winchester from 852 to 863; was buried by his own request in Winchester Churchyard, "where passers-by might tread above his head, and the dew of heaven fall on his grave." On his canonization, a century after, the chapter resolved to remove his body to a shrine in the cathedral, but their purpose was hindered on account of a rain which lasted 40 days from July 15; hence the popular notion that if it rained that day it would be followed by rain for 40 days after. Most European countries have a similar "rain saint."

Switzerland, a republic of Central Europe, bounded by Germany (N.), France (W.), Italy (S.), and Germany (E.); it is semicircular in shape, having the Jura Alps on its French border, and divided from Italy by the great central ranges of the Alpine system, whence radiate the Swiss Alps—Pennine, Lepontine, Bernese, etc.—covering the E. and S., and occupying with intervening valleys two-thirds of the country; the remaining third is occupied by an elevated fertile plain, extending between the Lakes of Constance and Geneva (largest of numerous lakes), and studded with picturesque hills; principal rivers are the Upper Rhone, the Aar, Ticino, and Inn; climate varies with the elevation, from the high regions of perpetual snow to warm valleys where ripen the vine, fig, almond, and olive.

Nearly a quarter of the land surface is under forest, and one-quarter arable; flourishing dairy farms exist, utilising the fine meadows and mountain pastures which, together with the forests, comprise the country's greatest wealth; minerals are exceedingly scarce. The thrift and energy of its people has skillfully harnessed the inexhaustible motive power of innumerable waterfalls and mountain streams to drive great factories of silk, cottons, watches, and jewellery. The beauty of its mountain, lake, and river scenery has long made Switzerland the mecca for the recreation ground of Europe. The Alpine barriers are crossed by splendid roads and railways, including the great tunnels through St. Gothard and the Simplon.

In 1848, after the suppression of the Sonderbund the existing league of 22 semi-independent states constituting since 1798 the Helvetic Republic formed a closer federal union, and a constitution (amended in 1874) was drawn up conserving as far as possible the distinctive laws of the cantons and local institutions of their communes. The President is elected annually by the Federal Assembly (which consists of two chambers constituting the legislative power, the upper chosen by the cantons and the lower directly by the people) and is assisted in the executive government by a Federal Council of seven members. By an institution known as the "Referendum" all legislative acts passed in the Cantonal or Federal Assemblies may under certain conditions be referred to the electors, and this is frequently done.

The languages spoken are French (in Fribourg, Vaud, Valais, Neuchâtel and Geneva), Italian (in Ticino), Romansch (in the Grisons) and elsewhere mainly German, all four being officially recognized: Catholics form about 41 per cent. and Protestants 57 per cent. of the population. There are seven universities. The capital is Bern, the other largest towns being Zürich, Basel, and Geneva. Area, 15,945 sq. m. Pop. 4,066,000. The country is permanently neutralized, and contains at Geneva the headquarters of the League of Nations.

Sword, a long-bladed cutting weapon with a hilt. It has taken various forms in different ages and countries; the straight sword has usually two cutting edges, but curved swords such as the sabre and scimitar have their inner edges only sharpened. The tip is generally pointed, but may be square or rounded, as in the Japanese harikari. In the East, and during the Middle Ages in the West, swords were frequently of beautiful workmanship, the blades being engraved or damascened and the hilts inlaid with gems, precious metals, mother-of-pearl, etc. Swords of romance even received names, as King Arthur's *Excalibur* and Roland's *Durandal*.

Sword Bean (*Canavalia ensiformis*), a cultivated leguminous plant yielding edible pods.

Sword Dance, a European folk-dance of great antiquity, surviving to the present day in various forms. In the English form a ring of five or more men linked by their swords perform steps of great intricacy, culminating in the "look."

Swordfish, the common name of the Xiphiidae and sub-order Scombroidea which includes the mackerels, bonitos, etc. They are distinguished by the long sword-like projection of the upper jaw, and the large dorsal fin. The *Xiphius gladius*, or Broad-bill, is sometimes found off the British coast. It reaches a length of 15 to 20 ft. The sword-like jaw may reach a length of 3 ft., and is used for stabbing prey; it has been credited with inflicting fatal wounds even on whales, and with being able to pierce the boards of a boat.



SWORDFISH

Sybaris, an ancient Greek city of Asia Minor, southern Italy, on the Gulf of Tarentum, founded before 700 B.C., but in 510 B.C. captured and totally obliterated by the rival colonists of Crotona. At the height of its prosperity the luxury and dissipation of the inhabitants was such as to become a byword throughout the ancient world, whence arose the use of the name Sybarite to denote a devotee of sensual pleasure.

Sycamore (*Acer pseudoplatanus*), a common but non-native tree of the order Aceraceae, introduced to Britain from the Continent in the 16th Century. It may attain a height of 100 ft., with a girth of 20 ft. The bark is smooth and ashen-grey, becoming rough and flaky later; leaves large and shining-green but greyish below, with pointed lobes. The flowers are borne in pendulous tassel-like spikes, and the winged fruits resemble those of the common Maple. The white, finely-grained wood is used for making rollers and bobbins.



SYCAMORE

Sydenham, Thomas, English physician, the "English Hippocrates," born in Dorsetshire. Among his contributions to medical practice were the use of cinchona in the treatment of malaria, the recognition of scarlatina as a complaint distinct from measles, the use of tincture of opium, and researches into the nature of gout, various fevers, etc. (1624-1689).

Sydney, the capital of New South Wales, the oldest and largest city in Australia, is situated on one of the most beautiful harbours (Port Jackson, with an area of 9,000 acres, and 75 m. of foreshore) in the world. The harbour bridge, one of the largest engineering schemes of its kind ever undertaken, links up the N. and S. shores. The city contains many very fine buildings, including the university, art gallery, museums, two cathedrals, libraries, and hospitals. It is a very important railway centre, and the extensive and modern plant for dealing with shipping and storing and loading grain in bulk is second to none in the southern hemisphere. A city underground electric railway is in course of construction. It is the chief station of the Australian navy, and manufactures pottery, clothing, motor cars, metalware, tobacco, etc. Pop. 1,267,400.

Sydney, second city of Nova Scotia, Canada, 275 m. N.E. of Halifax; it has steel works, and is a trading port of importance. Pop. 23,100.

Sydney Mines, a town of Cape Breton N. of Sydney, across the harbour. Coal and iron mining are carried on. Pop. 8,000.

Syllogism, a logical argument consisting of three propositions, two (major and minor) being called premisses, and that which necessarily follows from them the conclusion, as: Every cow has a tail (major premiss); a Manx cat has no tail (minor premiss); therefore a Manx cat is not a cow (conclusion).

Sylvester, St. the first Pope of that name, under whose tenure of the Papacy Constantine the Great (A.D.) accepted Christianity and made it the religion of the Roman Empire; medieval legend asserted that the Emperor on the occasion of his baptism made over to him and his successors in the Papacy the temporal rule over the city of Rome, when the imperial capital was changed to Byzantium. He held the Papal throne from 314 to 335.

Symbiosis, the state of two organisms, of different species, who live together to their mutual benefit, as in the case of a lichen, which is composed of a fungus and an alga.

Symbolism, the use of some object, colour, shape or form to represent and bring up in the mind some of the first sight unconnected idea. The chief functions of symbolism are in art and religion; early Christianity developed an symbolism in which the cross, the fish, the

monogram IHS, and so on, stood for Christ, and with the rise of the worship of saints each saint tended to have his easily recognisable symbol, as the keys of Peter, the X-shaped cross of Andrew, the man, lion, calf and eagle associated with the four evangelists, etc. The crescent moon has likewise become an accepted Mohammedan symbol, the hammer and sickle that of the Communists, the "Shield of David" or two crossed equilateral triangles that of Judaism, and the swastika that of the German Nazis.

Symbolist School, a school of French poets, including Baudelaire, Verlaine, and Mallarmé, who sought to interpret psychological ideas by means of symbols relating the physical to the moral sphere. It originated with Alfred de Vigny in a revolt against the Parnassians who, under Gautier, appealed solely to a sense of beauty and regarded our sympathies as irrelevant.

Symbols, in mathematics, chemistry, and other sciences, are used as a kind of shorthand to convey information which could otherwise be expressed only by a lengthy verbal explanation. In chemistry each element is allotted a symbol with a precise significance, the symbol H, for instance, representing one atom of hydrogen. These symbols when combined indicate compounds, thus H_2SO_4 signifies one molecule, or ultimate particle, of sulphuric acid, consisting of two atoms of hydrogen, one atom of sulphur and four atoms of oxygen. Of the common mathematical symbols, + signifies addition, - subtraction, \times multiplication, \div or $\sqrt{\quad}$ square root, $\sqrt[3]{\quad}$ cube root, = is equal to.

Symonds, John Addington, English man of letters, born at Bristol; author of *The Renaissance in Italy*, and several other works on Renaissance history and art, as well as translations from the Greek poets, and a collection of medieval Latin students' songs; his translation of Benvenuto Cellini's autobiography is particularly noteworthy; was consumptive, and spent his later years at Davos, in the Engadine. (1840-1893).

Symons, Arthur, English symbolist poet, parents. His first volume of verse, *Days and Nights*, appeared in 1889, and was followed by numerous collections of original poems and of translations from French and Italian writers, including Baudelaire, d'Annunzio, etc. He has also written verse plays and several volumes of criticism. (1865-).

Symphonic Poem, a term first used by the musician Liszt (1811-1886) for orchestral works of no set form but interpreting in music the emotions expressed by a poet in verse; it is now used with a wider application to include most descriptive (or programme) music. Liszt was succeeded by many Slavonic composers, who wrote works interpreting the spirit and scenes of their countries, e.g., *Sibelius's Finlandia*.

Symphony, a musical composition developed from the sonata form, but intended for full orchestra, consisting usually of four contrasted and related movements. It first rose into importance with Haydn, and was developed by Mozart (who wrote 41 symphonies), Beethoven, and Schubert, followed by Tchaikovsky and Brahms. The most famous are Mozart's *Jupiter* and *E-flat* symphonies, the 3rd, 5th and 9th of Beethoven's nine, Schubert's *Unfinished Symphony*, and Tchaikovsky's *Patriotic*.

Symposium, or banquet; literally a drinking together following a dinner, at which intellectual conversation was exchanged, or

other entertainment given; and, derivatively, a collection of opinions or articles by different writers on various aspects of some question. The class of composition to which the classic symposium belongs became popular in Greece at an early period. The name became famous as the title of one of the best-known dialogues of Plato.

Synagogue, a Jewish place of worship and prayer. The synagogue probably first arose during the Babylonian captivity, when the Jewish people were cut off from the Temple and naturally met together on the Sabbath, festivals, and other solemn occasions for public worship. It soon grew into a place of study as well, and by the time of Jesus, in spite of the restoration of the Temple worship, local synagogues were firmly established not only in Palestine, but in Rome, Alexandria, Antioch, and wherever Jews were to be found. The chief features of the synagogue are the Ark, or receptacle for the scrolls of the Law; the almemor, or pulpit and reading-desk, and (except in some modern "reformed" synagogues) the gallery for women, who are strictly separated from the male worshippers.

Syncopation, a musical term denoting an alteration of accent by prolonging a sound from a weak place in the bar to a stronger one. The practice, popular in America, was introduced into England about the time of the World War, when it became the basis of subsequent dance music.

Syncope, a temporary stoppage of blood circulation and of respiration, including faintness or possibly unconsciousness and collapse consequent upon the failure of the blood supply to the brain. It may be caused by low blood-pressure, emotional disturbance, or some form of heart disease.

Syncretism, name given to an attempted blending of different, more or less antagonistic, speculative or religious systems into one, such as Catholic and Protestant or Lutheran and Reformed. The name arose from the practice attributed to the ancient Cretans of fighting bitterly among themselves, but willingly combining when necessary against a common enemy.

Syndic, a name applied in Italian cities to an official roughly corresponding to the English mayor. It is also used at Cambridge University for officers appointed from time to time for specific duties, such as the management of the University Press.

Syndicalism, a proposed system of social organisation on the basis of a federation of trade unions which should take the place of the national State, and eventually itself federate with those of other countries in an international economic ruling body. It was popular in France, particularly before the World War, as an alternative to State socialism, and for a time between 1912 and 1914 played a part in British political philosophy. It is largely based on the theories of Georges Sorel. It advocated direct industrial action by workers to secure governing power in their industries; after a short period of favour in certain Labour circles in England, it tended to be replaced as an ideal by Guild Socialism (q.v.).

Syndicate, in commercial parlance is a number of capitalists associated together for the purpose of carrying through some important scheme usually having in view the control and raising of prices by means of a "corner."

Synge, John Millington, Irish playwright, born at Rathfriland, co. Dublin. After studying music in Germany, he lived for some time in Paris and Italy, but induced by W. B. Yeats (q.v.) to return to Ireland, he

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Taal, *Afrikaans* or *Cape Dutch*, a form of the Dutch language, spoken in the Union of South Africa; belongs to the Low German group of the Germanic languages. It shows supreme simplification of inflexion, and has adopted a number of English and native words. It is one of the official languages of the Union of South Africa.

Tabard, a sleeveless tunic, embroidered by heralds and kings-of-arms as their official insignia. It was originally worn by knights and nobles over their armour, when without their shields, to indicate their identity. The name is also applied to a similar cloak worn by trumpeters and drummers in the British Household Cavalry as a part of full dress uniform.

Tabard Inn, a famous inn in South-west London, the starting place of the pilgrims in Chaucer's *Canterbury Tales*. In 1666 the inn was rebuilt after the Fire, and was renamed the Talbot Inn, under which name it continued till demolished in 1873.

Tabernacle, a movable structure of erected by the Israelites during their wanderings in the wilderness. It was a parallelogram in shape, constructed of boards lined with curtains, the roof flat and of skins, while the floor was the naked earth. It included a sanctuary and a sanctuary sanctorum, and contained altars for sacrifice and symbols of sacred import, especially of the Divine presence, and was accessible only to the priests. The name is given nowadays, especially in Wales, to the chapels and meeting-places of certain Nonconformist religious bodies.

Tabes, name used for two wasting diseases, *tabes mesenterica*, a disease of childhood also known as abdominal tuberculosis, and *tabes dorsalis*, or locomotor ataxy, a disease of the nervous system which is one of the later stages of syphilis.

Table Mountain, a flat-topped eminence in the SW. of Cape Province, South Africa, rising to a height of 3,560 ft. behind Cape Town and overlooking it.

Taboo, or *Tabu*, a prohibition of some act or the use of some article or form of speech, either generally or by certain persons only, the violation of a taboo being supposed to entail supernatural punishment or retribution. The system was at its height among the Polynesian and African peoples, and is held by some to have been one of the practices at the root of the development of religion. The word has been adopted to cover any apparently non-rational prohibition of a kindred nature in more highly civilized societies.

Tabor (*tambour* in), a very small drum, hung from the left arm and tapped with a stick, frequently played with the pipe in medieval times.



TABOR

Tabor, Mount, an isolated cone-shaped hill, 1,600 ft. in height, and clothed with olive-trees, on the N.W. borders of Edrath, 7 m. E. of Nazareth. A tradition of the 2nd Century identifies it as the scene of the Transfiguration, and ruins of a church, built by the Crusaders to commemorate the event, crown the summit.

Tabriz, an ancient and important commercial city of Azerbaijan, Iran, 320 m. SE. of Tiflis, 4,500 ft. above sea-level; occupies an elevated site on the Aji, 40 m. E. of its entrance into Lake Urmiah; carries on a flourishing transit trade in carpets, dried fruits, cotton, hides, etc.; has the ruins of the famous "Blue Mosque"; earthquakes have left ruins of many other buildings in the vicinity. Pop. 219,000.

Tacca, a genus of plants with creeping tuberous roots and large divided leaves on long stalks, and bearing flowers in umbels and a berry fruit. The root of *T. pinnatifida* found in Malaya and Polynesia is made into arrowroot by the natives.

Tachometer. See *Speed Indicator*.

Tachylite, a black, brittle basaltic pitchstone found in neighbourhoods which have been exposed to volcanic action.

Tacitus, *Marcus Claudius*, Roman emperor, a descendant of Tacitus the historian, born at Interamna (Terni). He succeeded Aurelian in 275, after having served as consul twice. He was murdered by the troops after holding the throne for a little over six months. (290-276).

Tacitus, *Publius Cornelius*, Roman historian, born presumably in Rome, of equestrian rank, early famous as an orator; married a daughter of Agricola, held office under the Emperors Vespasian, Domitian, and Nerva, and with the younger Pliny conducted the prosecution of Marius Priscus. He is best known and most celebrated as a historian, and of writings extant the chief are his *Life of Agricola*, *Germania*, *Histories*, and *Annals*. His *Agricola* is admired as a model biography, while his *Histories* and *Annals* are now extant only in part. (c. 54-120).

Tacking, a term used in the law relating to mortgages. By the doctrine of tacking, any mortgage has priority over other puisne mortgages (i.e., any mortgage after a legal mortgage), even though posterior in date, if tacked to the legal mortgage; but it is essential, for the doctrine to be applicable, that the later advance or loan was made without notice of the earlier or intermediate puisne mortgage or mortgages.

Tacna, capital of a province of same name in Peru, 38 m. N. of Arica, with which it is connected by rail; trades in wool and minerals. It was ceded to Chile in 1883, with Arica, for 10 years, after a war in 1879, but at the end of the period Chile did not restore it, and a long dispute ensued ending only in 1929 with the return of Tacna to Peru, Chile continuing to hold Arica, but paying an indemnity therefor. Area (prov.), 4,930 sq. m. Pop. (prov.) 60,000; (town) c. 17,000.

Tacoma, town and port of Washington, U.S.A., on Puget Sound; is the outlet for the produce of a rich agricultural and mining district. Exports lumber, fish, and flour, and smelts copper and lead. Pop. 106,800.

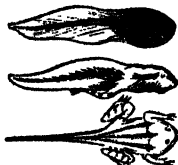
Tacsonia, a genus of showy climbing Passion Flower of the order Passifloraceae native to tropical America and the W. Indies. There are 25 recognised species, some of which are cultivated in England in sheltered places.

Tactics, the method of carrying on a military or naval campaign in accordance with a given strategical plan

(see Strategy). Modern tactics are based on the mobility of mechanized units, and on the fact that tanks, armoured cars, etc., are able to carry out controlled manoeuvres. Though tactical methods change with the introduction of new weapons, certain general principles remain. Line formation and development of gun fire are important, while the success of tactical manoeuvres depends on the strength of the attacking force, its power of gaining fire superiority, of taking instant advantage of success, and of progressing rapidly from one success to another.

Tadmor. See Palmyra.

Tadpole, the stage in the life of a frog, toad, or other amphibian between the egg and adult conditions; the tadpole is purely aquatic, breathes by gills, and has a fish-like tail. In the case of the frog and toad tadpoles the tail is absorbed into the body and the gills give place to air-breathing apparatus as the adult stage is reached, but some amphibian tadpoles (e.g., the newt and salamander) retain the tail in maturity, whilst the axolotl (q.v.) or tadpole stage of the amblystoma can live and reproduce itself without ever completing its metamorphosis.



TADPOLE

Tadzhikistan, an autonomous republic of Soviet Central Asia, between Uzbekistan, the Kirghiz Republic, Chinese Turkestan and Afghanistan. The capital is Stalinoabad (Dushanbe). Agriculture, cattle breeding, and cotton growing and milling are the chief industries. The valuable mineral deposits are so far little worked. Area, 55,000 sq. m. Pop. 1,333,000.

Tael, a Chinese weight of silver, formerly used as money of account; its weight varied widely in different parts of the country. In 1933 it was superseded as an exchange unit by the silver dollar, equivalent to 0.715 tael (roughly 3s.) of the former Imperial standard of 1908. As an ordinary measure of weight it is equivalent to 1½ oz.

Taff, river of S. Wales, rising in Brecknock, neck Beacons and flowing through the coal and iron country of Glamorganshire to the Bristol Channel at Cardiff. Its length is about 40 m.

Taffeta, *Taffetas* or *Taffety*, a kind of silk fabric popular in the 16th Century, when it was manufactured in many parts of England. Nowadays the name is taken to mean a mixture of silk and wool.

Taff Vale Judgment, the outcome of an important legal dispute in 1901 between the Taff Vale Railway Co., S. Wales, and its employees after a strike. It was held by the House of Lords that trade union funds were liable for acts committed by individual members of the union, a decision that led in 1906 to the Trade Disputes Act, which reversed the ruling of the House of Lords.

Taft, William Howard, American statesman. He was governor of the Philippine Is. from 1901 to 1904, War Secretary in that year, and in 1908 succeeded Theodore Roosevelt as President of the United States. He stood for re-election in 1912, but was defeated. In 1921 he became Chief Justice of the United States. (1857-1930).

Taganrog, a Russian seaport on the N. shore of the Sea of Azov, an important industrial centre, and an outlet for the products of local agriculture and fisheries. Pop. 150,000.

Tagliamento, a river in Venetia, N. Alps and flowing into the Gulf of Venice, 100 m. in length. It was the scene of fighting in the World War, when Italian troops retreating from Caporetto made a stand in November, 1917, before retreating to the Piave.

Tagore, Rabindranath, Indian poet, born in Bengal. In 1913 he won the Nobel Prize for Literature, and in the same year his play *The Post Office* was given a London production. Among his volumes of verse are *Gitanjali* and *The Crescent Moon*; he has also written novels and other plays. In 1915 he received a knighthood, but after 1919 ceased to use his title as a protest against British ruling methods in India. In 1901 he founded at Bolpur the famous school Santiniketan, which has become an institute with the status almost of an international university. (1861-).



RABINDRANATH TAGORE

Tagus, the largest river of the Spanish peninsula, issues from the watershed between the provinces of Guadalajara and Teruel; follows a more or less westerly course across the centre of the peninsula, and, after dividing into two portions below Salvaterra, its united waters enter the Atlantic by an estuary 20 m. long; total length 566 m., of which 180 are in Portugal; navigable as far as Abrantes.

Tahiti, the principal island of a group in the S. Pacific, called the Society Is., situated 2,000 m. N.E. of New Zealand; are mountains of volcanic origin, beautifully wooded, and gift by coral reefs; a fertile soil grows abundant fruit, cotton, sugar, etc., which, with mother-of-pearl, copra, and phosphates, are the principal exports; capital and chief harbour is Papeete (pop. 7,000). The whole group since 1880 has been a French possession. Area, 600 sq. m. Pop. 19,000.

Tailor Bird (*Sutoria*), a genus of birds of the family Sylviidae (Warblers), native to India, notable for the peculiar nest of leaves sewn together with thread to prevent their slipping.

Taine, Hippolyte Adolphe, French critic, aesthete, and historian, born at Vouziers, in Ardennes; after some years of scholastic drudgery in the provinces returned to Paris, and there, by the originality of his critical method and brilliancy of style, soon took rank among the foremost French writers. In 1854 the Academy crowned his essay on *Livy*; 10 years later he became professor of Aesthetics at the Ecole des Beaux-Arts in Paris, and in 1878 he was admitted to the French Academy. His voluminous writings embrace works on the philosophy of art, essays critical and historical, volumes of travel-impressions in various parts of Europe; but his finest work is contained in his vivid and masterly studies on *Les Origines de la France Contemporaine* and in his *History of English Literature* (1833-1834; Eng. trans. by van Laun), the most penetrating and sympathetic survey of English literature yet done by a foreigner. He was a disciple of Sainte-Beuve. (1828-1893).

Tai-Pings, a name bestowed upon the followers of Hung Hsi-ch'wan, a Chinese who, coming under the influence of Christian teaching, sought to subvert the religion and ruling dynasty of China. He himself was styled "Heavenly King," his reign "Kingdom of Heaven," and his dynasty "Tai-Ping" (Grand Peace). Between 1851 and 1855 the rising armed formidable dimensions, Nanking being taken

in 1853, but from 1855 began to decline. The religious enthusiasm died away; foreign auxiliaries were called in, and under the leadership of Gordon (q.v.) the rebellion was stamped out by 1865.

Tait, Archibald Campbell, British ecologist, born at Edinburgh, of Presbyterian ancestry; educated at Edinburgh, Glasgow, and Oxford; when at Oxford led the opposition to the Tractarian Movement; in 1842 succeeded Arnold as headmaster at Rugby; in 1850 became Dean of Carlisle; in 1856 Bishop of London; and in 1868, Archbishop of Canterbury. (1811-1882).

Taiwan. See *Formosa*.

Taj Mahal. See *Agra*.

Takoradi, port and wireless station of the Gold Coast, Africa, the only shelter between Sierra Leone and Nigeria for vessels drawing over 30 ft. It was opened in 1928.

Taku, port of Tientsin, in Chih-li province, N. China, by the mouth of the Peiho, captured by the British and French fleets in 1858 and again by allied forces in the Boxer rising of 1900.

Talavera de la Reina, a picturesque old Spanish town on the Tagus, situated amid vineyards, 75 m. S.E. of Madrid; scene of a great victory under Sir Arthur Wellesley over a French army commanded by Joseph Bonaparte and Marshals Jourdan and Victor, July 28, 1809. Pop. 13,500.

Talbot, **William Henry Fox**, one of the earliest experimenters in photography (called after him Talbotype), born in Chippenham, which he represented in Parliament; was also one of the first to decipher the Assyrian cuneiform inscriptions. (1800-1877).

Talc, a soft, lustrous, silvery mineral consisting mainly of silica and magnesia found in foliated and granular masses. As "French chalk" it is used for marking, and also has applications in concrete, tile and paint manufacture and as an insecticide.

Talent, a weight, coin or sum of money among the ancients, of variable value among different nations and at different periods. The Attic talent of 60 minas was roughly equivalent to 633 troy ounces, or in monetary value to £243 10s. among the Romans; the great talent was worth £99, and the little worth £75. The Hebrew talent of 3,000 shekels was slightly under 94 lb.

Taliesin, literally the "Radiant Brow," a Welsh bard of the 6th Century, son of Saint Henwg of Caerleon-upon-Usk. His name, regarded by his countrymen with the reverence due to the "Prince of Song," is known to the Saxons chiefly through the brief and spirited invocation of Gray.

Talisman, a magical figure of an astrological nature carved on a stone or a piece of metal, and carried or worn on the person to avert evil, protect from danger, safeguard health, and so on.

Talith, or **Talle**, a garment of shawl form worn by Jewish male worshippers at the synagogue service and at private devotions; it is generally a large square of white linen, fringed and tasselled, with blue stripes.

Talking Films, the development of which introduced talking, music, noises, etc., synchronised with the action in the film; the general exhibition of such films commenced in London in 1928. The original phonofilm system was invented by Lee de Forest, the inventor of the triode wireless valve. Several alternative systems of sound reproduction are in use, but generally the sound track is

carried along the edge of the picture film on a photographic record, which is transformed by means of a photo-electric cell into an electric current, and reproduced acoustically by means of a loud-speaker.

Talleyrand de Périgord,

Charles Maurice, Duke of Benevento, French statesman and diplomatist, born in Paris; rendered lame by an accident, he was educated for the Church, and made bishop of Autun; chosen deputy of the clergy of his diocese to the States-General in 1789, threw himself with zeal into the popular side, officiated in his pontifical robes at the feast of the Federation in the Champ de Mars, and was the first to take the oath on that side, but on being excommunicated by the Pope, resigned his bishopric, and embarked on a statesman's career; sent on a mission to England in 1792, remained two years an *émigré*, and had to depart thence to the United States, where he employed himself in commercial transactions; recalled in 1796, was appointed Minister of Foreign Affairs; supported Bonaparte in his ambitious schemes, and on the latter becoming Emperor, was made Grand Chamberlain and Duke of Benevento, while he retained the portfolio of Foreign Affairs, shortly after withdrawing from the Ministry; he attached himself to the Bourbons on their return, and, becoming Foreign Minister to Louis XVIII., was made a peer, and sent as ambassador to the Congress of Vienna; went into opposition till the fall of Charles X., and attached himself to Louis Philippe in 1830, retiring from active life four years later. (1754-1838).



TALLEYRAND

Tallinn (formerly *Reval*), capital of Estonia, a flourishing seaport on the S. side of the Gulf of Finland, 232 m. W. of Leningrad; has a castle, fortifications, cathedral, medieval antiquities, etc.; is the seat of a technical university; chiefly engaged in commerce; exports largely oats and other cereals, spirits, cement, timber, etc. Pop. 146,500.

Tallow, the product obtained from fat under steam pressure in iron cylinders. In its pure state it is a stiff white grease, but the commercial product is light yellow and sometimes rancid. It contains glycerol esters of stearic, palmitic and oleic acids. Formerly in great demand for making candles, it is now used for dressing leather, soap-making, and as a lubricant.

Tallow Tree, a tree (*Sapium sebiferum*) of the order Euphorbiaceae, the seeds of which are covered with a waxy substance used in China, to which it is native, for making candles. A similar tree (*Vateria indica*) of S. India, and the *Pentadema butyracea* of Sierra Leone, are known by the same name.

Tally, a notched stick used in commercial and Exchequer transactions, originating in times when writing was not generally known. The marks, of varying breadth, indicated sums paid; the stick was split longitudinally, and one half retained by the seller and one by the buyer as a receipt. As a means of receipt for sums paid into the British exchequer, the tally was in common use until 1782, and was not entirely abolished till 1830. The burning of the old Houses of Parliament in 1834 was due to the destruction of accumulations of old tally-sticks.

Tally System, a mode of credit, whereby a merchant provides a customer with goods, and

receives in return weekly or monthly payments to account. Except in the ready-made clothing industry, it has been generally superseded by the hire-purchase system (q.v.).

Talmud, the standard collection of texts and commentaries on Jewish religious law, as developed from the Pentateuch (q.v.). It consists of two parts, the Mishnah and Gemara, the former being a commentary on the matters dealt with in the Mosaic legislation, the latter a commentary on the Mishnah itself. Two versions exist, the Palestinian, compiled about the end of the 4th Century, and the Babylonian, about two centuries later. The portions dealing with law proper are called Halakha, those consisting of illustrative anecdote, history and legend are the Haggadah. In orthodox Jewry the authority of the Talmud is held second only to that of the Old Testament. It has been attacked by Christians at times—quite unfairly—as anti-Christian.

Talus, in Greek legend, a man of brass, the work of Hephaestus, given to Minos to guard the island of Crete. He walked round the island thrice a day, and if he saw any stranger approaching he made himself red-hot and embraced him.

Tamarind, a leguminous tree (*Tamarindus indica*) bearing seed-vessels, the pods of which contain an acid pulp used in medicine for its laxative qualities, and in India in the preparation of a cooling drink. It is grown in most tropical countries, and is also cultivated for the sake of its hard wood, used for cabinet making.

Tamarisk, a small shrub of the order Tamaricaceae, with stiff straight branches, small leaves which give a feathery appearance to the tree, and spikes of rose-coloured flowers blooming in July. The bark is highly astringent. The Common Tamarisk (*Tamarix Gallica*) is found in abundance on the shores of the Mediterranean, and is common in places on the S. and E. coasts of England, and in Cornwall, where it forms a wind-break and serves to bind sand-dunes.



COMMON TAMARISK

Tambourine, a musical instrument consisting of a wooden hoop with skin or parchment stretched over one side and pairs of cymbals, called jingles, placed in slits round the circumference. It is played by shaking or striking with the knuckles or elbow.

Tambov, town of European Russia, in the Central Black Soil Area, 306 m. SE. of Moscow. It is a market for grain, horses and cattle. Pop. 102,000.

Tamerlane, or **Timur**, great Asiatic conqueror, born at Kesh, near Samarkand; the son of a Mongol chief, raised himself by military conquest to the throne of Samarkand (1369), and having firmly established his rule over Turkestan, inspired by lust of conquest began the wonderful series of military invasions which enabled him to build up an empire that at the time of his death extended from the Ganges to the Grecian Archipelago; died whilst leading an expedition against China; was a typical Asiatic despot, merciless in the conduct of war, but in peace-time a patron of science and art, and solicitous for his subjects' welfare (1336-1405).

Tamil, a Dravidian language spoken in the Indians in Ceylon. It has an extensive literature, and is closely allied to Kanarese, Malayalam and Telugu. The number of speakers of the language in India is some

\$1,000,000, out of the 75,000,000 who form the whole Dravidian-speaking group.

Tammany Society, of Tammany Hall (so-called from their meeting-place), a powerful political organization of New York City, whose ostensible objects, on its formation in 1805, were charity and reform of the franchise. Its growth was rapid, and from the first it exercised, under a central committee and chairman, known as the "Boss," remarkable political influence on the Democratic side. After the gigantic frauds practised in 1870-1871 on the municipal revenues by the then "Boss," William M. Tweed, and his "ring," the society remained under public suspicion as "a party machine" not too scrupulous about its ways and means, but it regained most of its power under "Boss" Croker, who succeeded in 1886. In recent years its influence has tended to wane before that of other Democratic organizations; a fresh attack was made upon it in 1898, one of its district leaders, J. J. Hines, being charged with bribery and the conduct of lotteries. The name is derived from a celebrated Indian chief who lived in Penn's day, and who has become the centre of a cycle of legendary tales.

Tammuz, a Babylonian deity, mentioned in the Old Testament book of Ezekiel, and generally identified with the Greek Adonis (q.v.), the memory of whose fate was annually celebrated with expressions, first of mourning and then of joy, all over Asia Minor. The tenth month of the Jewish calendar still bears his name. He appears to have been a symbol of the sun, departing in winter and returning as youthful as ever in spring.

Tampa, city, port of entry and popular seaside resort of Florida, U.S.A., the greatest centre for the production of Havana cigars in the U.S.A. It also ships most phosphate, and is a distributing centre for oil and petrol. The Gandy Tampa Bay bridge, which is partly a viaduct, is 6 m. long. Pop. 101,000.

Tampere, formerly Tammerfors, the chief industrial city of Finland, situated on a rapid stream, which provides power for its textile factories, saw mills, and metal works, 50 m. NW. of Tavastehus. Pop. 61,000.

Tampico, a port of Mexico, on the Panuco, 9 m. from its entrance into the Gulf of Mexico, and almost entirely surrounded by water. Oil, chicle, fruits, asphalt, etc., are exported. Pop. 70,000.

Tamworth, town on the Stafford and England, 7 m. SE. of Lichfield. The capital of the old Mercian kingdom, it was destroyed by the Danes in 911. There are coal mines in the neighbourhood, and freclay is made. Pop. 11,700.

Tana (Tana, or Dembea), lake in Abyssinia, 1,100 sq. m. in area, and at an altitude of 5,700 ft. above sea-level; is the source of the Blue Nile; a convention as to the use of its waters was one of the points embodied in the Anglo-Italian agreement of 1898.

Tanager (Tanageridae), a family of birds found only in America, of brilliant plumage, living chiefly in forest regions. There are several genera, and some 350 species are recognized, the commonest being the violet, the Mexican crimson-headed, the white-capped, a summer migrant to the Argentine, and the scarlet (*Piranga erythromelas*), or fire-bird, a song-bird with bright scarlet body and black



TANAGER

tail and wings in the male, and olive-green back with greenish-yellow breast in the female.

Tancred, leader in the First Crusade, and the hero of Tasso's poem, *Gerusalemme Liberata*. He fought at Nicæa, Jerusalem, and Ascalon, and was made Prince of Tibérias by Godfrey of Bouillon. He died at Antioch of a wound received in battle. (1078-1112).

Tang, a dynasty of Chinese monarchs between 618 and 907 A.D., under whom the Chinese rule was extended into Korea, Tibet and Turkestan; it was the golden age of Chinese poetry, and probably saw the introduction of printing and of the use of paper money into the country. The greatest emperor of the house was Tai Tsung (627-650).

Tanganyika, a lake of East Central Africa, stretching between the Belgian Congo (W.) and Tanganyika Territory (E.); discovered by Speke and Burton in 1858; more carefully explored by Livingstone and Stanley in 1871; the overflow is carried off by the Lukuga into the Upper Congo; is girt round by lofty mountains. Its length is 420 m., breadth from 15 to 45 m.

Tanganyika Territory, that portion of the former Colony of German East Africa which, under the Treaty of Versailles, 1919, was mandated to Great Britain—the remaining portions, namely, the districts of Ruanda and Urundi in the NW., and the Kionga area, S. of the Rovuma R., being similarly mandated to Belgium and Portugal respectively. The British mandated territory extends from the Umbe R. on the N. to the Rovuma R. on the S., with a coastline of about 500 m.; the N. boundary runs NW. to Lake Victoria, and the W. boundary follows the Kagera R. and along the eastern boundary of Urundi to Lake Tanganyika. The total area is 374,100 sq. m. which includes 20,000 sq. m. of water.

Along the coast lies a plain, varying from 10 to 40 m. in width, behind which the country rises gradually to a plateau constituting the greater part of the hinterland. This plateau falls sharply from a general level of 4,000 ft. to the level of the lakes (Tanganyika, 2,590 ft.; Nyasa, 1,606 ft.), which mark the Great Rift valley extending northwards to Lake Nalvasha. The seat of government is Dar-es-Salaam. The most important inland town is Tabora at the junction of the main caravan routes; other towns are Tanga, Bagamoyo, Lindi, Moshi, Bukoba, and Ujiji. The highest point is the extinct volcano Kilimanjaro (19,600 ft.); Mount Meru is 14,966 ft. In the SW. are the Livingstone Mts. (9,000 ft.). Portions of the great lakes of Central Africa are included in the territory.

There are good forest resources, cedar and various hardwoods, ebony and gum copal, bamboo and baobab being plentiful. Gold (Lupa Goldfield), tin, wolfram, diamonds, salt, mica and phosphates have been mined for export. The government is administered by a British governor, assisted by an Executive and a Legislative Council, the latter having 10 non-official members in addition to 13 official. The British explorer Burton first entered the territory in 1858, and was soon followed by Speke, Livingstone and Stanley. In 1916, General Smuts attacked and defeated the German forces at the foot of Mt. Kilimanjaro and occupied Moshi; in 1917 the Germans were driven across the Rovuma R. into Portuguese East Africa, and the country was in effective British occupation. Pop. 2,955,000 (Europeans 8,500, Asiatics 22,000).

Tangent, in geometry, a straight line touching a circle or the curve of an arc, at a point, but does not cut it.

Tangerine, a small flattened, leop-coloured variety of orange, grown at Tangier; its botanical name is *Citrus nobilis Tangeriana*.

Tangier, a seaport of Morocco, on a Gibraltar, small bay of the Strait of Gibraltar; occupies a picturesque site on two hills, but within its old walls presents a dirty and crowded appearance; has a considerable shipping trade; was a British possession from 1663 to 1683, but was abandoned, and subsequently became infested by pirates. It is the capital of the Tangier Zone, since 1912 internationalised, and governed by an international assembly of 27 members through an administrator. Area, 225 sq. m. Pop. 60,000 (including about 17,000 Europeans).

Tangle, name given to various large species of seaweed, of the genus *Laminaria*, especially *Laminaria digitata* and *Laminaria saccharina*; also called tangle-wrack and hanger; they are found off the British coasts. They have long thick solid stems and fronds up to 6 or 8 ft. in length.

Tango, a modern ballroom dance of slow manner, introduced into Europe from South America (Argentina), and originating in the traditional dances of Moorish Spain.

Tanistry, a method of tenure which prevailed among the Gaelic Celts. According to this custom succession, whether to office or land, was determined by the family as a whole, who on the death of one holder elected another from its number. The practice was designed probably to prevent family estates falling into the hands of an incompetent or worthless heir. The next heir to an estate or chieftainship, under this system, was known as the Tanist, a name which has been adopted in the 1937 constitution of Eire for the Deputy Prime Minister.

Tank, a mechanically-propelled military armoured car, first used during the World War, capable of negotiating uneven

country, and knocking down such natural obstacles as trees. Britain was the first to invent tanks, and put them into action in September, 1916, on the Somme to end the deadlock of trench warfare. They were conspicuously successful at the surprise attack at Cambrai in 1917. The original tanks were heavy machines, but later light tanks were invented. The British Tank Corps, formed in March, 1916, now comprises seven battalions, each containing three "mixed" companies and a section of close-support tanks (a "mixed" company comprises a section of five medium and a section of seven light tanks). Modern strategy favours the operation of medium and light tanks in conjunction. Water was once the only sure defence against tank attack, but the amphibious light tank can cross rivers at a speed of approximately 7 knots, climb banks, and proceed on land, developing over good ground a speed of as much as 40 m.p.h. Each tank is manned generally by an officer, a driver, and seven men. A one-man "crawler" tank has now been invented which enables a machine-gunner to advance against an enemy machine-gun post.

Tannenberg, a village in E. Prussia, where in August, 1914, the Germans gained an important victory over the Russians. Hindenburg and Ludendorff led the German forces and annihilated the Russians, and the battle proved one of the most decisive of the World War, removing all possibility of a victory for the Allies on the eastern front.



BRITISH
MEDIUM TANK

Tannin, or **Tannic Acid**, a whitish solid, soluble in water, which is found in gall-nuts and other parts of oak trees, and is used in tanning, or converting the skins of animals into leather. It has a characteristic astringent taste, and is used in medicine on account of its astringent properties.

Tanning, the process of converting raw hides and skins into leather by adding some agent which prevents the raw material from rotting and renders it elastic. The commonest agent is tannin (*q.v.*), a soluble vegetable extract which forms insoluble compounds with the gluten and other elements of the skin or hide. Alum and sodium are also used to strengthen the fibrous part of the material against moisture or air. The vegetable tanning extracts in use to-day are mainly valonia, mimosa or South African wattle-bark, chestnut-wood, oakwood, quebracho and gambier. The first stage in the industrial process is "layering," *i.e.*, steeping in tanning liquors to impart firmness; this is followed by "scouring" to remove deposits, and then by drying and finishing.

Tansy (*Tanacetum vulgare*), a perennial plant of the order Compositae; common in hedges and waste ground; bears bright yellow flowers in August. The aromatic and bitter-flavoured leaves are used in folk-medicine, and as a flavouring for confectionery.

Tantalum, a metallic chemical element (symbol Ta; atomic weight 181.4; atomic number 73). It is very resistant to acids, and is used in the manufacture of certain steels. As an electric lamp filament it has been largely replaced by tungsten.

Tantalus, in the Greek mythology, a Lydian king, who, being admitted to the banquets of the gods, incurred their displeasure by betraying their secrets, and was consigned to the nether world and compelled to suffer the constant pangs of hunger and thirst, though he stood up to the chin in water, and had ever before him the offer of the richest fruits, both of which receded from him as he attempted to reach them, while a huge rock hung over him, ever threatening to fall and crush him with its weight.

Taoism, a Chinese philosophical and religious system tracing its origins to Lao-tse (*q.v.*). Originally it seems to have been a mystical monism relying on intuition as opposed to Confucian rationalism, but after the introduction of Buddhism into China it was greatly influenced by, and in part coalesced with, that religion. Its priests and devotees later adopted numerous magical and esoteric practices akin to those of the European alchemists, and a rapid degeneration set in. To-day it is impossible to enumerate Taoist adherents separately, as many if not most Chinese frequent impartially Taoist, Confucianist and Buddhist temples and take part in the rites of all three creeds.

Tap, a hole in a vessel or at the end of a pipe through which liquid may be drawn; it is stopped by means of an adjustable plug which controls the amount of the flow, or cuts it off completely when required, the plug being usually manipulated by the turning of a handle.

Tapajos, a river of Brazil, one of the Amazon; its head waters rise in the Sierra Diamantina, in the S. of Matto Grosso State; has a northward course of over 1,000 m. before it joins the Amazon near Santarem; its lower course is navigable for 150 m.

Tape Machine, a telegraph instrument which receives information issued along relay lines from an exchange centre, and records the words in print on a moving paper tape. It is used principally in newspaper offices for the receipt

U.E.

of news items issued by press agencies. It is sometimes, and in America generally, known as the "ticker."

Tapestry, designs woven in such a way that the horizontal threads (woof) completely conceal the vertical threads (warp), the pattern being formed by the use of woof threads of various colours, which are woven through selected groups of warp threads instead of through all of them, as in ordinary weaving. The word is applied also to embroidery, *e.g.*, the famous 11th Century Bayeux tapestry. The art of tapestry proper dates from early times—in Egypt from the second, in Greece from the first millennium B.C. In Europe the most famous tapestry was made at Arras from about 1300 until its fall in 1477, and the name of the town became a generic name for rich tapestry. Other centres of tapestry-weaving were Brussels (14th to 16th Century), Mortlake, England (16th Century), Gobelin, Paris (17th Century); at the Gobelin factories and at Aubusson the best tapestries of the present day are produced.

Tape Worm (*Cestodes*), an endoparasitic worm found in the alimentary canal of vertebrates, including man. There are many species, segmented and unsegmented, varying in size from a few millimetres to over a yard. In segmented species, the segments or proglottides contain generative organs. The tapeworm attaches itself to the mucous membrane by the suckers and hooks with which the head or scolex is equipped. It is generally introduced into the human digestive system as a result of eating undercooked beef or pork containing the ova or immature stages of the worm.

Tapioca, a farinaceous food obtained from the starch contained in the roots of cassava or manioc. This starch is extracted and dried on hot plates, forming small irregularly-shaped pieces. It is also sold in the form of flour. Tapioca is exported chiefly from Singapore and Brazil.

Tapir, the common name of the ungulate mammals of the family Tapiridae.

Several species are found in S. America, and one, *Tapirus indicus*, in Malaysia. The latter is remarkable for its colouring, the limbs, head and foreparts being deep black, the back, belly and hindquarters white.



TAPIR

It is a large and clumsy animal with long snout, rudimentary tail, and thick smooth skin. Nocturnal in habit, it lives in forests, and is hunted for the sake of its skin.

Tapping, in surgery the operation of fluid which has collected in the cavities or subcutaneous tissues of the body, as, *e.g.*, in the pleura or peritoneum. It is performed by piercing the wall of the cavity with a suitable instrument, and allowing the fluid to exude through a tube or similar medium.

Tar, a viscid resinous substance, the by-product in the destructive distillation at high temperatures of wood (*e.g.*, pine), shale, and coal. It is used in building macadamized roads, and for the preservation of rough outdoor wood-work. By distillation such varied products may be obtained from it as pitch, creosote, paraffin (from shale tar), benzene, phenol, and naphthalene. Wood-tar possesses medicinal properties and is used in skin-ointment.

Tara, Hill of, a celebrated eminence, some 300 ft., in country north of Bire, 7 m. S.W. of Navan; legend points to it as the site of the residence of the High Kings

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of Celtic Ireland; St. Patrick is said to have met and defeated the Druids there in argument.

Taranaki, a provincial district of New Zealand, occupying the SW. corner of North I.; remarkable for its dense forests, which cover nearly three-fourths of its area, and for its beds (2 to 5 ft. deep) of titaniferous iron-sand which extend along its coasts, out of which the finest steel is manufactured; the industries are almost entirely agricultural and pastoral. New Plymouth is the capital. Area, 3,750 sq. m. Pop. 78,600.

Taranto, a seaport of S. Italy and headquarters of an Italian naval zone, situated on a rocky inlet between the Gulf of Taranto and the Mare Piccolo, a broad inlet on the E., 72 m. S. of Bari; is well built, and contains various interesting buildings, including a cathedral and castle; is connected with the mainland on the E. by six-arched bridge, and by an ancient aqueduct on the W.; textile and glove manufactures are carried on, and oyster and mussel fisheries and fruit-growing are important; as the ancient Tarentum its history goes back to the time when it was the chief city of Magna Græcia; was captured by the Romans in 272 B.C., and after the fall of the Western Empire was successively in the hands of Goths, Lombards, and Saracens, and afterwards shared the fate of the kingdom of Naples, to which it was united in 1063. Pop. 118,000.

Tarantula (*Wolf-spider*), a spider (*Lycosa tarantula*) found chiefly in S. Italy, where its bite is reputed to be venomous, causing tarantism, an epidemic disease allied to hysteria in which the patient makes involuntary dance-like movements. Widespread outbreaks of the disease occurred in the 15th and 16th Centuries, the "dancing madness" spreading over a great part of S. Europe. The name "tarantula" is also sometimes erroneously applied to the tropical bird-catching spiders (*g.r.*).

Tarapaca, a maritime province of N. 1883; its immense deposits of nitrate of soda are a great source of wealth to the country; silver and guano are also produced; area, 21,250 sq. m. Pop. 80,400. Capital Iquique.

Tarbert, a fishing village of Argyllshire, Scotland, on the Mull of Kintyre, 39 m. SW. of Inverary. Above it stand the ruins of a castle built by Robert the Bruce. Pop. 2,060.

Tarbes, an ancient town of France, on the Adour, capital of the dept. of Hautes-Pyrénées, 100 m. SW. of Toulouse; has a fine 12th-Century cathedral and a Government cannon foundry. Pop. c. 30,000.

Tardieu, *André*, French statesman, originally in the diplomatic service and attaché to the Berlin Embassy, he became professor of modern history at the School of Political Science, Paris, and afterwards at the French Army Staff College. He later took to journalism, and during the World War he was given positions on the staff of Foch and Joffre, but transferred to a line regiment in the trenches where he was wounded and badly gassed. He represented France at the Versailles Peace Conference, was Prime Minister in 1929, 1930, and for a short time in 1932, and later served in the Doumergue non-party government of 1934 as Minister without portfolio. (1876-).

Tare, or *Vetch*, the common name in number of leguminous plants of the genus *Vicia*, *Vicia sativa*, the chief, being found in waste places and much cultivated for horse and cattle forage.

Tare and Tret, deductions usually made from the gross weight of goods. Tare is the weight of the case or covering, box or suchlike, containing the

goods; deducting this the net weight is left. Tret (a term now practically disused) was an allowance for wastage through dust damage and similar causes.

Tarentum. See Taranto.

Target, or *Targe*, original-Celtic shield; from a resemblance in shape, the name was given to an artificial mark at which archers, and later rifle men, might practise firing. The present-day service target is a wooden frame on which is sketched a canvas background showing the dark silhouette of a head and shoulders; those used by amateur rifle clubs generally show a "bull's eye."



TARGET

Tarifa, Spanish seaport, the most SW. of Gibraltar, derives its name from the Moorish leader Tarif, who occupied it A.D. 710; held by the Moors for more than 500 years; still thoroughly Moorish in appearance, dingy, crowded, and surrounded by walls; its main occupation is fishing. Pop. 12,000.

Tariff, a duty imposed on goods imported from abroad. The idea underlying the system is to raise the price of imported articles, and so afford a margin to home producers to enable them to compete on better terms in the home market. Some tariffs, however, are designed not to give protection to home industries but to raise revenue; in England these include the duties on tobacco, wine, and tea, which were imposed even in the "Free Trade" epoch before 1831, after which a general tariff on all imported articles came into force. See *Protection*.

Tariff Reform, an agitation started early this century by Joseph Chamberlain (*q.r.*) for a reversal of Britain's free trade policy and the imposition of protective duties on imported articles, together with an encouragement of Empire trade by granting preferences. The Tariff Reform League was started in 1903, and in 1906 its proposals became part of the programme of the Conservative Party in the general election, when they were heavily defeated. In 1923 Baldwin sought to reverse that decision, but without success. In 1932, however, in response to the new situation created by the economic crisis of 1931, the free trade policy was abandoned, and a general protective tariff imposed by the Import Duties Act, one of the first measures of the National Government.

Tarn, dept. of S. France, in the former province of Languedoc. Mainly mountainous, there are fertile plains in the W. where cereals, etc., are grown. Cattle and sheep are reared. The capital is Albi. It is watered by the R. Tarn, which flows through picturesque gorges. Area, 2,230 sq. m. Pop. 299,000.

Tarn-et-Garonne, dept. of S. France, part of the old province of Guienne. It is mainly a fertile plain enclosed by low hills and is watered by the Tarn, Garonne and Aveyron. The capital is Montauban. Area, 1,440 sq. m. Pop. 155,000.

Tarnopol, county of Poland, in the area formerly known as Galicia; area, 5,460 sq. m.; pop. 1,600,400. Also its capital, on the R. Sereth, 80 m. SE. of Lwów, an agricultural centre, largely inhabited by Jews; pop. 30,000.

Taro, a plant (*Colocasia esculenta*) of the order Araceae, found in Japan and Hawaii and elsewhere in the Pacific; was formerly common in New Zealand. Its root, from which flour is made, and its leaves, are common articles of food in Polynesia. Another

allied species, *Colocasia antiquorum*, is cultivated in the tropics for its root which, though poisonous raw, becomes edible when boiled.

Tarpaulin, hempen, jute or linen cloth coated with tar or pitch to make it waterproof. It is used for covering boats and other exposed portions of ships from the weather, to protect deck cargo, and as a covering for goods in course of transport by other methods.

Tarpeian Rock, a precipitous cliff on the W. of the Capitoline Hill at Rome, from which in ancient times persons guilty of treason were hurled. It took its name from Tarpeia, a vestal virgin, who betrayed the city to the Sabine soldiers, then besieging Rome, on condition that they gave her what they wore on their left arms, meaning their golden bracelets. Instead, they flung their shields upon her, visiting her perfidy with merited punishment. At the base of the rock her body was hurled.

Tarpon, a large fish (*Megalops atlanticus*) of the family Clupeidae, attaining when full-grown a length of over 8 ft. It is found chiefly off the coasts of California, Mexico, and Brazil. It is distinguished by a peculiar elongation of the dorsal fin, and the scales are large, 2 to 4 in. in diameter.



TARPON

Tarquinius, name of an illustrious Roman family of Etruscan origin, two of whose members, according to legend, reigned as kings in Rome: **Lucius Tarquinius Priscus**, fifth king of Rome; the friend and successor of Ancus Martius; said to have reigned from 616 to 578 B.C., and to have greatly extended the power and fame of Rome; was murdered by the sons of Ancus Martius. **Lucius Tarquinius Superbus**, seventh and last king of Rome (534-510 B.C.), usurped the throne after murdering his father-in-law, King Servius Tullius; ruled as a despot, extended the power of Rome abroad, but was finally driven out by a people goaded to rebellion by his tyranny and infuriated by the infamous conduct of his son Sextus (the violator of Lucretia); made several unsuccessful attempts to regain the royal power, failing in which he retired to Cumae, where he died.

Tarragona, a Spanish seaport, capital name (area 2,500 sq. m.; pop. 349,000), situated at the entrance of the Francoli into the Mediterranean, 60 m. W. of Barcelona; contains many interesting remains of the Roman occupation, including an aqueduct, still used, and the Tower of the Scipios; possesses also a 12th-Century Gothic cathedral; has a large shipping and transport trade, and manufactures wine, silk, jute, and lace. It was the seat of the manufacture of the well-known liqueur, Chartreuse, during the expulsion of the Carthusian monks from France in the early part of the 20th Century. Pop. 25,000.

Tarshish, a place frequently mentioned generally identified with Tartessus, a Phœnician settlement in the SW. of Spain, near the mouth of the Guadalquivir, which became co-extensive with the district subsequently known as Andalusia; also conjectured to have been Tarus, and alternatively Yamen.

Tarsier, a small lemur (*Tarsus speciosus*) of the family Tarsiidae, rather larger than a rat, with rounded head, very large eyes in great sockets, and long hind legs; it is of nocturnal and arboreal habit and, with the aid of its sucker-like toes and fingers, can climb and hold on to trees with remarkable

ease. It preys upon lizards, and is found in the East Indian Islands.

Tarsus, now **Tarsus**, city of Turkey, ancient capital of Cilicia, on the Cydnus, 12 m. above its entrance into the Mediterranean; legend ascribes its foundation to Sennacherib in 690 B.C.; in Roman times was a famous centre of wealth and culture, rivaling Athens and Alexandria; associated with the meeting of Antony and Cleopatra and the deaths of the emperors Tacitus and Maximinus; here St. Paul was born; it has to-day an export trade in corn, cotton, wax, lilac, etc. Pop. 72,000.

Tartan, woollen cloth woven in coloured stripes crossing at right angles, in various patterns, formerly produced only in the Scottish Highlands, where each clan was distinguished by its own pattern.

Tartar Emetic, or potassium antimony tartrate, a monohydrate, clear, shining, rhombic pyramids, soluble in water, very poisonous, and prepared by boiling 5 parts of cream of tartar with 4 parts of antimony trioxide and 50 parts of water. It is used in medicine as an emetic and in dyeing as a mordant.

Tartaric Acid, an organic hydroxy-acid occurring as the potash salt in grape juice. It is prepared in the form of large white transparent crystals soluble in water, and its salts are used in medicine as purgatives, emetics, etc. It is also used in the preparation of cooling beverages such as sherbet.

Tartar (or Tatar) Republic, an autonomous republic of the Russian Soviet Federation, lying N. of the Middle Volga Area and watered by the Volga and its tributary, the Kama. Area, 26,000 sq. m. Pop. 2,600,000. The capital is Kazan.

Tartars, or, more properly, **Tatars**, a name of no precise ethnological significance, used in the 13th Century to describe the Mongolian, Turkish, and other Asiatic hordes, who, under Genghis Khan (q.v.), were the terror of E. Europe, and now bestowed upon various tribes dwelling in Siberia and other parts of Asiatic Russia and Mongolia. As a geographical name in the Middle Ages Tartary embraced practically the whole of Asia N. of Persia and India, including the western parts of China.

Tartarus, a dark sunless waste in the earth as heaven is above it, into which Zeus hurled the Titans who rebelled against him. The term was subsequently sometimes used by the Greeks to denote the whole nether world, often conceived of as a place of punishment after death.

Tartu (formerly **Dorpat**), second city of Estonia, on the R. Empeach, 150 m. N.E. of Riga, with a celebrated university founded by Gustavus Adolphus in 1632; a German Hanse town in the Middle Ages; it fell later to Poland, Sweden, and finally Russia; the treaty of 1920 by which Russia recognized Estonian independence was signed here. Pop. 60,000.

Tashi Lama, or Panchen Lama, one of the two principal superiors of the Lamaist faith in Tibet. His authority is purely spiritual, not extending, like that of the Dalai Lama, to secular affairs. He resides at Tashi-Lhunpo, a monastery near Shigatse.

Tashkent, capital of the Uzbekistan S.S.R., on the Chir-Chik, 300 m. N.E. of Samarkand; an ancient place still surrounded by its 12 m. circuit of wall; formerly the seat of the Cossack Russian government of Turkestan; carries on a brisk trade and manufactures silks, leather and porcelain ware. It is the seat of the Central Asiatic State University. Pop. 490,800.

Tasman, Abel Janszoon, Dutch explorer, and discoverer of the island later called Tasmania. He early took to the sea, and in 1642 was placed in command of an expedition sent out by Van Diemen, governor of the Dutch East India Company. In the course of that voyage he discovered Tasmania, New Zealand, and the Fiji Is. In a second voyage in 1644 he discovered the Gulf of Carpentaria. (c. 1600-1659).

Tasmania, an island lying 100 m. S. of Australia, from which it is separated by Bass Strait, forming a State of the Australian Commonwealth. The beauty of its mountain and lake scenery has won it the name of "the Switzerland of the South." Extensive stretches of tableland diversified by lakes—largest Great Lake, 90 m. in circumference—occupy the centre; wide fertile valleys stretch down to the coastal plains, often richly wooded, with lofty eucalyptus and various pine trees. Rivers are numerous, and include the Derwent and Tamar, which form excellent waterways into the interior. Sheep-farming and mining (zinc in particular), and fruit-growing are the principal industries. It has a long, irregular coastline, with many excellent harbours; chief exports are fruit, zinc, copper, and wool and woollen manufactures. It was discovered in 1642 by Tasman, a Dutchman, and first settled by Englishmen in 1803. The aborigines are now completely extinct. It was till 1852 a penal settlement, and received representative government in 1856. It was formerly called Van Diemen's Land after Van Diemen, the Dutch governor-general of Batavia, who despatched Tasman on his voyage of discovery. Area, 26,215 sq. m. Pop. 233,000. The capital is Hobart (pop. 65,000); the second town Launceston.

Tasmanian Devil, or *Ursine Dasyphus ursinus*, a marsupial found only in Tasmania.

It resembles a small bear, about a couple of feet in length, has a dark brown coat, long tail, and a broad white band across the chest. It is extremely destructive to game and poultry, whence its name.



TASMANIAN DEVIL

Tasman Sea, the sea, over 1,000 m. in width, lying between the New Zealand group and Australia and Tasmania.

Tasso, Torquato, Italian poet, son of Naples; educated at a Jesuit school in Naples, he studied law at the university of Padua, and at 18 published his first poem *Rinaldo*, a romance in 12 cantos, the subject-matter of which is drawn from the Charlemagne legends. At the court of Alfonso, Duke of Ferrara, he received the needful impulse to begin his great poem *La Gerusalemme Liberata*. For the court stage he wrote his pastoral play *Aminia*, a work of high poetic accomplishment, which extended his popularity, and by 1575 his great epic was finished. In the following year the symptoms of mental disease revealed themselves, and fleeing from Ferrara, he for two years led the life of a wanderer. On return to Ferrara he was placed in confinement for seven years. During these years the fame of his epic spread throughout Italy, and the interest excited in its author eventually led to his liberation. In 1585 he was summoned by Pope Sixtus VIII., from a homeless and wandering life, to appear at Rome to be crowned upon the Capitol the poet-laureate of Italy, but he died before the ceremony could take place. Valfray's version of the *Jerusalem Delivered*

is one of the great translations in the English language. (1544-1595).

Tatar. See Tartar.

Tate, Sir Henry, English industrialist and philanthropist, born at Chorley, Lancashire. Employed in a Liverpool sugar-factory, he acquired a machine for cutting loaf-sugar into cubes, 1872; migrated to London in 1880, and built up an extensive sugar-business. He endowed University College, Liverpool, and built the Tate Gallery (q.v.) to which he presented many pictures. (1819-1898).

Tate, Nahum, English poet laureate, born in Dublin, where he was educated at Trinity College; came to London to ply the craft of letters, and in 1690 succeeded Shadwell in the laureateship; he died in the Mint, Southwark, a contemporary refuge for debtors; wrote some dramatic pieces, but is remembered mainly for his metrical version of the Psalms, executed in conjunction with Nicholas Brady, which superseded the older version done by Sternhold and Hopkins. (1652-1715).

Tate Gallery, a British national art collection, housed at Millbank, London, and named after Sir Henry Tate, who founded it in 1897, the building costing £80,000. Sir Joseph Duveen added a Turner wing in 1910, and later a further addition to house modern foreign pictures and sculpture, the Gallery having been previously devoted to the works of British artists only. The Gallery occupies the site of the former Millbank Prison.

Tattersall's, the principal London sale-room for horses, at which business of various kinds relating to horse-racing is carried on. It was established at Knightsbridge, London, by Richard Tattersall (1724-1795), an auctioneer, who in 1766 obtained a lease of premises in Hyde Park Corner; the present premises were occupied on the expiry of the lease in 1865. A "Tattersall's ring" is the most select public enclosure at the larger English race-courses.

Tattoo, in its origin the signal for hence, the drum-beat calling soldiers to their quarters at night. In recent years the name has been given to military pageants staged to create popular interest in the Army. This development began at Aldershot soon after the World War, the proceeds being devoted to military charities. Other tattoos have been staged at Wembley and at Tidworth, Salisbury Plain, and they have now become regular annual functions, the scenarios arranged by Captain Oakes-Jones, the historian of the Royal Fusiliers, having been an important contributory factor in their success.

Tattooing, the practice of imprinting designs upon the skin by means of colouring matter, e.g., Chinese ink, cinabar, introduced into punctures made by needles; widely in vogue in past and present times amongst uncivilized peoples, and even to some extent amongst civilized races, especially among sailors; reached a high artistic standard in Japan, where it was resorted to as a substitute for clothing, as well as among many Polynesian races, such as the Maoris and Marquesas Islanders; the Picts ("painted men") of Scotland probably derived their name from the practice. It is now carried out in Europe and America by puncturing the skin with a small machine worked by electric power, and is occasionally resorted to for cosmetic reasons as an alternative to rouge, to conceal scars, etc.

Tauber, Richard, Austrian-Jewish tenor, born at Linz; educated at the Conservatoire, Frankfurt-on-Main; has appeared in musical plays in Vienna, Berlin, London, and New York; produced his own

operetta *Der Singende Traum*, 1934. (1892-).

Tauchnitz, Karl Christopher Traugott, German printer and bookseller, born at Grossparlau, near Leipzig; he opened his own printing works at Leipzig in 1796, and became celebrated for his neat and cheap editions of the Roman and Greek classics; introduced stereotyping into Germany. (1761-1838). The well-known "British Authors" collection was started in 1841 by Christian Bernard, Baron von Tauchnitz, a nephew of the preceding, who established himself as a printer and publisher in Leipzig in 1837. (1816-1895).

Taunton, (1) County town of Somersetshire, England, on the Tone, 45 m. SW. of Bristol. Its castle was founded in the 8th Century, and rebuilt in the 12th, and it has associations with Perkin Warbeck. Judge Jeffreys' "Bloody Assize" began here, the town having welcomed Monmouth (q.v.) on his invasion of England. It is noted for its hosiery, glove and silk manufactures, and is also a busy agricultural centre. Pop. 27,200. (2) City in Massachusetts, on the Taunton R., 34 m. S. of Boston, with manufactures of cotton, bricks, locomotives, etc. Pop. 37,300.

Taunus, a range of mountains in Hesse-Nassau, Germany, frequented by tourists. Many of the heights overlook the Rhine, and the vantage points were occupied by fortified castles now in ruins. The mineral springs of Wiesbaden, Homburg, etc., lie among the hills, which attain a height of 2,890 ft.

Taupo, lake in the volcanic region of N. Island, New Zealand. It has an area of 240 sq. mi. The town of Taupo, which has hot medicinal springs, lies on the NE. shore.

Taurus (the Bull), the second sign of the zodiac, which the sun enters on April 10; the constellation of that name, which includes the Pleiades (q.v.) and the well-known star Aldebaran, is now situated in the sign Gemini owing to the precession of the equinoxes.

Taurus, Mount, a mountain range of Turkey in Asia, stretching W. for about 600 m. in an unbroken chain from the head-waters of the Euphrates to the Aegean Sea, and forming the S. buttress of the tableland of Asia Minor; in the E. it is known as the Ala Dagh, in the W. as the Bulghar Dagh, the Cilician Gates marking the pass that separates the ranges. The Anti-Taurus is an offshoot of the main range, which, continuing to the N.E., unites with the systems of the Caucasus.

Tavernier, Jean Baptiste, Baron, born at Paris, the son of an Antwerp engraver. During the years 1630-1689 as a dealer in jewels he travelled in six journeys over most of India and Persia, returning with stores of valuable information respecting the commerce of those countries. He embodied the results of his observations in his *Six Voyages*, a classic of travel literature; was ennobled in 1689 by Louis XIV. (1605-1689).

Tavistock, a market town of Devon, England, situated at the western edge of Dartmoor, on the Tavy, 11 m. N. of Plymouth. It is one of the old stannary towns, and copper, tin, manganese and arsenic are still found in the neighbourhood. Pop. 5,100.

Tax, a charge levied by the state on the property or income of individuals, or on products, or on the expenses of a transaction. The tax is said to be immediate when it is intended immediately on the person who it is intended should pay it, as, e.g., income tax, poll tax, property tax; "indirect" when it takes the

form of a general payment on some commodity or is otherwise so framed that the person from whom it is exacted may indemnify himself at the expense of others, as, e.g., excise and customs duties, tariffs, entertainment tax.

Taxation was arbitrary in England under the Norman kings, but gradually became subject more and more to Parliamentary control; since the end of the Stuart epoch the sole right of the House of Commons to regulate taxation has been unquestioned. In selecting methods of taxation the chief regulatives are that the tax should yield a maximum return with a minimum of disturbance to the life and business of the nation, and that the cost of collection should not bear too large a proportion to the amount realized. The principal headings of taxation in Great Britain are income and sur-tax, land tax and land duties, estate and legacy duties, customs excise, and stamp duties.

The expression "local taxation" denotes rates or other moneys collected by local authorities to defray the cost of various public services. See also *Income Tax*; *Rates and Rating*.

Taxed Costs, the amount paid by a lawsuit to his opponent to meet the latter's expenses. The order of the court almost invariably directs the costs to be taxed, and the taxing master of the Supreme Court rarely allows the full amount which the successful party has to pay to his own solicitor; the difference between these amounts, or the "extra costs," has to be paid by the winner of the suit. If the court orders that the costs payable should be taxed "as between solicitor and client" a much more liberal allowance is made.

Taxidermy, the art of preparing and preserving the skins of animals for exhibition. In present practice the skin is generally preserved by treatment with saltpetre and burnt alum, or in the case of birds, benzoline; a dummy of the animal, in a suitable attitude, is prepared, over which the skin is stretched, the eyes and mouth being suitably modelled and painted to give a lifelike result.

Taximeter, a device for measuring a cab, and registering the fare payable. A front wheel of the cab is geared to the instrument, and a second set of time-gearing by clockwork also operates to register time spent in waiting. When the apparatus is working, a flag is raised to indicate that the cab is hired.

Taxodium, a genus of coniferous trees comprising two species, *Taxodium distichum* and *Taxodium meicanum*, native to the swampy soil of Florida and other parts of the southern United States, and known also as Swamp or Deciduous Cypress. *Taxodium distichum* is a tree of great beauty, with green feathery foliage in spring and rich brown in autumn. In swampy soil hollow protuberances or "knees," supposed to be aerating organs, are sent up from the roots. It is grown in Britain as an ornamental tree for lawns. In America its wood is used in building, and a resin exuded from the bark is sometimes employed as a dressing for wounds.

Tay, a river of Perthshire, Scotland, rises on the northern slope of Ben Ledi, on the Argyll border, and flowing 25 m. N.E. under the names Fillan and Dochart, enters Loch Tay, whence it sweeps N., S.E. and E., passing Perth and Dundee, and enters the North Sea by an estuary 25 m. long. It is renowned for the beauty of its scenery, possesses valuable salmon fisheries and has a total length of 120 m. Immediately W. of Dundee it is spanned by the Tay Bridge, consisting of 95 spans, with a total length of 3,440 yds., opened in 1887, its predecessor

dating from 1878, having been destroyed in a storm the year after its opening. *Loch Tay*, one of the finest of Highland lochs, lies at the base of Ben Lawers, stretches 14½ m. N.E. from Killin to Kenmore, and varies from ½ m. to 1½ m. in breadth.

Taylor, Jeremy, English divine and author, born at Cambridge; educated at Caius College; became a Fellow of All Souls, Oxford; took orders; attracted the attention of Laud, and was appointed to the living of Uppingham; in 1642 joined the king at Oxford and, becoming his chaplain, adhered to the royal cause through the Civil War; suffered much privation, and imprisonment at times. Retiring to Wales, he procured the friendship and enjoyed the patronage of the Earl of Carberry, in whose mansion at Grove he wrote a number of his works; removing to Ireland in 1658, he became after the Restoration Bishop of Down. His works are numerous, the principal being his *Liberty of Prophecy*, *Holy Living and Holy Dying*, *Life of Christ*, and *Ductor Dubitantium*, a work on casuistry. He is considered one of the greatest masters of English prose style. (1613-1687).



JEREMY TAYLOR

Taylor, Zachary, twelfth President of the United States, born in Orange County, Virginia; first saw service in Indian wars on the north-west frontier; in 1836 cleared the Indians from Florida and won the brevet of brigadier-general. Great victories over the Mexicans on the Texan frontier during 1845-1848 raised his popularity to such a pitch that he was carried triumphantly into the Presidency. The questions raised during his term of office were the proposed admission of California as a free state and the extension of slavery into the newly acquired territory. He was popularly known as "Old Rough and Ready." (1784-1850.)

Tchaikovsky, Peter Illich, Russian composer. Born at Votkinsk, he studied law, but at the age of 23 entered the Conservatoire at St. Petersburg, and three years later was a professor at Moscow. He made his London début as a conductor in 1888, and later toured America. The *1812 Overture* and *Symphonic Pathétique* are his most famous works. He wrote several operas, symphonies, concerti, and chamber and piano music. (1840-1893).

Tchekhov, Anton. See Chekhov.

Tchitcherin, Georgy Vasilievitch. See Chicherin.

Tea, a beverage made by infusing the prepared leaves of the tea-plant, *Thea sinensis*, containing tannic acid and theine, an alkalioid stimulant. The plant is cultivated extensively in China, India, and Ceylon. China tea contains a lesser quantity of tannic acid, and is more digestible. The proportion of theine is highest in Ceylon tea, which is therefore more of a stimulant. The young leaves of the plant are picked, exposed to the air, roasted, rolled by hand, and then dried. Green tea is exposed only for a very short time before roasting; black tea for a longer period. The best China teas are Pekoe and Souchong, while the fullest flavoured Indian teas come from Assam and Darjeeling. Before being placed on the market, teas are generally carefully blended. Many China teas are made fragrant by the addition of flower oil. Imported tea was taxed in England in 1860 to 1939, when the tax was repealed, to be reimposed a few years later; in 1938

the duty was at the rate of 8d. per lb. The levying of a duty on tea imported into America in 1787 led to the famous "Boston Tea Party," which ended in the American War of Independence.

Teachers, National Union of the principal trade union organization of the teaching profession, especially for teachers in state-aided schools in Great Britain; it has existed since 1870, and has a membership approaching 150,000. It was in 1938 concerned in negotiations for affiliation or amalgamation with some or all of the numerous smaller teaching professional associations which include teachers in private and public schools.

Its status since the World War, largely owing to the revision and increase of teachers' salaries consequent on the Burnham Award of 1925. The qualifications needed by the successful teacher vary according as his or her work is concerned with elementary, secondary, technical or university teaching; but patience, sympathy, resilience, and a natural gift for imparting information are always essential. For secondary teaching a university degree is necessary, followed by the obtaining of a diploma in education, obtainable through the teachers' training departments now established at most universities. For special subjects, such as physical training, domestic science, etc., a period at a specialized training college is necessary. The Board of Education makes grants to promising students of teaching, and numerous scholarships are available for them.

Teak (*Tectona grandis*), a tree of the order Verbenaceae, the many varieties of which grow in India, Burma, Java, Ceylon and Malaya. Burmese teak is almost black, Siamese a deep yellow. The wood is exceedingly strong, weighing some 40 lb. to the cu. ft. It is much used in constructional work where resistance to water and pests is essential, for shipbuilding, and also for ornamental work.

Teal, the common name of a number of small ducks mostly of the genera *Querquedula* and *Nettion*, found about lakes and rivers.

The Common Teal, *Nettion crecca*, frequents Britain and the Continent; it is slightly over a foot in length, the plumage of the male being grey and white in winter, the head chestnut marked with metallic green. The female is a mottled buff spotted with brown on the breast. The plumage of the male in summer resembles that of the female. *Querquedula circa* is the Garganey or Summer Teal, a summer resident in Britain; *Querquedula discors* the Blue-Winged Teal.



TEAL

Teasel, name for several plants of the order Dipsacaceae (genus *Dipsacus*) of which *Dipsacus fullonum* (fuller's teasel) is cultivated in cloth-manufacturing districts for the sake of the awns of the head, which are used for raising the nap of cloths. The *Dipsacus sylvestris*, an English prickly wild plant, grows to a height of 4 ft. or 5 ft.

Technical Education, instruction in any branch of knowledge necessary for the pursuit of a profession or trade. In England provision for technical education was made by the Technical Instruction Act, 1889, by empowering local councils to levy a rate for the purpose. Technical education throughout the country is given in evening and similar schools and in Day Technical Classes and Technical Instruction Courses—mostly controlled by local authorities. State grants are paid

according to number of students, of whom about one half are under 17 years of age. The Imperial College of Science and Technology, South Kensington, has a special department where science applied to industry is studied.

Technology, the branch of knowledge dealing with the processes of the industrial arts and crafts, such as engineering, metallurgy, woodwork, etc. It has increased enormously in importance, as modern industrial processes usually demand an intelligent appreciation by the worker of the methods of his work and the relation his part in the production of an article bears to the finished whole. Instruction in the various branches of technology is given at educational institutions, private and public, of various kinds. See *Technical Education*.

Teck, German title, from a castle (now in ruins) crowning an eminence in the Swabian Alps, Germany, 20 m. S.E. of Stuttgart. In 1603, Francis, the son of Duke Alexander of Württemberg, was made Prince, and in 1771 Duke, of Teck. In 1866 he married Princess Mary of Cambridge, whose daughter Mary (q.v.) became the consort of George V. of Great Britain. In 1917 the family renounced connexion with Teck, and took the surname Cambridge—the then Duke, Adolphus (1868–1927) becoming Marquess of Cambridge.

Teddington, town in Middlesex, on the Thames, now part of the borough of Twickenham. It is the point at which the Thames ceases to be tidal, and is the seat of the National Physical Laboratory. Pop. 23,000.

Te Deum, a Latin hymn, so called from its first words, sung at matins and on occasions of joy and thanksgiving. It is used both in the Roman Catholic and Anglican churches; tradition relates that it was sung in alternate verses by St. Ambrose and St. Augustine at the baptism of the latter, but it was probably actually written in the 3rd Century by Niceta, Bishop of Remesiana.

Tees, English river, rises on Cross Fell, Cumberland, and flows E., forming the boundary between Durham and York; enters the North Sea 4 m. below Stockton, after a course of about 80 m. The district round the estuary is an important industrial area.

Teeth, the instruments of mastication in man and most vertebrate animals, except birds. Man has 32 teeth in all, 16 in each jaw, the two sides of each jaw being symmetrical, though the teeth of the upper and lower jaws differ a little. Starting from the front of the jaw, the two teeth nearest the centre on each side are the incisors or cutting teeth; the next, the canine or eye tooth; the next two, the bicusps or premolars; and the remaining three, the molars or grinding teeth.

Each tooth consists of (1) the crown, which in the incisors has a chisel-like edge, but which in the bicusps bears two points and in the molars four points in the upper jaw and five in the lower; (2) the fangs, which join the crown at the neck and are buried in a socket made by the jawbone and the mucous membrane of the mouth, the gum. The molars have two or three fangs each, the bicusps one forked fang, and the other teeth one each.

The interior of the tooth is a cavity filled with dental pulp, a delicate tissue abundantly supplied with nerves mainly of the sensory type, and communicating with the gums by means of the fangs. The crown and fangs of the tooth are composed of dentine, a dense calcified substance. The crown is protected with enamel which thins towards the neck. The outer surface of the fangs has a coating of true bone. See also *Dentistry*, *Caries*.

Tegucigalpa, capital of Honduras, situated near the centre of the country at a height of 3,400 ft., in the fertile valley of the Rio Grande, surrounded by mountains; has a cathedral and university. Silver and gold are mined near by. Pop. 33,000.

Teheran, capital of Iran, stands on a plain near the Elburz Mountains, 70 m. S. of the Caspian Sea. The city is largely modernised, and is surrounded by a twelve-gated fortifying wall. There are few buildings of great interest, save for the Shah's palace. Staple industries are the manufactures of carpets, silks, and cottons. Pop. c. 350,000.

Teign, river of Devon, England. Rising on Dartmoor, it flows by a southerly course into the English Channel at Teignmouth, through a wide estuary. Its length is 30 m.

Teignmouth, holiday resort and English, on the estuary of the Teign, 13 m. S. of Exeter; there is a trade in china clay and pipeclay. It was twice destroyed by the French, in 1340 and 1690. Pop. 10,000.

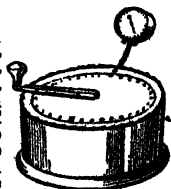
Telautograph, a device for reproducing drawings at a distance. An electric current transmits the motions of a pen operated at the transmitting end, and they are reproduced by an electrical device at the receiving end.

Tel-aviv, a Jewish town of Palestine, adjoining Jaffa on the N. It has sprung into being since the World War as the principal urban Jewish centre of the country, with a wealthy Jewish residential quarter, numerous industries, including textile factories and orange-packing establishments. The Palestine Electric Corporation has a power house here with transmission lines to various parts of the country. The Levant Fair is held here. Pop. 140,000.

Telegraph, an instrument for transmitting signals over a distance.

signals representing written messages. If an electric current is passed round a coil of wire wound on an iron core the iron is magnetised so long as the current flows, and the magnet may be used to attract a second piece of iron in opposition to the pull of a spring. The current to the electro-magnet may be sent from a distance, and thus the action of the magnet can be used for sending signals from one station to the other. The current may be sent for longer and shorter intervals to represent dashes and dots by opening and closing a switch at the sending station, and thus completing the electrical circuit.

These facts are applied in the electric telegraph, though it is seldom so simple as in the above example. To avoid the expense of providing a large number of wires between a pair of stations, arrangements are made so that signals can be sent and received at the same time by both stations, using one wire only, and even to send a number of signals at the same time. One method of doing this is to use alternating currents of different frequencies for different transmissions, and to have at the receiving station several receivers, each capable of responding to signals of one frequency only. Automatic machines are used, both for setting up the messages and for reception. The operator who is transmitting works at a keyboard, and the messages received are printed on strips of paper by the receiving apparatus.



A.B.C. TELEGRAPH
(1859-1862)

Tel el-Amarna, ancient city of the right bank of the Nile, about 35 m. S. of Beni-Hasan. Extensive excavations carried on there since 1890 have yielded much information on the Egypt of the 14th Century B.C., many artistic and literary treasures having been brought to light, relating particularly to the times of Amenhotep IV., a religious reformer who instituted a monotheistic sun-cult and built the city.

Tel el-Kebir (the "Great Mound"), on the edge of the Egyptian desert, midway between Ismailia and Cairo, the scene of a memorable victory by the British forces under Sir Garnet Wolseley over the Egyptian forces of Arabi Pasha (Sept. 13, 1882), which ended the war.

Telemachus, the son of Ulysses and his wife Penelope who, an infant when his father left for Troy, was a grown-up man on his return. Having gone in quest of his father after his long absence he found him on his return in the guise of a beggar, and assisted him in slaying his mother's suitors.

Telemeter, or **Range-finder**, an instrument for determining the distances of objects from a given point. When the targets are visible, optical range-finders are employed; for those which are invisible sound telemeter apparatus is used.

Telepathy, the supposed power of mind and mind by means not perceptible to or through the natural sense-organs. The investigations of the Psychological Research Society and other students have accumulated much evidence supporting the possibility of such communication, but no satisfactory explanation of its processes has yet been suggested.

Telephony. The earliest telephone was constructed by Alexander Graham Bell in 1876. In the modern instrument the transmitter contains a hollow box, loosely packed with granules of carbon; its front consists of a thick, electrically conducting diaphragm, and the back of a block of carbon. An electric current passes through the diaphragm, the carbon granules, and the block, and hence to the transmission lines. When the compression waves which constitute sound pass through the air and fall on the diaphragm, each wave forces the diaphragm inwards, compresses the loosely packed granules, and causes a momentary change of the electrical resistance of the transmitter. Each sound wave thus causes a pulse of current to pass to the transmission lines. In the telephone receiver two short iron rods are mounted on the ends of a U-shaped magnet. Wound on the rods are coils of wire which are connected to the transmission lines, and when a current passes round these coils the iron rods become more strongly magnetised, and attract an iron diaphragm which is fixed near them. Hence each sound wave at the transmitter causes a movement of the diaphragm in the receiver, and thus sets up a sound wave in the air near the latter.

Telephotograph, a photograph taken from a distance by means of a camera fitted with a telescopic lens. The original telephoto lens was invented by T. R. Dallmeyer in 1891. Its principle is a suitable combination of a positive and negative lens, and from this results an increase in focal length without a corresponding increase in camera extension. The difference in diameters between the size of the image afforded by the positive lens alone and that of the image afforded by the telephoto lens is called the magnification, and this can be varied according to the ratio of positive to negative.

Telescope, an instrument for magnifying images of distant objects. The first is said to have been constructed in 1608 by a Dutch spectacle-maker, Hans Lippershey. Two years later Galileo observed satellites of Jupiter through a telescope of his own make. The Galilean telescope consists of a convex lens, giving an inverted image of the object, in front of which a concave (diverging) lens is inserted as eye-piece, the eye being placed immediately behind. The effect of the concave lens is to produce a magnified erect virtual image from the rays which were converging to form the real image. In a simple astronomical telescope, the objective is a convex lens which produces a real inverted image of the object; this is viewed through the eye-piece, which is a second convex lens used to magnify the image, which appears inverted and reversed. For terrestrial work, an extra lens is inserted to re-invert the inverted image. In the reflecting telescope the convex lens is replaced by a concave mirror, which forms an inverted image of the object; this image is reflected by a plane mirror to a more convenient spot, where it is viewed through a convex magnifying eye-piece. In the modification introduced by N. Cassegrain, a convex mirror is used instead of the plane mirror for displacing the image, and the latter is viewed by the eye-piece through a hole in the concave mirror. Telescopes with reflecting concave mirrors of over 8 ft. diameter have been made.

Television, the transmission by wireless communication of visual representations of images and their reproduction at a distance. In 1926 John L. Baird gave the first demonstration of true television by reflecting light from an image on to a photo-electric cell. From then until 1936 the Baird Company carried out research work at the Crystal Palace, and in 1929 began a public television service in conjunction with the B.B.C. Later an extended trial was made of two systems, those of Baird Television, Ltd., and Marconi-E.M.I. Television Company, Ltd. A London Television Station was established at Alexandra Palace, and a complete chain of studios, control room and transmitting equipment was installed by each company, while the B.B.C. provided the sound transmitter and aerials. In addition, the B.B.C. constructed on top of one of the palace towers a television mast, 300 ft. in height, carrying two separate aerial systems, one for vision and one for sound; these are connected to the transmitters by concentric feeders which pass down the mast and along to the transmitting rooms. The station equipment comprises a studio for each system, with an associated control room, and ultra-short-wave television transmitter; and an ultra-short-wave sound transmitter common to both systems. In the receiving set a stream of electrons passes down a cathode ray tube, where they are focused on a point on a fluorescent screen and produce a spot of light, the intensity of which is regulated by the strength of the incoming signals. This spot of light is caused to move across the screen in time with the movements of the scanning apparatus (the process by means of which the scene transmitted is broken into elements which are treated in order is called "scanning") and thus reproduces on the screen the scene transmitted. In 1937 it was decided that the Marconi-E.M.I. system alone should be used for the B.B.C. transmissions.

Telford, Thomas, Scottish engineer, born originally a stonemason, he came to England in 1782 and, as surveyor of public works for Shropshire in 1787, constructed bridges over the Severn, and planned and superintended

the Ellesmere Canal connecting the Dee, Mersey and Severn; afterwards he was entrusted with the construction of the Caledonian Canal, the great road between London and Holyhead (including the Menai Suspension Bridge), and St. Katherine Docks, London; he also planned a nation-wide system of canals for the Swedish Government. (1757-1834).

Tell, William, Swiss legendary hero and patriot, a peasant who flourished in the beginning of the 14th Century; resisted the oppression of the Austrian governor Gessler, and was taken prisoner, but was promised his liberty if with his bow and arrow he could hit an apple on the head of his son, a feat he accomplished with one arrow; he afterwards shot the oppressor and a rising followed, which ended only with the emancipation of Switzerland from the yoke of Austria. The story is the subject of a play by Schiller and an opera by Rossini.

Tellurium, a semi-metallic chemical element belonging to the same group as oxygen, sulphur and selenium. Symbol *Te*; atomic number 52; atomic weight 127.61. It occurs in small quantities in many copper ores, and is principally used for alloying with lead, which it renders tougher and more resistant to corrosion. In many of its properties tellurium resembles the non-metals, but in its electrical conductivity it is similar to metals.

Telpherage, a system of goods transport, port used in factories, yards, etc., in which carriers running on grooved wheels suspended from cables or girders, and carrying an electric motor, are supplied with power from a trolley wire or from the supporting girders.

Telugu, a Dravidian language spoken in southern India by some 26 million people in the Madras neighbourhood. It is allied to Tamil (*q.v.*).

Tempera, a painting process in which albuminous medium is used instead of oil. It is capable of many combinations which produce results greatly differing in appearance according to its degree of opacity, for it may be opaque or transparent as water-colour; some tempera paintings can hardly be distinguished from fresco, others may be mistaken for oils. The process was popular with Italian renaissance painters, and has been revived in recent times.

Temperance Movement, the movement, begun in the 19th Century, for reasoned self-control in the consumption of alcoholic beverages. It tended very early to take form in societies whose members were pledged, not to temperance in, but to complete abstinence from, the use of such beverages. It gained little following outside English-speaking and Scandinavian countries, though the complete prohibition (*q.v.*) of alcoholic drink in the U.S.A. and some Scandinavian countries during and for some time after the World War was largely due to the previous propaganda of "temperance" societies. In England the British and Foreign Temperance Society was founded in 1831, and the London Temperance League in 1851; other active temperance bodies include the Church of England Temperance Society, and the British Women's Temperance Society.

Temperature, the amount of measurable heat in an object. A body is said to have a high or low temperature according as it is capable of conveying much or little heat to adjacent bodies. Temperature is measured by the thermometer (*q.v.*). The influences affecting the temperature of a part of the earth's surface are mainly latitude and the amount of water vapour present in the atmosphere.

The hottest parts of the earth's surface are generally the interior parts of continents. On high mountains the intensity of solar radiation is greater than in valleys, the temperature of the air diminishing at the rate of about 1°F. for every 300 ft. of ascent. Changes of temperature take place more rapidly over land than over sea. The temperature of the human body in health should be about 98.4° or 98.5° F., tending to be slightly higher in babyhood and old age. A temperature below 97.5° or above 99.0°F. indicates some abnormality of health.

Tempering, the process applied to steel and steel tools and other articles to impart hardness. It consists in heating them to a known degree, which varies with the purpose for which they are used, and then suddenly cooling them.

Tempest, Marie, English actress, by birth Marie Susan Etherington; born at London. Beginning in musical comedy, she made her debut in 1885 at the Comedy Theatre, London; from 1899 she played frequently in America, and in 1899 turned to ordinary comedy. After 1911 she became known as a producer. (1864-).

Templars, a religious order of knights founded in 1119 to protect pilgrims to the Holy Land from Saracen attacks; their name was taken from the fact that their chief house in Jerusalem was close to the site of Solomon's Temple.

Their constitution was drawn up by Bernard of Clairvaux (1138), and later three ranks were recognized—the knights, who alone wore the mantle of white linen and red cross, men-at-arms, and lower retainers, while a grand-master, seneschal, and other officers were created. During the first 150 years of their existence the Templars increased enormously in power; under papal authority they enjoyed many privileges, such as exemption from taxes, tithes, and interdict. After the capture of Jerusalem by the Infidels Cyprus became in 1291 their headquarters, and subsequently France. They were subjected at this time to accusations of various kinds of crime, probably owing in part to the great wealth they had accumulated, and measures of the cruellest and most barbarous kind were taken for their suppression by Philip the Fair of France, supported by Pope Clement IV. Between 1306 and 1314 hundreds were burned at the stake, the order scattered, and their possessions confiscated.

Template, or **Templet**, a pattern used by moulders or engineers, consisting of a thin plate of board or metal cut to the shape required for a finished flat object, by which the conformity of the object to that shape may be tested.

Temple, The, of Jerusalem, a building of Jewish sacrificial worship on the same plan and for the same purpose as the Tabernacle (*q.v.*) but of larger dimensions, more substantial and costly materials, and a more ornate style. Three successive structures bore the name—Solomon's, built by Solomon about 980 B.C., and destroyed by Nebuchadnezzar in 586 B.C.; Zerubbabel's, built in 515 B.C., and pillaged and decorated by Antiochus Epiphanes in 168 B.C.; and Herod's, on the ruins of the former, begun in 16 B.C., finished in A.D. 29, and destroyed by Titus in A.D. 70. The site was later occupied by the mosque, built about A.D. 700, known as the Mosque of Omar or Dome of the Rock.

Temple, Frederick, English divine, born at Santa Marta, in the Ionian Is.; from 1858 to 1869 was headmaster of



KNIGHT
TEMPLAR

Rugby; he supported the disestablishment of the Irish Church, and was elected to the bishopric of Exeter (1868), of London (1885), and in 1896 was consecrated Archbishop of Canterbury. (1821-1902).

Temple, William, British divine, son years from 1910 he was headmaster of Repton, and in 1919 became Canon of Westminster, a post he held for two years before being made Bishop of Manchester. In 1928 he became Archbishop of York. (1881-).

Temple, Sir William, English diplomat and essayist, born in London; after a period of Continental travel he went to Ireland, and in 1660 was returned to the Convention Parliament at Dublin; five years later began his diplomatic career, the most notable success in which was his arrangement in 1668 of the Triple Alliance between England, Holland, and Sweden to hold in check the growing power of France; as ambassador at The Hague became friendly with the Prince of Orange, whose marriage with the Princess Mary (daughter of James II.) he negotiated; was recalled in 1671, but after the Dutch War returned to his labours at The Hague, and in 1679 carried through the Peace of Nimwegen; his later years were spent in the enjoyment of his garden, and the pursuit of letters at his villa at Sheen, and, after 1686, at Moor Park, in Surrey, where he had Swift for secretary; is remembered in constitutional history for his scheme (a failure ultimately) to put the king more completely under the check of the Privy Council by remodelling its constitution; was a writer of considerable distinction, his miscellaneous essays and memoirs being notable for grace and perspicuity of style. (1628-1699).

Temple Bar, a gateway in London Fleet Street from the Strand; pressure of traffic caused its removal in 1879; now stands at the entrance to Theobald's Park, Cheshunt, Herts, once a palace of James I.

Temple Church, one of the oldest churches in London, just off the Strand, belonging to the Inner and Middle Temple. Built by the Knights Templar, it was consecrated in 1185, and is modelled on the Holy Sepulchre, like the other round churches (q.v.) in England.

Tempo, the speed at which a piece of music is played or a dance performed. It is indicated in written musical scores by a set of conventional Italian terms ranging from *grave* (very slow) to *presto* (fast).

Tenacity, that force in solid bodies which causes the molecules to cohere. It varies not only in different substances, but even in the same material under variations of temperature. It is measured by the longitudinal stress required to tear the body asunder. The tenacity of metal may be greatly increased in one direction by forging and drawing into wire.

Tenasserim, the southernmost division of Burma, forms a long coastal strip facing the Bay of Bengal and backed by the mountain barrier of Siam; acquired by the British in 1825. The chief town is Moulmein. Area, c. 35,800 sq. m. Pop. 1,630,000.

Tenbury, market town of Worcestershire, shire, England, 22 m. NW. of Worcester, on the Teme, in the midst of hop-gardens and orchards. Its medicinal springs are visited by sufferers from rheumatism, etc. Pop. 1,750.

Tenby, watering-place of Pembrokeshire, marthen Bay coast; ruins of its old wall and of a castle still remain; has a fine 13th-Century Gothic church. Fishing is carried on. Pop. 4,100.

Tench (*Tinca tinca*), a fish of the carp family found in most lakes of

Europe, and in ornamental waters and ponds in Britain. It attains a length of 10 to 12 in., and is generally greenish-olive in colour and has small scales and round fins. It feeds on vegetable matter at the bottom of the water. It was formerly credited with great value in the cure of many human ills and with being the physician of other fish.



TENCH

Tender, an offer of money in payment of a debt. It is a defence to an action if the money is brought into court, but the offer must be unconditional, even though under protest, and must be paid in legal tender (q.v.). The exact amount must be produced, as a creditor cannot be compelled to give change. The name is also given to a contractor's offer to execute certain works for a specified payment.

Tendon, cords of dense, white, shining, tough and fibrous tissue attaching muscles and ligaments to the bones.

Tendon, Achilles. See *Achilles Tendon*.

Tendrils, the winding, stem-like or leaf-climbing plants, such as vines, virginia creeper, clematis, pea, etc., attach themselves to their supports. They are modified stems or leaves.

Tenedos, a rocky but fertile Turkish island in the Egean, 3 m. off the mainland of Turkey in Asia, and 12 m. S. of the entrance to the Dardanelles. From 1920 to 1923 it was in Greek possession. It was the place where the Greek fleet was stationed during the Trojan War. Wine is produced in large quantities. Pop. c. 5,000.

Tenerife, the largest of the Canary Is. (q.v.), of volcanic formation, with cliff-bound coast; richly fruit-bearing; chief exports, lace, bananas, tomatoes, and wine; capital, Santa Cruz (q.v.); most notable natural feature is the famous Peak of Tenerife, a conical-shaped dominant volcano, 12,000 ft. in height, at the summit of which there is a crater 300 ft. in circuit; last eruption took place in 1798. Area, 780 sq. m. Pop. 180,000.

Teniers, David, the elder (1582-1649), and David Teniers, the younger (1610-1690), father and son, both famous masters of the Flemish school of painting, and natives of Antwerp; the son carried his father's gift of depicting rural and homely life to a higher pitch of perfection.

Tenison, Thomas, English ecclesiastic; Cambridge, born at Cottenham, Cambridgeshire; after holding country cures, he became rector of St. Martin's-in-the-Fields, London, in 1680, founding a school and library there. In 1691 he became Bishop of Lincoln; he was present at the deathbeds of Nell Gwynn, Mary II., and William III., and crowned Queen Anne. In 1695 he was appointed Archbishop of Canterbury. (1636-1715.)

Tennant, Sir Charles, British merchant, fortune in the management of the chemical works established by his grandfather at St. Rollox and in other industrial activities. He was a Member of Parliament for Glasgow and Peebles and Selkirk for a number of years and was made a baronet in 1885. In 1894 he became a trustee of the National Gallery. His own collection of pictures is now known as the Tennant Gallery. His children included the present Countess of Oxford and Asquith and the late Lord Glenconner, who received a barony in 1911. (1823-1906).

Tennessee, one of the central States of the U.S.A., lies S. of Kentucky, and stretches from the Mississippi (W.) to North Carolina (E.). It is divided into three regions with characteristic natural features: the East mountainous, with ridges of the Appalachians, possessing inexhaustible stores of coal, iron, and copper; the centre, an undulating wheat, corn and tobacco-growing country; and the West, with lower-lying plains growing cotton, and traversed by the Tennessee R., the largest affluent of the Ohio. The Tennessee Valley Authority, set up in 1933 to develop the Tennessee R. system in the interests of navigation, flood control and defence, and to generate electric power, has carried out many works of first importance as part of the programme of emergency works undertaken under "N.R.A." (q.v.) after the economic crisis of 1931. Nashville is the capital and largest city; other towns are Memphis, Chattanooga, and Knoxville. Area, 42,020 sq. m. Pop. 2,616,600.

Tenniel, Sir John, English cartoonist, born in London, who, from 1864, week by week, drew the chief political cartoon in *Punch*; illustrations to *Esop's Fables*, *Ingoldsbys Legends*, *Alice in Wonderland*, and other works, reveal the grace and delicacy of his workmanship; joined the staff of *Punch* in 1851; was knighted in 1893. (1820-1914).

Tennis, a game derived from handball, originated in France and Italy in the Middle Ages; rackets did not come into use till the 14th Century. The game had reached England in Chaucer's day, and continued afterwards as a game for the nobility, Henry VIII. being a player. This "real" tennis continues to be played by a few, and is governed by the Tennis, Racquets and Fives Association. The expense of maintaining courts, however, led to the growth of *Lawn Tennis*, a popular variant of the original game started by Major Wingfield in 1874. In 1875 a code of laws was issued for the new game, a court was opened at Wimbledon, and in 1877 the first championship was held there.

The Lawn Tennis Association was formed in 1888, and in 1900 the Davis Cup competition was instituted for international male matches, and soon attracted entries from most European and English-speaking countries, as well as China and Japan. Besides these matches the principal tennis fixtures are the annual championships at Wimbledon, St. Cloud and Forest Hills (U.S.A.) and the Anglo-American women's contests for the Wightman Cup. Of recent years there has been a tendency to play lawn tennis more on hard courts than on grass. Among the players who have helped the phenomenal growth of the game have been H. L. and R. F. Doherty, J. Borotra, N. L. Brooks, W. Tilden, R. Lacoste, F. J. Perry, Mlle. S. Lenglen, Helen Wills Moody, Dorothy Round and Helen Jacobs.

Tennyson, Alfred, Lord, English poet, Lincolnshire. He left Cambridge without a degree. In 1826 he contributed to a small volume of verse conjointly with his brother, and in 1830 published his own first volume of poems. He produced *The Princess* in 1847, and *In Memoriam* (in memory of his friend Arthur Hallam) in 1850; was in 1851 appointed to the laureateship, and next in that capacity wrote his *Ode on the Death of the Duke of Wellington*. In 1855 appeared his *Maud*, in 1859 the first four of his *Idylls of the King*, which were followed by *Enoch Arden* and the *Northern Farmer* in 1864, and by a succession of other pieces. In 1876 he turned to dramatic art and produced thereafter *Queen Mary*, *Harold*, *The Cup*, *Becket*, and *The Foresters*. He was raised to the peerage in 1884. Held in high esteem by

his own generation, his work has fallen into less repute with the general 20th-Century aversion from Victorianism. (1809-1892).

Tenor, highest part sung by the male voice, natural male voice, covering about two octaves in compass.

Tenrec, the popular name of the Centetidae) of insectivorous mammals found only in Madagascar and the Comoro Is., including the Spiny Tenrecs (*Centetes*), the Striped (*Hemicentetes*), the Long-tailed (*Microgale*), the Rice (*Oryzoryctes*) and the Aquatic (*Lamnogle*). They are not unlike hedgehogs in appearance, the Spiny Tenrecs being sometimes known as Tailless Hedgehogs. They include some of the largest of the insectivora.



TENREC

Tent, a structure of canvas, skin, or other fabric easily movable and used as a shelter for nomads, soldiers in the field, holidaymakers in the countryside, etc. The modern tent is generally based on two upright poles, connected by a ridge pole, and fastened to the ground by a system of ropes and pegs.

Tentacle, a long flexible appendage of lower animals, used as a touching or grasping organ. It is found in jelly-fish, sea anemones, etc. The arms of the cuttlefish, and the feelers of snails and slugs, are also so called.

Tenure, Land. See *Freehold*; *Land*; *Lease*; *Landlord and Tenant*.

Teplíce, health resort in Bohemia, Czechoslovakia, finely situated in a valley between the Erzgebirge and Mittelgebirge, 20 m. NW. of Litoměřice. Its thermal springs are celebrated for the cure of gout, rheumatism, etc. Pop. 31,000.

Teraphim, small images, a sort of household gods among the Hebrews, consulted as oracles, and apparently the counterpart of the Roman Penates.

Terbium, a metallic element, one of the rare earths. Symbol Tb; atomic number 65; atomic weight 159.2. It has no industrial uses.

Terborch, or **Terburg**, Gerhard, Dutch painter whose portraits and genre pictures are to be found in most of the great European galleries; born at Zwolle; after travelling in Germany, Italy, England and Spain, settled at Deventer, where he became burgomaster. His most famous pictures are a portrait of William of Orange, "Father's Advice," and his "Congress of Munster," 1648, the last in the National Gallery, London. (c. 1617-1681).

Terceira, the second largest of the Azores; rears cattle, and yields grain, oranges, and other fruits; chief town Angra, capital of the group. Pop. c. 50,000.

Terebene, the name given to a disinfectant liquid, a mixture of hydrocarbons, light yellow in colour, made by treating oil of turpentine with sulphuric acid.

Terebinth (*Pistacia terebinthus*), of the order Anacardiaceae, the Chian turpentine tree: is a striking feature in Palestinian landscapes; growing to a height of over 30 ft., with wide-spreading branches. It was apparently an object of worship among the ancient Canaanites.

Teredo, or **Shipworm**, the common name of the bivalve mollusc of the family Teredinidae, of wormlike appearance, largely owing to the elongation of the breathing tubes or siphons. They reach a length of about a foot, and cause much destruction by boring into the hulls of wooden

ships, submerged piles, etc., though green-heart timber is impervious to it.

Terence (*Publius Terentius Afer*), Roman comic poet, born at Carthage; brought thence as a slave; educated by his master, a Roman senator, and then set free; composed plays, adaptations of others in Greek by Menander and Apollodorus, depicting Greek manners for Roman imitation in a pure and perfect Latin style, and with great dramatic skill. Six are extant, including *Andria* and *Heautontimorumenos* ("The Self-Tormentor"). His plays are still presented at English public schools, such as Westminster. (c. 195-159 B.C.).

Tereus. See *Philomela*.

Term, an indeterminate period of time; the name is applied in schools and universities to the periods during which instruction is given; the Oxford terms are Hilary, Trinity, Michaelmas, the Cambridge terms Lent, Easter and Michaelmas; in the law-courts the periods during which courts are in session are the Hilary (January-March), Easter (April-May), Trinity (May-July) and Michaelmas (October-December) terms. The word is also used of the period during which a lease extends.

Terminus, in Roman mythology, a deity who presided over boundaries, whose worship was instituted by Numa (q.v.). His name was afterwards applied to the boundary-posts set up to mark the limits of estates.

Termites, the common name of the soft-bodied insects of the order Isoptera, also called White Ants, though they are not ants at all. They are found in tropical countries, where they live in organized communities, building conical dwellings which may reach a height of 10 or 12 ft. The colony consists of a large "king" and "queen," which are concerned with reproduction, and infertile insects called "soldiers" and "workers," the soldiers having large square heads and projecting mandibles, the workers small rounded heads with concealed mandibles. Termites wreak much havoc to wood, sometimes gnawing away practically the whole timber work of buildings.

Tern, the common name of a group of birds akin to the gull, and included with them in the same family of birds (the Laridae), distinguished from them by their shorter legs, longer wings, and deeply forked tail—whence they are popularly called Sea-Swallows. Five species occur in Britain, viz., the Common (*Sterna fluvialis*), the Arctic (*S. macrura*), the Little (*S. minuta*), the Sandwich (*S. cantiaea*) and the Roseate (*S. dougalli*) all of which are regular summer migrants.

Terni, city of Italy, in Perugia, on the Nera, 50 m. N.E. of Rome. It has an old cathedral and Roman ruins. The fine falls of the Nera give power for its iron and steel and munition works. Pop. 69,000.

Terpenes, a class of colourless hydrocarbons, widely distributed in the essential oils of plants, such as clove, hops, patchouli, rubber and turpentine.

Terpsichore, the Muse of choral song and dancing, and later of lyric poetry, the lyre being specially associated with her.

Terra-Cotta, a composition of fine sand moulded into shapes and baked to hardness. It has been used since classical times for roofing and decorating buildings, as in the case of the London Albert Hall. In Greece it was extensively used for statuettes, especially the little "Tanagra" figures frequently seen in museums; and it was restored to favour in the Italian Renaissance period by Donatello and della Robbia, among others.

Terrapin, a name given to various particularly *Malaclemmys terrapin*, found in salt water in the eastern U.S.A., and largely reared for food purposes.



TERRAPIN

The colour is grey mottled with black.

Terre-Haute, city of Indiana, U.S.A., stands on a plateau overlooking the Wabash, 178 m. S. of Chicago; is situated in a rich coal district, and has numerous foundries and various factories. Pop. 63,000.

Terrier, a small variety of the original badgers, foxes and other "earthing" animals. It was later developed into a large number of breeds, a group with short legs and long bodies, including the Scotch, the typical variety of this class, with rough and wiry hair; the Skye, with long, silky coat; the Dandie Dinmont, Yorkshire and Maltese; and another group with a shorter body and longer legs, including the Welsh, Irish, Airedale and Bedlington breeds. The bull terrier is a cross between the terrier and bulldog. The Airedale is widely used for police work. The fox terrier, perhaps the nearest breed to the original terrier, is one of the most popular at the present day.

Territorial Army ("Territorials"). the auxiliary section of the British army, formed in 1908 by Lord Haldane to take the place of the old "volunteers." Before the World War it was not liable for foreign service, but nevertheless all battalions volunteered and fought on various fronts. After the war the force was reconstituted as the "Territorial Army" with a foreign service obligation, subject in this respect to Parliamentary control. Members attend a fortnight's annual camp, put in a minimum number of drills and undergo courses of instruction. The Territorial Army is, in fact, equipped as a second-line replica of the Regular Army, and is under Regular Army instructors. The authorized establishment in 1938 was approximately 200,000, but the strength was then only 155,000, a deficiency which has since been largely made up. The Territorial Army is entrusted both with coast defences and ground defence against attack from the air. Many of its units have recently been converted into anti-aircraft units.

Territorial Waters, the seas a country over which it has an exclusive jurisdiction; the general convention is that territorial rights extend for 3 m. from the coast-line measured from low-water mark. Harbours, estuaries, and land-locked seas belong to the state possessing the shores around them; similarly lakes and land-locked seas not directly communicating with the ocean; but bays and gulfs, if more than 6 m. wide at the mouth, are theoretically free waters. The control of straits is regulated by special rules of international law or in many cases by special treaties.

Terror, Mount, mountain of Antarctica, on Ross I., South Victoria Land. It is an extinct volcano, 10,700 ft. high, and was discovered by Sir James Ross.

Terry, Ellen, (Mrs. James Carew), English actress, born at Coventry; made her debut at the early age of eight, appearing as Mamilus in *The Winter's Tale*, at the Princess Theatre, then under the management of Charles Kean; married in 1864 G. F. Watts, the painter, the marriage being dissolved soon after; during the years 1864-1874 she lived in retirement, but

returning to the stage in 1875 achieved her first great success in the character of Portia; played for some time with the Haecrofts and at the Court Theatre; in December, 1878, made her first appearance at the Lyceum Theatre, then under the management of Henry Irving (q.v.), with whose subsequent successful career her own is inseparably associated. Her ashes were placed in St. Paul's Church, Covent Garden, in 1929. (1848-1928).

Tertiaries, name given to members of Third Orders, or lay associates of the Religious Orders of the Roman Catholic Church; the members are not bound by the religious vows, and do not generally live in community, but have a rule of life of their own and share in the good works of the parent Order. Regular tertiaries are those (generally women) who live in community without being bound by the full obligations of the rule of the Order to which they are affiliated.

Tertiary, the third chief division of fossil-bearing sedimentary rocks, lying above the Mesozoic or Secondary and below the Quaternary. It is subdivided into three systems—Eocene, Miocene and Pliocene—to which a fourth, Oligocene, has been interpolated after the Eocene. The early tertiary ages were distinguished by a prodigious outpouring of lavas. Examples are seen in the basaltic plateaux of Antrim and the Inner Hebrides, the Eifel and Bohemia.

Tertullian, *Quintus Septimius Florens*, one of the Latin Fathers of the Christian Church, born at Carthage, the son of a Roman centurion; trained as a rhetorician; was converted to Christianity, became a priest at Carthage, and embraced Montanist views; wrote numerous works, of which the best-known is his *Apology*, a vindication of Christianity against heathenism. His writings are marked by his particularly strict attitude towards worldly show and pleasure. (c. 155-230).

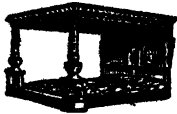
Teruel, mountainous province of E. Spain, in the S. of Aragon. It is watered by the Tago, Guadalquivir and Guadaloupe, and is fertile, corn, vines and fruits being grown. Area, 5,720 sq. m. Pop. 253,000. The capital, Teruel, is a cathedral city, of medieval appearance. Heavy fighting took place in its neighbourhood during the Spanish Civil War, the town passing into rebel hands in 1937, and being again occupied by the rebels in 1938 after a short-lived recapture by the Government. Pop. 12,000.

Test, river of Hampshire, England, rising on the Berkshire-Wiltshire border, and flowing into Southampton Water near Totton, after a course of 39 m. It passes Stockbridge and Romsey.

Test Act, an Act of 1673, since repealed, requiring all officials under the Crown to take the oath of allegiance and supremacy; directed equally against Dissenters and Roman Catholics.

Testament, the name given to each of the Bible; also a written statement in which a person expresses his intentions as to the disposal of his property on his decease. See Will.

Tester, a silver coin the 16th Century in Scotland and France, and to some extent in England. Originally the English coin was worth a shilling, though it later depreciated in value to sixpence. The name was also given to the wooden canopy or sounding-board over a bed or a pulpit.



TESTER BED

Test Matches, the international cricket matches played from time to time between England, Australia, and South Africa, and between England and New Zealand and England and the West Indies; those played between England and Australia were inaugurated in 1876-1877; England first met South Africa in 1905; in 1914 a triangular contest between these three was held; the West Indies first met England in Test Matches in 1928, and New Zealand followed in 1929. England v. Australia Test Matches up to 1938 totalled 139. England has won 53 (21 in England; 32 in Australia), Australia 56 (39 in Australia; 16 in England); drawn, 31. England v. South Africa Test Matches total 59. England has won 28 (9 in England; 19 in South Africa); South Africa, 12 (1 in England, 11 in South Africa); drawn, 19. Australia v. South Africa Test Matches total 19. Australia won 14 (9 in Australia; 3 in South Africa, 2 in England); South Africa, 1 (in Australia); drawn, 4. An All-India team toured England for the first time in 1936; of the three Test Matches, England won two, the third being a draw. Of the Test Matches with New Zealand in 1937 England won 1 and 2 were drawn.

Testudo, in ancient Roman warfare, a protection for the heads of foot-soldiers against missiles thrown from above from city walls, etc., formed by holding their shields above their heads so that they overlapped. The name is due to the resemblance of the resulting formation to a tortoise, for which *testudo* was the Latin name.

Tetanus, or Lockjaw, a nervous affection which usually begins with intensely painful and persistent cramp of the muscles of the throat and jaws, spreading down to the larger muscles of the body. As the disease progresses the muscles become more and more rigid, while the paroxysms of pain increase in violence and frequency. Death as a rule results from either sheer exhaustion or failure of breath through the spasmodic closure of the glottis. The disease is due to the action of a microbe, which may find an entrance through any wound or abrasion of the skin. Inoculation with anti-tetanic serum, practised on an enormous scale during the World War, has much reduced the terrors of the disease.

Tetrarch, a Roman governor, originally of the fourth part of a province; but in later usage the title was given to various local rulers, especially in Syria and the neighbouring countries, without regard to the extent of their rule. It was most often used of the members of the family of Herod, several of whom are called by that name in the New Testament.

Tetrazzini, *Luise*, Italian soprano singer. Born at Florence, she made an early reputation on the Continent, toured South Africa, and made her London debut in 1908, subsequently appearing very frequently in the U.S.A. She published an autobiography, *My Life of Song*, in 1921. (1871-).

Tettenhall, urban district of Staffordshire, England, 2 m. W. of Wolverhampton, of which it is practically a residential suburb. A battle between the Danes and the British took place here. Lord Wrottesley has his seat at Wrottesley Hall, nearby. Pop. 6,000.

Tetuan, a port of Morocco, on the Martil, 4 m. above its entrance into the Mediterranean and 22 m. S. of Ceuta. It is the capital of the Spanish zone, and as such was a centre of activity in the Spanish Civil War of 1936, many African troops being sent thence to the aid of the rebel forces in Spain. It trades in slippers, dried fruits, linseed, etc. Pop. 50,000.

Teutoberger-Wald, range of forested hills in NW. Germany, in Lippe and along the Hanover-Westphalia border. In a battle here the Germans under Arminius or Hermann, the earliest German national hero, defeated the Romans under Varus in A.D. 9, thus preventing the Romanisation of the interior of Germany.

Teutonic Knights, a religious hood which arose during the period of the Crusades, originally for the purpose of tending wounded crusaders; subsequently became military in character, and besides the care of the sick and wounded included among its objects aggressive warfare upon the heathen. Like the Templars, they acquired extensive possessions, and in the 13th Century undertook the conquest and Christianisation of the heathen Prussians, acquiring much territory in the southern Baltic regions. After 1400 the order began to decline, but as a secularized, land-owning community the knight-hood lasted till 1809, when it was entirely suppressed in Germany by Napoleon.

Teutons, an ancient people of unknown habited the Jutland peninsula in the 3rd Century B.C. In alliance with the Cimbri, between 112 and 100 B.C., they devastated Gaul and threatened the Roman republic. The name was later applied to the German people in general, and especially to their language and the tongues allied to it. The Teutonic family of languages includes three main groups: West Germanic (German, Dutch and Flemish, English, Frisian); East Germanic (the now extinct Gothic); and North Germanic (the Scandinavian tongues).

Teviot, a river of Scotland; rising in SW. county to join the Tweed near Kello. Its valley (about 40 m. long) is known as Teviotdale. There are salmon and trout fisheries.

Tewfik Pasha, Mohammed, khedive of Egypt from the time of his father's abdication in 1879. Arabi Pasha's insurrection, closed at Tel el-Kebir (q.v.), and the Mahdi's rising and capture of Khartum, occurred during his reign, which witnessed Egypt's steadily increasing prosperity under English rule. (1852-1892).

Tewkesbury, a market town of Gloucestershire, England, at the confluence of the Avon and Severn, 10 m. NE. of Gloucester; possesses a magnificent Norman abbey church; trades chiefly in agricultural produce. Half a mile distant is the field of the battle of Tewkesbury (May 4, 1471), where the Yorkists under Edward IV. crushed the Lancastrians. Pop. 4,500.

Texas, the largest of the United States of America, and fifth in population, in the extreme SW., fronts the Gulf of Mexico for 400 m. between Mexico (W.) and Louisiana (E.). Its surface is very varied, exhibiting rich alluvial valleys and pastoral prairies with arid deserts of sand in the S. Climate in the S. is semi-tropical, in the N. colder and drier. Agriculture and stock-raising are the chief occupations, Texas being the leading cattle-raising and cotton State in the Union; there is an enormous output of petroleum and natural gas. It seceded from the republic of Mexico in 1835, and was an independent State till 1845, when it was annexed to the American Union. Austin is the capital; other large towns are Houston, Dallas, San Antonio, Fort Worth, El Paso, and Galveston. Area, 265,900 sq. m. Pop. 5,225,004.

Texel, an island of N. Holland, situated near Zee, at the entrance to the Zuider Zee and separated from the mainland by a

narrow strait called the Marsdiep, the scene of several memorable naval engagements between the Dutch and English, as in 1653 and 1673; staple industries are sheep and dairy farming. Area, 70 sq. m.

Textiles, a general name for any woven cotton, or mixtures of these materials, silk and linen being more usually excluded from the common use of the word. Textile manufacture is one of the oldest and most important of the world's industries; it was carried on domestically until the invention of spinning and weaving machinery at the end of the 18th Century began the great movement towards industrialisation known as the Industrial Revolution. The development of local textile machine industries in Eastern countries such as India and China, and the consequent drop in the demand for European goods of the class, has been one of the most important factors in the changes in the nature of world trade that have marked the present century.

Thackeray, William Makepeace, English novelist, born in Calcutta, educated at the Charterhouse and at Trinity College, Cambridge; after leaving college without a degree, travelled on the Continent.

On his return he turned to literature, contributing to *Punch*, where the well-known *Snob Papers* and *Jeames's Diary* originally appeared, and to various other journals. In 1840 he produced the *Paris Sketch-Book*, his first published work, but it was not till 1847 that the first of his novels, *Vanity Fair*, was issued in parts, followed in 1848 by *Pendennis*, in 1852 by *Emmond*, in 1853 by *The Newcomes*, in 1857 by *The Virginians*, in 1862 by *Philip*, and in 1863 by *Denis Duval*. In 1852 he lectured in the United States on *The English Humourists of the Eighteenth Century*, and in 1855 on *The Four Georges*, while in 1860 he was appointed the first editor of the *Cornhill Magazine*. He was also the author of a number of ballads and rhymes. (1811-1863).

Thaler, a former German silver coin, roughly equivalent in value to 3s. It was superseded in 1871 as a monetary unit by the mark, at the rate of 3 marks to the thaler. The name "Dollar" was in its origin a corruption of thaler.

Thales, philosopher of Greece, and one of the seven sages. He was considered by the ancient Greeks as the founder of philosophical speculation, finding the original principle of the universe in water. He flourished about the close of the 7th Century B.C.

Thalia, one of the three Graces (q.v.), as also of the nine Muses (q.v.), her special field being comedy.

Thallium, a metallic chemical element belonging to the same group as boron, aluminium, gallium and indium. Symbol Tl; atomic number 81; atomic weight 204.39. It was discovered in 1861 by Sir William Crookes. Its principal ores are crookite and lorandite. Traces are frequently present in iron pyrites. It is a soft, greyish-white metal which quickly tarnishes in moist air; it is used in making alloys resistant to chemical action. Its compounds are employed as preventives of mildew in the textile industry, and also for increasing the light sensitivity of photographic films.

Thame, a river of England, rising in the Chilterns and flowing S. through the Vale of Aylesbury to join the Thames near Dorchester, after a course of 30 m. The town of Thame (Oxon.) is on its banks.



W. M. THACKERAY

Thames, the most important river of Great Britain, formed by the junction at Lechlade of four head-streams—the Isis, Churn, Olen, and Leach—which spring from the S.E. slope of the Cotswold Hills; winds across the southern midlands eastwards till in a wide estuary it enters the North Sea; forms the boundary-line between several counties, and passes Oxford, Reading, Windsor, Richmond, London, Woolwich, and Gravesend; navigable for barges to Lechlade, and for ocean steamers to Tilbury Docks; tide is felt as far as Teddington, 80 m.; length about 250 m. See *Thames Conservancy*; *Port of London Authority*.

Thames, river of Ontario, Canada, in the Lakes Peninsula. London is on its banks, and Chatham 15 m. from its mouth in Lake St. Clair. Length, 160 m.

Thames Conservancy, the body entrusted with the conservation of the R. Thames between its source and Teddington Lock, from which point the Port of London Authority is in charge of the stream.

Thane, or **Thegn**, in the Anglo-Saxon intermediate between the nobility and the ceorls or tenant farmers. The title was bestowed at first upon those bound to military service who were not nobles by blood, and subsequently was extended to cover the more important and richer members of the ceorl class. After the Norman Conquest the Saxon thane approximated in social position to the Norman knight, and the name was eventually dropped in favour of the latter, being last used in the reign of Henry II.

Thanet, *isle of*, forms the N.E. corner of Kent, from the mainland of which it is separated by the Stour. On its shores, washed by the North Sea, stand the popular watering-places Ramsgate, Margate, and Broadstairs. The north-eastern extremity, the North Foreland, is crowned by a lighthouse.

Thanksgiving Day, a public celebration on a day set apart in the United States annually by Presidential decree as a commemoration of divine goodness and thanksgiving for harvest. It is a public holiday, and is celebrated on the last Thursday in November. The celebration is traceable to the early 17th Century.

Theatre, a playhouse; a building, room, booth, etc., devoted to the representation of dramatic spectacles. The East possessed flourishing theatres in antiquity, but the European theatre derives more from the drama of ancient Greece. The Greek theatre, uncovered, consisted of an *orchestra*, in the centre of which was an altar of Dionysus, and the *auditorium*. Slopes making natural amphitheatres were preferred (as at Epidaurus). Probably not until Roman times was the stage raised.

In the Middle Ages liturgical plays were performed originally in the churchyard. When discouraged by the Church, a secular drama arose, acted in the market-places on platforms, and kept alive by amateur players belonging to town guilds assisted by professional strolling-players. In the 16th Century when the scope of the drama increased, professional actors became more prominent. Plays were acted in the courts of inns, the spectators crowding the galleries, but a fixed theatre soon became necessary.

In 1576 John Burbage, under Elizabeth's patronage, built "The Theatre" in Shoreditch. "The Curtain" followed in 1577. By 1588 Southwark became the centre with "The Rose," "The Swan" (1595), and "The Swan" (1598), the latter built by Richard Burbage. The actors formed companies under the patronage of noblemen.

Many theatres were destroyed under Cromwell, but at the Restoration the tradition was revived, the apron stage was introduced, and women appeared on the stage for the first time; Drury Lane Theatre, London, dates from this epoch.

In spite of the spectacular element, the 18th Century was an age of great actors: Cibber, Doggett, Mrs. Oldfield, later Garrick, and Macklin, followed by Mrs. Siddons. Their tradition was taken up by Kemble and Kean, and with scenic elaborations, continued down to Henry Irving and Beerbohm Tree. Ibsen's plays encouraged realistic presentation, but with the development of stage machinery and lighting, both spectacular and realistic drama continued to flourish. A later tendency has been towards simplicity, and small intimate theatres with fixed backgrounds have become popular. See also *Repertory Theatre*.

Thebaid, a desert in Upper Egypt in the early Christian centuries it was a favourite resort of hermits of both sexes, who formed numerous colonies there, one of them, Paul, being looked upon as the founder of the monastic life.

Thebes, an ancient city of Egypt of great renown, once capital of Upper Egypt; covered 10 sq. m. of the valley of the Nile on both sides of the river, 300 m. S.E. of Cairo; now represented by imposing ruins of temples, palaces, tombs and statues of colossal size, including the Temple of Memnon and the remains of the avenue of Sphinxes leading from Luxor to Karnak, amid which the humble dwellings of four villages—Luxor, Karnak, Medinet Habu, and Kurna—have been raised. The period of its greatest grandeur extended from about 1600 to 1100 B.C., but some of its ruins have been dated as far back as 2500 B.C.

Thebes, capital of the ancient Greek State of Boeotia (q.v.), whose site on the slopes of Mount Teumessus, 44 m. N.W. of Athens, is now occupied by the village of Thiva. Its legendary history, embracing the names of Cadmus, Dionysus, Hercules, Oedipus, etc., and authentic struggles with Athens and Sparta during the Peloponnesian War, its rise to supremacy over all Greece, under Epaminondas, and its destruction by Alexander, who sold all its inhabitants into slavery, have all combined to place it amongst the most famous cities of ancient Greece.

Theft, a popular name for the offence known in legal terminology as *larceny* (q.v.).

Theism, belief in the existence of a God, especially of a transcendent personal God who actively rules over and by his providence manifests himself in the world.

Thellusson Act, a measure passed in 1800 to prevent a testator leaving money to accumulate for more than 21 years after his death, occasioned by a bequest made by Peter Thellusson in 1797 leaving half a million pounds to accumulate at compound interest for two generations. The Act was modified in 1927 to allow money to be left to the state to accumulate and be applied to the redemption of the National Debt.

Themis, in Greek mythology, the goddess of things; was a daughter of Uranos and Gaia, and the spouse of Zeus, through whom she became the mother of the divinities concerned in maintaining order among gods and men.

Themistocles, Athenian general and statesman; rose to political power on the ostracism of Aristides, his rival; persuaded the citizens to form a fleet to secure the command of the sea against Persian invasion; commanded at Salamis, routed the fleet of Xerxes, and afterwards accomplished the fortification of the city in

spite of the opposition of Sparta, but falling in popular favour was ostracised, and took refuge at the court of Artaxerxes of Persia, where he died. (c. 580-459 B.C.)

Theobald's Park. See *Temple Bar*.

Theocracy, government of a State and under the direction as well as the sanction of Heaven. Examples are the Jewish state under the original Mosaic dispensation, the secular authority of the Papal See, and to a certain extent the government set up in 17th-Century England under Cromwell.

Theocritus, pastoral poet of Greece, was the creator of bucolic poetry; wrote *Idylls*, descriptive of the life of the common people of Sicily, in a thoroughly objective, though a truly poetical, spirit. His style was imitated by Virgil, over whom he exercised considerable influence. (c. 310-265 B.C.)

Theodicy, name given to an attempt of the universe consistently with the presence of evil, and especially to that of Leibnitz, in which he attempts to demonstrate that this is the best of all possible worlds.

Theodolite, a surveying instrument for measuring angles. The transit theodolite, now in general use, consists of a telescope on a movable stand, capable of making a complete revolution either horizontally or vertically, and supplied with graduated circles from which measurements can be read off.

Theodora, consort of the Byzantine Emperor Justinian I. (q.v.); before her marriage in 527 she had followed the professions of acting, dancing, and prostitution. After ascending the throne her morality was unquestioned, and she played a great part with her husband in the rule of the Empire, concerning herself especially with Church affairs. (508-548).

Theodore, or *Kassai*, king of Abyssinia. He won his way to the throne by rebellion, but proved a strong and reforming ruler; his imprisonment of a British consul was followed by General Napier's expedition to Magdala, which fell in 1867; Theodore committed suicide when thus defeated. (1818-1867).

Theodore, bishop of Mopsuestia, Biblical critic, Syrian theologian and Antioch. He wrote commentaries on most of the books of the Bible, eschewing the allegorical method of interpretation, and accepting the literal sense. He held Nestorian views, and his writings were anathematized by Justinian a century after his death. d. about 428.

Theodoret, Church historian, born at Antioch. As bishop of the Syrian city of Cyrus he attempted the conversion of the Maronites. He took an active part in the Nestorian and Eutychian controversies, and was deposed by the so-called robber-council of Ephesus, but was reinstated by the Council of Chalcedon in 451. (c. 390-457).

Theodoric, surnamed the Great, founder of the monarchy of the Ostro- or East Goths, son of Theodimir, the Ostrogothic king of Pannonia; was for 19 years during his youth a hostage at the Byzantine Court at Constantinople; succeeded his father in 475, and immediately adopted a policy of expansion; in 483 advanced upon Italy, overthrew Odoacer, and after his murder became sole ruler, and the most powerful of the Gothic kings, with an empire embracing Italy, Sicily, and Dalmatia, besides German possessions, became in after years, as "Dietrich of Bern," one of the great heroes of German legend, and figures in the *Nibelungenlied*. (453-526).

Theodosius I., The Great, Eastern Roman emperor, born in Spain, son of the noted general of the same name, in whose campaigns in Britain and elsewhere he participated. In 379 he was invited by the Emperor Gratian to become emperor in the East, that he might stem the advancing Goths. In this Theodosius was successful; the Goths were defeated, had territory conceded to them, and many became Roman citizens. In 394 he became sole head of the empire, after successfully combating the revolutionaries, Franks, and others. He was a zealous Churchman, and stern suppressor of Arianism. He is remembered among other things for the rebuke administered to him by St. Ambrose in consequence of a massacre of the citizens at Thessalonica which he ordered in consequence of a riot there in 390. (346-395).

Theology, the science which treats of religion, and the relations of man to God. Natural theology is concerned with what may be learnt of these relations by observation and reason; revealed theology with the teachings and deductions based upon supernatural revelation. The subject of moral theology is the relation between ethics or conduct and religion; pastoral theology deals with the duties of the religious teacher or priest and his relations with his flock. Other divisions of the science are speculative and dogmatic theology. Theology is not, of course, an exact science, as its material differs according to the particular religion with which it is concerned.

Theophrastus, Greek philosopher, born in Lesbos, pupil and successor of Aristotle, and inheritor of his library. His writings were numerous, but only a few are extant, including treatises on plants, stones, and fire, and the popular *Characters*. (c. 370-287 B.C.)

Theorem, in mathematics, a universal proposition capable of proof by pure reasoning, and not merely by induction. In the synthetical method employed in geometry, the principle to be proved is stated before the demonstration is begun; the latter then proceeds by regular argument to a final conclusion confirming the principle originally enunciated.

Theosophy, a mystical philosophico-religious system taught by the Theosophical Society, an organisation founded in New York in 1875 by Madame Helena P. Blavatsky and others; the headquarters were moved four years later to Adyar, near Madras, India, where they still remain. The system is largely based on Buddhist teaching, with infiltrations from other eastern sources; like Buddhism it teaches the doctrines of Karma and rebirth. It claims to incorporate the truths common to all religious systems, and emphasises universal brotherhood and the importance of the spiritual world. The founder was succeeded by Annie Besant (q.v.), who claimed to have discovered a new world teacher in the person of a young Hindu, J. Krishnamurti (q.v.). The society has lost some of its influence through secessions, a group of its former members, claiming that its present teaching is not in accordance with its original system, having broken away.

Theotocopuli, Domenico, called *El Greco*, Cretan painter, resident in Spain. He studied at Venice under Titian, and was much influenced by Tintoretto. He settled in Toledo c. 1577, and his masterpiece is the "Burial of the Conde de Orgaz," at the church of Santo Thome, in that city. A "St. Jerome" and replicas of "Christ on the Mount of Olives" are in the National Gallery, London. (c. 1547-1614).

Therapeutics, in its widest sense the whole science and art of healing and treating disease; it is generally restricted in practice to the study of drugs and other remedies. Modern medical practice has added several new branches to the art, including thermotherapy, or treatment by heat; ray therapy; electrotherapy; and dietetic therapy, or the study of the values of foods in relation to disease.

Therm, a unit of heat measurement equivalent to 100,000 British Thermal Units; the latter being the quantity of heat required to raise the temperature of 1 lb. of pure water 1° F.

Thermae, the buildings erected in ancient Rome and in cities throughout the Roman empire for use as baths; the typical thermal establishment included a tepidarium, or warm room where the bather spent some time before undressing; the apodyterium, or dressing room; and the frigidarium and caldarium, or cold and warm bathing compartments respectively.

Thermidor, the eleventh month of the French republican calendar, covering the latter part of July and the earlier of August. The 9th of Thermidor of the year 2 (July 27, 1794) is remembered as the date of Robespierre's fall.

Thermionic Valve, a valve consisting of a vacuum tube containing two or more electrodes, in which electrons emitted from a heated cathode are attracted to the anode, the thermionic current being able to flow in one direction only. It is of fundamental importance in wireless engineering.

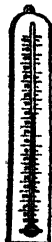
Thermite, a mixture of iron oxide with ignited, e.g. by means of a piece of burning magnesium ribbon, the mass becomes incandescent and a residue of aluminum oxide with metallic iron is left. It is used for welding iron rails, etc., *in situ*, and in incendiary bombs.

Thermochemistry, that branch of chemistry which deals with the heat changes taking place in chemical reactions. In most chemical changes heat is evolved, and such changes are described as exothermic. More seldom encountered are endothermic changes, in which heat is absorbed. Typical exothermic reactions are the combustion of fuels, while among endothermic reactions may be mentioned the formation of water-gas (*q.v.*), by the passage of steam over white-hot coals. Its principal law states that the total amount of heat evolved or absorbed in a chemical reaction is in no way affected by the course of the reaction, but depends entirely upon the weight and nature of the original reactants and the final products.

Thermodynamics, the science dealing with the relations between energy, or work, and heat. It has been developed as an elaboration of two laws known as the first and second laws of thermodynamics. The first law is merely a statement of the fact that, when heat is converted into mechanical energy, or the reverse, the total quantity remains unchanged. The second law may be stated as follows: "It is impossible for any self-acting machine, unaided by any external agency, to convey heat from one body to another at a higher temperature." One consequence of the second law is that, although the total amount of energy remains always the same, less and less of it becomes available to our use, since in all natural processes energy of other kinds is being converted into heat energy. This heat energy merely raises the temperature of the surroundings, and cannot then be used again. James Prescott Joule (*q.v.*) was the first to make quantitative experiments regarding heat.

Thermography, an instrument consisting of a thermometer whose rise and fall operates a pen which records the movement on a revolving paper drum. It is used to register temperature movements for meteorological purposes.

Thermometer, an instrument for comparing the temperature or "hotness" of one object with that of another. The commonest form consists of a capillary glass tube with a bulb at the lower end and sealed at the top; the bulb and part of the tube are filled with mercury, the rest of the tube being a vacuum. If the temperature rises, the mercury expands and rises up the capillary, while if the temperature falls the mercury contracts and reaches only to a lower level in the tube.



Two main scales of measurement are in use, the Fahrenheit scale, generally used in England for non-scientific purposes, on which the melting-point of ice is called 32°, and the boiling-point of water is called 212°, so that there are 180 Fahrenheit degrees between the two; the Centigrade or Celsius scale, employed on the Continent, and universally adopted in scientific work, on which the melting-point of ice is taken as 0° and the boiling-point of water as 100°. To convert temperatures Fahrenheit into temperatures Centigrade, therefore, it is necessary to subtract 32 and multiply by five-ninths. In certain countries, such as Norway and Sweden, the Réaumur scale is in use; on it the melting-point of ice is 0° and the boiling-point of water is 80°.

Thermopile, a delicate electrical instrument for detecting and measuring small quantities of radiant heat.

Thermopylae (i.e., "the hot gates"), a pass in N. Greece, the only traversable one leading southward into Thessaly, lies 25 m. N. of Delphi, and is flanked on one side by Mt. Ceta, and on the other by the Gulf of Zeïtouni; memorable as the scene of Leonidas's heroic attempt with his 300 Spartans to stem the advancing Persian hordes under Xerxes (480 B.C.); also of Greece's futile struggles against Brennus and the Gauls (279 B.C.), and Philip the Macedonian (207 B.C.).

Thermostat, an instrument for the automatic regulation of temperature. It consists typically of a piece of metal whose expansion or contraction on applying heat or cold cuts off or turns on a supply of electricity, gas, air, hot or cold water, and so on. It is applied in the construction of self-regulating refrigerators, gas-cookers, geysers, and similar apparatus.

Theseus, legendary Greek hero of Attica, and son of Aegeus, king of Athens; captured the Marathonian bull, and slew the Minotaur (*q.v.*) by the help of Ariadne (*q.v.*); waged war against the Amazons, and carried off the queen; assisted at the Argonautic expedition, and is famed for his friendship for Perithous, whom he aided against the Centaurs.

Thespis, an Athenian Greek of the 6th Century B.C., supposed to have been the inventor both of tragedy and of the tragic mask as worn by Greek actors.

Thessalonians, Epistles to the two to the Church at Thessalonica; the first written from Corinth about A.D. 53 to exhort them to beware of lapsing, and comforting them with the hope of the return of the Lord to judgment; the second, within a few months of the first, dealing with the date of Christ's second coming. The former is generally

admitted to be genuinely Pauline; modern critics tend strongly to doubt the authenticity of the second.

Thessaloniki, modern name of the seaport of Greece, better known as Salonika (g.r.).

Thessaly, Greece, a wide, fertile plain stretching southward from the Macedonian border to the Malia Gulf, and entirely surrounded by mountains save the Vale of Tempe in the NE. between Mts. Ossa and Olympus; was conquered by Philip of Macedon in the 4th Century B.C., and subsequently incorporated in the Roman Empire, on the break up of which it fell into the hands of the Venetians, and eventually of the Turks (1835), and remained a portion of the Ottoman Empire till 88, when the greater and most fertile part was ceded to Greece, the remainder following in 1919. Modern Thessaly is divided into the two depts. of Larissa and Trikkala, with chief towns of the same names respectively. Area, 5,150 sq. m. Pop. 493,200.

Thetford, market town in Norfolk, England, on the Suffolk border, at the confluence of the Thet and Little Ouse, 31 m. SW. of Norwich. It was the capital of the old East Anglian Kingdom, and a bishop's see before the cathedral was removed to Norwich. Brewing and tanning are carried on. Pop. 4,100.

Thetis, in Greek mythology, the daughter of Nereus and Doris, who being married against her will to Peleus, became the mother of Achilles. She shared with Proteus the power of changing her shape at will.

Thiepval, a village in the dept. of Somme, France, where there was much fighting in the World War during the battle of the Somme; a memorial has been erected to the troops from Ulster, who played a prominent part in it.

Thiers, Louis Adolphe, French statesman and historian, born at Marseilles; studied law at Aix, but turned to journalism, and published in 1827 his *History of the French Revolution*, which established his rank as a writer; took part in the July revolution; in 1832 was elected a deputy for Aix, supporting Louis Philippe; obtained a post in the ministry, and eventually led it; was swept out of office at the revolution of 1848; voted for the presidency of Louis Napoleon, but opposed the *coup d'état*; published in 1860 the *History of the Consulate and the Empire*, a labour of years; entered public life again, but soon retired; at the close of the Franco-Prussian War was responsible for the raising of the indemnity to Prussia; became head of the Provisional Government, and President of the Republic from 1871 to 1873. (1797-1877).

Thing, or **Ting**, name for a legislative or judicial assembly among the Scandinavians, as in the Danish Landsting (the Lower House), the Norwegian Storting, and the Swedish Landstings or provincial councils.

Third Degree, popular term for the violent means used by the police in America and elsewhere in examining accused persons. The methods adopted are supposed to include prolonged questioning for several hours at a time, deprivation of sleep, statements that other accused persons have confessed and betrayed the examinee, and so forth.

Third International. See International.

Third Party Insurance, a method of indemnification against claims for damages by third parties for injury to themselves or their property. Third-party insurance was made compulsory for drivers of

motor-driven vehicles by the Road Traffic Act of 1936.

Third Republic, the republican government set up in France in 1871 on the fall of the Second Empire, and still in existence. The first French republic was established by the National Convention in 1793, and fell when Napoleon made himself emperor in 1804; the second was instituted in 1848 when Louis Philippe abdicated, and ceased with the institution of the Empire of Napoleon III. in 1852.

Thirlmere, one of the lakes in the English lake district, in Cumberland, 5 m. SE. of Keswick; since 1885 it has been embanked and enlarged as the source of Manchester's water supply. The water is conveyed to the city by a 105 m. aqueduct.

Thirty-nine Articles, The first in 1562, state the doctrinal basis of the Church of England. They are appended to the Book of Common Prayer, and all candidates for ordination have to subscribe to them, as does any priest taking a new benefice.

Thirty Years' War, a series of wars arising out of one another in Germany during 1618-1648; at first a quarrel between the Catholic and Protestant states, it developed into a struggle for supremacy in Europe between France and the Hapsburg Empire. It originated in Bohemia, where the Protestants in revolt against the Empire, and aided by Moravians and Hungarians, were suppressed; in 1624 the war was renewed, and Denmark, which had espoused the Protestant cause, was routed; in the third phase, beginning in 1630, the early Swedish successes were not continued, and the Hapsburgs were the gainers. In 1636 the war burst into flame again, but in 1648, when French armies were converging upon Austria, diplomacy brought the war to an end by the Peace of Westphalia, the chief gains of which were the securing of religious tolerance and the recognition of the independence of Switzerland and the United Provinces.

Thistle. See Pyramus,

Thistle, a general name for various composite plants of the family Cynaraceae, especially of the genera *Carduus* and *Cnicus*, with prickly stems; the Scottish national emblem is the Scotch or cotton thistle, *Onopordion Acanthium*. Other common species are the lady's thistle (*Carduus marianus*), sow thistle (*Sonchus oleraceus*) and blessed thistle (*Cnicus benedictus*) the last used in medicine as a laxative and tonic. The readiness with which they scatter their seed makes many thistles serious pests to the agriculturist.



SCOTCH THISTLE
(*Onopordion Acanthium*)

Thistlewood, Arthur. See Cato Street Conspiracy.

Thomas, Albert, French statesman, a reformist Socialist views; he was assistant editor of *L'Humanité* from 1904, and entered the Chamber in 1910. In 1916 he became Minister of Munitions, and visited Russia the following year to confer with Kerensky on behalf of the Allies. In 1918 he became Director of the International Labour Office at Geneva. (1878-1932).

Thomas, Ambrose, French musical composer, born at Metz; after a brilliant career of study at the Paris Conservatoire, became professor of Composi-

tion in 1852, and nine years later succeeded Auber as director; a prolific writer in all forms of musical composition, but has won celebrity mainly as a writer of operas, the most popular of which are *La Double Echelle*, *Mignon*, and *Hamlet*; was decorated with the Grand Cross of the Legion of Honour in 1880. (1811-1896).

Thomas, Bertram Sidney, British explorer and orientalist; a civil servant from 1908; he served in the World War in Belgium and Iraq; going to the East he was *Wazir* and Finance Minister in Muscat and Oman from 1925 to 1930. He crossed the Rub 'al Khali desert in Arabia in 1930-1931, and wrote thereafter books on his experiences. (1892-).

Thomas, James Henry, British politician. He started work when 9 years old, became an engine-driver, and then turned trade union organizer; in 1910 he became President of the National Union of Railwaymen, and was elected Labour M.P. for Derby. He was made a Privy Councillor in 1917, and the same year he was sent on an official mission to the U.S.A. He achieved considerable popularity with industrialists at the price of the enmity of the extreme section of his own party. In 1924 he took office in the Labour government as Colonial Secretary, and in 1929 was again in office as Lord Privy Seal, having special charge of the unemployment problem. He became Secretary of State for Dominions Affairs in 1930, and in 1931 followed J. R. MacDonald (q.v.) into the National Government, resigning his post as Secretary to the National Union of Railwaymen, which body deprived him of his pension rights. In 1935, after the report of a committee appointed to enquire into an alleged leakage of Budget secrets, he resigned from the Cabinet and from Parliament. (1875-).

Thomas, St., the Apostle, is reputed to have preached Christianity in the East, finally settling on the Malabar coast of India, where the old-established Christian church claims descent from him; modern research suggests that the tradition may have some historical foundation. He is represented in art as bearing a spear in his hand, and sometimes an arrow, a book, and a carpenter's square.

Thomas the Rhymer.

See Rhymer, Thomas the.

Thomism, the doctrine of Thomas Aquinas (q.v.), particularly in reference to predestination and grace; his followers were called Thomists as opposed to the Scotists who followed Duns Scotus. The revived scholastic philosophy of the present century is sometimes known as Neo-Thomism.

Thompson, Francis, British poet. Trained for the Roman Catholic priesthood, he turned from his studies to medicine, but relinquished it and lived in obscurity for some years until his first volume, *Poems*, was issued in 1893, after he had come to London. His reputation, enhanced by his later volumes, *Sister Songs* and *New Poems*, has much increased since his death from tuberculosis accelerated by the opium-smoking of his early years. (1859-1907).

Thomson, James, British poet, born at Edinburg, Roxburghshire; educated and trained for the ministry at Edinburgh University, but went to London in 1795 to push his fortune. His poem, *Winter*, published in the following year, had immediate success. It was followed by the rest of the *Seasons*, and some indifferent plays. The *Maecius of Alfred*, with its popular song *Rule Britannia* (1748) was the outcome of his later years of leisure. (1700-1748).

Thomson, James, British poet, generally known as B.V., the initials under which his works were issued, to distinguish him from his namesake; born at Port Glasgow, and brought up in an orphanage; was introduced to literature by Bradlaugh, to whose *National Reformer* he contributed much of his best poetry, including his gloomy yet sonorous and impressive *The City of Dreadful Night*, besides essays. (1834-1882).

Thomson, Sir John Arthur, British histonshire, lecturer on Zoology at Edinburgh, and professor of Natural History at Aberdeen; among his books are *Outlines of Zoology*, *What is Man?* and many other popular scientific treatises. He was knighted in 1930. (1860-1933).

Thomson, Sir Joseph John, British scientist; Cavendish professor at Cambridge, 1884-1919, and afterwards Master of Trinity College and professor of Physics. His greatest work was done on the conduction of electricity through gases and the structure of the atom. He carried out experiments to determine the charge and mass of the electron, and devised a method for the analysis of positive rays; received a Nobel prize for physics in 1906, and was President of the Royal Society from 1916 to 1930; O.M., 1912. (1856-).

Thomson, Sir William, Lord Kelvin. See Kelvin.

Thomson of Cardington,

Christopher Birdwood Thomson, first Baron, British soldier and Labour statesman. He served as military attaché in Rumania, 1915-1916, and in 1918-1919 was a member of the Supreme War Council. He received a peerage in 1924, when he was made Secretary for Air; an office he again held from 1929 until his death in the conflagration of the airship *R101* near Beauvais, France. (1875-1930).

Thor, or *Thunar*, in Norse mythology, the god of thunder, agriculture, and war, the son of Odin (q.v.) and the enemy of the giants, whom he attacked and destroyed with his magic hammer. Thursday takes its name from him. The thunder was his wrath, the fire-bolt from heaven his all-rending hammer. He was the strongest of gods and foe of the chaotic powers.

Thorax. See Chest.

Thoreau, Henry David, American author, born at Concord, where his life was mostly spent. The serious occupation of his life was to study nature in the woods around Concord, making daily journal entries of his observations and reflections. His chief works are *Walden*, the account of a two years' sojourn in a hut built by his own hands in the Concord Woods near "Walden Pool," *A Week on the Concord and Merrimack River*, essays, poems, etc. (1817-1862).

Thorium, a metallic chemical element belonging to the same group as titanium, zirconium and hafnium. Symbol Th; atomic number 90; atomic weight 232.13; is mainly extracted from the monazite sand of Brazil and India. It is a silvery white, radioactive metal; its chief compound is thorium oxide, which is the main constituent of gas mantles and is also mixed in small quantity with tungsten to form electric light filaments.

Thorn (*Torun*), Polish town on the Vistula, 115 m. NW. of Warsaw; formerly a member of the Hanseatic League (q.v.); was annexed by Prussia in 1815, and became Polish again in 1919; the birthplace of Copernicus; carries on a brisk trade in corn and timber; it is a fortress and the centre of a military district. Pop. 54,000.

Thorn, in botany, a projection on a plant, an outgrowth of a varying nature according to the plant it is on, being in some cases an epidermal structure, in some cases a specialized branch growth, in some cases a specialized leaf growth, a petiole, root, stipule, etc. The name thorn is also applied to many thorn-bearing plants, especially to those of the genus *Crataegus* of the natural order Rosaceae, in which the thorns are modified branches, and which includes the British Hawthorn or May.



THORN

- A. Honey Locust
- B. Blackthorn
- C. Blackberry
- D. Rose

Thornaby-on-Tees, borough of England, in the N. Riding, on the Tees, opposite Stockton. It has iron-foundries, and there are also ship-building yards, engineering works, etc. Pop. 21,200.

Thorndyke, Dame Sybil, British actress, born at Gainsborough, took to the stage at 18, and started by touring America. Later she played at the "Old Vic." London, and built up a reputation as a tragedienne, which reached its height in 1923 with her rendering of Shaw's *Saint Joan*. Although her reputation was made in Shakespearean and Greek tragedy, her versatility is shown by her successful impersonations in comedy. In 1908 she married Lewis Casson, the actor, and was made D.B.E. in 1931. (1885-).

Thorne, market town of Yorkshire, England, in the W. Riding, 10 m. NE. of Doncaster. Barge-building and rope-making are carried on, and peat moss is obtained nearby. Pop. 31,200.

Thorne, Will, British Labour politician, born at Birmingham; he began work in a barber's shop at the age of six. He helped to found the National Union of General and Municipal Workers, 1889, and was its General Secretary, 1889-1934. He has been a member of the Parliamentary Committee of the Trades Union Congress since 1894, and Member of Parliament for West Ham since 1906; member of the West Ham Council since 1890; Mayor of West Ham, 1917-1918; C.B.E., 1930. Wrote *My Life's Battles*, 1925. (1857-).

Thornycroft, Sir John Isaac, British in Rome; son of Thomas Thornycroft, sculptor, and brother of Sir William Hamo Thornycroft. From 1866 he built torpedo boats at Chiswick, constructing them for the British navy from 1877. Removed yard to Woolston, Southampton, 1906. (1843-1928).

Thornycroft, Sir William Hamo, English sculptor, born in London. Among his works were statues of General Gordon (1885), John Bright (1892), and Oliver Cromwell (1899). (1850-1925).

Thorwaldsen, Bertel, Danish sculptor, born near Copenhagen, the son of a poor Iclander; studied in Rome, where he learnt to admire the Greek sculptors. Canova encouraged him, and a fine statue of Jason established his reputation; his life henceforth was one of increasing fame and prosperity. Most of his life was passed in Italy. Among his works are many classical subjects, and a colossal group of "Christ and the Twelve Apostles," "St. John Preaching in the Wilderness," and other religious subjects, besides statues of Copernicus and Galileo, and the celebrated reliefs "Night" and "Morning"; bequeathed to his country many of his works, now in the Thorwaldsen Museum. (1770-1844).

Thoth, a god of the ancient Egyptians, the Greek Hermes, and inventor of arts and sciences; usually represented as having the body of a man and the head of an ibis or of a dog.

Thothmes, name of Egypt, of the 18th dynasty, of whom Thothmes I. subdued southern Egypt and campaigned to the Euphrates (reigned c. 1540-1503 B.C.); his son-in-law, Thothmes II., reigned c. 1503-1500 B.C., and was succeeded by Thothmes III., who subdued Syria, which had revolted, and earned fame as a builder, reigning c. 1500-1446 B.C. Thothmes IV., who succeeded Amenophis II., reigned c. 1420-1400 B.C.



THOTHMES III.

Thrace, a region in SE. Europe, to the E. of the I. Maritima, now divided between Greece, Turkey, and Bulgaria. The name was used by the Greeks, who considered the country's then inhabitants as barbarians. It later became a Roman province. The country is mainly hilly; the vine and tobacco are grown, and there is some cattle-grazing.

Thread, a cord made of several fine twisted fibres of cotton, silks, etc., used for sewing. The basis of all sewing threads is a two-ply twist, thicker or stronger threads being made by twisting together two, three or more two-ply threads.

Threats, in law, may, if serious, amount to felonies punishable by penal servitude, or may, if less serious, give ground for application to a court of summary jurisdiction for the guilty person to be bound over to keep the peace. Contracts entered into as a result of unlawful threats may be rendered unenforceable. But threats are not necessarily unlawful in themselves, if they merely amount to declarations of intention to invoke a legal remedy or to follow a course of action which is in itself lawful.

Three Rivers (Trois Rivières), city of Quebec, Canada, 85 m. NE. of Montreal; does a considerable trade in lumber, ironware, etc. Pop. 40,000.

Threshing. See *Winnowing*.

Throat, the cavity at the back of the palate, though the word is applied loosely to the larynx (q.v.). The throat or pharynx is the cavity into which the nose, mouth, gullet and larynx all open. Diseases of the throat include laryngitis (q.v.), and pharyngitis, which is generally connected with disturbances of the digestive organs, and also may be due to excessive spirit drinking. What is called "sore throat" is generally a symptom of some more serious complaint, though it may be a mere local inflammation of the tonsils.

Thrombosis, the formation of a blood clot in a vein or artery at a fixed spot. It is generally due to an injury to the lining of the vessel consequent upon inflammation, but a clot may also occur through cancer or anaemia. If it occurs in the cerebral vessels, apoplexy is likely to result. The clot is known as a thrombus, and when a thrombus or a part of a thrombus becomes detached in the blood stream the condition known as embolism (q.v.) arises.

Throne, an ornamental chair of state used by the Pope; also the official seat of a bishop in his cathedral church. The British throne, King Edward's (the Confessor's) chair in Westminster Abbey, has been constantly used at coronations since Anglo-Saxon times.

Under it is the famous reddish or purplish stone brought from Seone, Scotland, by Edward I. in 1296, on which Scottish kings were crowned.

Thrush, a family (Turdidae) of song birds, with numerous species found in all parts of the world. There are nine sub-families, including the True Thrushes (Turdine), the Redstarts (Ruticollinae) and the Chats (Saxicolinae). The True Thrushes include such familiar British species as the Blackbird, Ring-Ouzel, Fieldfare, Hedge-Sparrow, the Mistle-Thrush (*Turdus viscivorus*), the largest of the British species, and the Common or Song-Thrush (*Turdus musicus*), one of the sweetest and earliest of British songsters, of brown colouring above, whitish-grey below. The Ruticollinae sub-family includes, besides the Redstarts, the Common Nightingale. For the various species mentioned see individual species.

Thrush, an inflammatory disease affecting mouth, tongue, and the corners of the lips, occurring in sickly children. It is characterized by white patches on the mucous membrane of the mouth and tongue, and is due to a parasitic fungus or mould.

Thucydides, Greek historian of the Peloponnesian War, born in Athens of a wealthy family; was in Athens during the plague of 430 B.C., fell a victim, but recovered; served as naval commander in 424 in the Peloponnesian War, but for neglect of duty was banished; returned from exile 20 years after. His great achievement is his history, derived from personal observations and oral communication, the materials of which were collected during the war; it was left unfinished at his death, eight books having then been completed, and is recognized as one of the most important historical monuments of the classic world. (c. 471 B.C.-411 B.C.).

Thugs, a Hindu secret society the goddess Kali, the wife of Shiva, who, to propitiate her, practised murder, and lived on the spoils of the victims; they were suppressed after 1835. Their method of disposing of their victims by poison or strangling was called Thuggee.

Thulium, a metallic chemical element belonging to the group of rare earths (q.v.). Symbol Tm, atomic number 69; atomic weight 168.4. It has no industrial importance.

Thumbscrew, an old steel instrument of torture, which gradually compressed the thumb until the joint was broken. It was popular with Inquisitioners, and with the opponents of the Covenant in Scotland, where it remained in use until 1690.

Thunderstorms, storms caused by violent changes in the electrical condition of the earth and a cloud, or of two clouds, and of the air between them. When a cloud charged with positive electricity floats near the earth, the negative electricity of the earth pulls upon it; if the tension becomes strong enough the resistance breaks down and rapid electrical oscillations take place between them, thus producing lightning (q.v.). The heated particles of matter in the air soon lose their heat, and the air rushes back to fill the vacuum caused by its expansion. This meeting from all sides with great force, produces a sharp clap, and the reverberation of the peal or thunder-roll arises chiefly from the echoes produced by the reflection of the sound from objects on the earth, or from the clouds themselves. Thunderstorms are most frequent and violent in tropical regions. They often occur entirely within the atmosphere, when differently charged clouds approach and discharge.

Thurgau, a ^{canton} of Switzerland, on the N.E. frontier, where Lake Constance for a considerable distance forms its boundary; inhabitants are mainly German-speaking and Protestant; country is hilly but not mountainous, fertile, and traversed by the R. Thur, a tributary of the Rhine; fruit-growing is largely pursued; capital Frauenfeld. Area, 390 sq. m. Pop. 136,000.

Thurible, a vessel to contain incense, hung on chains and capable of being swung to and fro in the hand. It is used in religious services in the Roman Catholic and other churches.

Thuringia (Thuringen), a state of the German Reich, constituted in 1919 by the merging of eight former small states in the Thuringian district, N. of Bavaria and W. of Saxony; it is largely under forest, industry being mainly agricultural. Capital, Weimar. Area, 4,540 sq. m. Pop. 1,660,000.

Thurles, a town of Tipperary, Eire (Ireland), on the Suir, 87 in. SW. of Dublin. Sugar is manufactured. In the vicinity are the fine ruins of Holy Cross Abbey. Pop. c. 5,000.

Thurlow, Edward, Baron, British lawyer and politician, born at Bracon-Ash, Norfolk; called to the bar in 1754; entered Parliament in 1768; became a favourite of George III., and rose through the offices of Solicitor-General and Attorney-General to the Lord Chancellorship in 1778, being raised to the peerage as Baron; lost his position during the Coalition Ministry of Fox and North, but was restored by Pitt, who, however, got rid of him in 1792, after which he seldom appeared in public. (1731-1806).

Thursday, fifth day of the week, named Thor (q.v.), from the Scandinavian god

Thursdays Island, a small island in Torres Strait, N. of Australia, belonging to Queensland; has a fine harbour, Port Kennedy, and is the centre of valuable pearl fisheries. Pop. 1,050.

Thurso, a seaport in Caithness, Scotland, at the mouth of the Thurso R., 21 m. NW. of Wick; does a brisk trade in agricultural produce, cattle, and paving stones. Pop. 2,950.

Thurston, Ernest Temple, English novelist and playwright, born at Halesworth. His *Apple of Eden* was written at the age of 18, but not published till 1905. His best-known story is *Sally Bishop*, 1908. *John Chilcote, M.P.*, was a play founded on a novel written by his first wife. (1879-1933).

Thyme (*Thymus*), a genus of small-leaved labiate evergreen shrubs bearing red, white or heliotrope flowers, the two most important species being *Thymus vulgaris* (garden thyme) cultivated for its aromatic odour, and for the essential Oil of Thyme extracted from it for use as a kitchen flavouring, and Wild Thyme (*Thymus serpyllum*), a common British-wild hill-plant.



WILD THYME

Thymol, a white crystalline solid found in Oil of Thyme, though it is now prepared synthetically. It has a pleasant thyme-like odour and is a moderately powerful antiseptic. For the last purpose, it is made up into an aqueous solution with glycerine and a colouring matter ("glycerine of thymol").

Thymus Gland, a ductless gland situated in the lower part of the neck, which is largest during the first and second years of life, thereafter diminishing until in the adult it has almost disappeared.

Thyroid Gland, a ductless gland at the back of the larynx, consisting of two lobes, producing a secretion called thyroxine, which plays an important part in the growth of the body and the development of the sympathetic nervous system. It is subject to goitre, a condition of abnormal enlargement, and to myxodema, a disease consequent on its degeneration or failure to function. The condition known as cretinism (q.v.) is also due to unsatisfactory thyroid functioning.

Thysrus, in Greek religion, an attribute of Dionysus, being a staff or spear entwined with ivy leaves and bearing a cone at the top; carried by the devotees of the god on festive occasions; the cone was presumed to cover the spear point, a wound from which was said to cause madness.

Tiara, the triple crown worn by the Pope as a symbol of his temporal authority. It consists of a cap of cloth of gold encircled by three coronets. The name is also given to a jewelled circlet or headdress worn by women as an ornament.

Tiber, the main river of Central Italy, celebrated in ancient Roman history, rises in the Apennines, in the province of Arezzo, Tuscany; rapid and turbid in its upper course, but navigable 100 m. upwards from its mouth; flows generally in a S. direction, and after a course of about 260 m. enters the Mediterranean about 15 m. below Rome.

Tiberias (Tiberiyyeh), a town of Palestine on the W. shore of the Sea of Galilee, lying 680 ft. below the sea level; founded by Herod Antipas in honour of the Emperor Tiberius, whence its name. In the 2nd-4th Centuries it was the headquarters of the Jewish remnant in Palestine and still continues, as of old, to be a favourite place of Talmudic study. Somewhat to the S. are medicinal springs or hot baths. Pop. 9,700.

Tiberius Claudius Nero, second Roman emperor, born at Rome; was of the Claudian family; became the stepson of Augustus, who, when he was five years old, had married his mother; was himself married to Agrippina, daughter of Agrippa, but was compelled to divorce her and marry Augustus's daughter Julia, by whom he had two sons, on the death of whom he was adopted as the emperor's successor. After various military services in various parts of the empire, he succeeded Augustus in A.D. 14. His reign was notable for some progressive measures, but was distinguished by acts of cruelty, especially his execution of his minister Sejanus. Given up to debauchery, he was suffocated in a fainting fit by the captain of the Praetorian Guards in A.D. 37, and succeeded by Caligula. (42 B.C.-A.D. 37).

Tibet, a country of Central Asia, nominally a dependency of China, but in effect an independent state under British patronage; comprises a wide expanse of tableland, most of it over 10,000 ft. in height, subject to great extremes of temperature, but during most of the year intensely cold; enclosed by the lofty ranges of the Himalaya and Kuen-Lun Mts., it was practically unvisited by Europeans between the Middle Ages and the 20th Century, but since 1900 has been partially explored; possesses considerable gold and other mineral wealth, and a foreign trade is carried on in woollen cloth (chief article of manufacture); the sheep, yak, and buffalo are bred. Polyandry is prevalent among the people, who are a Mongolian race of fine physique, fond of music and dancing, nearly one-quarter of them priests or monks.

A variation of Mongol Shamanism known as Bon has mingled with Mahayana Buddhism to produce Lamaism, the distinctive religion of the country, and the supreme secular authority is vested in the Dalai Lama, reputed to be a reincarnation of the Buddha, who resides at Lhasa, the capital. Area, 463,000 sq. m. Pop. uncertain, but probably between one and two millions.

Tibia, or *Shinbone*, the inner and usually larger of the two bones of the lower leg, extending from the knee to the ankle. The thigh-bone or femur is united to its larger upper end at the knee joint, while its lower end forms part of the ankle joint.

Tichborne, an estate in Hampshire, England, which, became notorious in the 'seventies through a butcher, from Wagga Wagga, in Australia, named Thomas Castro, otherwise Thomas Orton, laying claim to it in 1866 on the death of Sir Alfred Joseph Tichborne. The "Claimant" represented himself as an elder brother of the deceased baronet, supposed to have perished at sea. The imposture was exposed after a lengthy trial ending in March, 1872, and a subsequent trial for perjury resulted in a sentence of 14 years' penal servitude. Orton, after his release, confessed his imposture in 1895.

Ticino (Tessin), the most southerly canton of Switzerland, lies on the Italian frontier; slopes down from the Lepontine Alps in the N. to fertile cultivated plains in the S., which grow olives, vines, figs, etc. The inhabitants speak Italian, and the canton, from the mildness of its climate and richness of its soil, has been called the "Italian Switzerland." It embraces most of Lakes Lugano and Maggiore, and is traversed by the St. Gothard Railway. The capital is Bellinzona; other towns, Locarno and Lugano. Area, 1,090 sq. m. Pop. 159,000.

Ticino, a river of Switzerland and N. Italy; springs from the S. side of Mount St. Gothard, flows southwards through Lake Maggiore and S.E. through N. Italy, joining the Po 4 m. below Pavia, after a course of 120 m.

Ticks, tiny parasitic animals of the family Ixodidae in the order Acari (which includes the mites (q.v.) also) of the class Arachnida. There are many species, all possessed of a piercing or sucking organ by which they attach themselves to the skin of mammals, birds and reptiles. Some of them are disease-carriers.

Tide, the rise and fall of the ocean, occurring usually twice each lunar day, due to the inequality of the moon's attractive force on the solid and liquid portions of the earth; this produces two simultaneous high tides, one directly under the moon and the other directly opposite to it. Solar tides are also produced by the attraction of the sun, but these are not strong enough to form tide waves, merely acting as drawbacks to the lunar tides when the moon is in front of, and as aids when the moon is behind, the sun. When both sun and moon are on the same side of the earth, as at new moon, the lunar and solar tides are heaped one on the other and a very high or spring tide is formed; the same happens when they are on opposite sides, as at full moon. In other positions the two forces act against one another; and when they are 90° apart they are diametrically opposed, and a very small tide, called a neap tide, results.

Tidworth, village of Wiltshire, England, between Salisbury and Marlborough, on the slope of the Wiltshire Downs. It is the site of an important military camp, where tattoos (q.v.) are sometimes held. Pop. 2,800.

Tien-Shan, a great mountain range of Central Asia, separating Sinkiang from Drungaria and the Altai regions;

the Syr-Darya, Ili and Tarim rivers take their rise in the system. Highest summit Tengri, 22,500 ft.

Tientsin, an important city and river-port, on the Pei-ho, 34 m. from the mouth and 76 m. S.E. of Peking, of which it is the port; it became an open treaty port in 1858; there is a University, and a small Italian concession adjoins the town. The city was bombed and captured by the Japanese in July, 1937. Pop. 1,292,006.

Tierra del Fuego, a compact island-group at the southern extremity of the S. American continent, from which it is separated by the Strait of Magellan; the most southerly point is Cape Horn (q.v.). Of the group, Tierra del Fuego, sometimes called King Charles South Land, belongs partly to the Argentine and partly to Chile, to which also belong the other islands, except Staten I., an Argentine possession. Save for a few fertile plains in the N., where some sheep-farming goes on, the region is bleak, barren, and mountainous, with rocky, fiord-cut coasts swept by violent and prolonged gales. The inhabitants are mostly nomadic Indians of little culture.

Tiflis (Tbilisi) capital of the Georgian S.S.R., a constituent republic of the U.S.S.R., in the Caucasus, on the Kar, 165 m. S.E. of the Black Sea; is a city of considerable antiquity and note, now mainly a trading centre, but still famous for its silversmiths' work; it is the seat of the Georgian State University. Pop. 408,000.

Tiger, a carnivorous mammal (*Felis tigris*) a wider, more massive skull and standing lower on the limbs. A full-grown tiger measures 5½-6½ ft. and stands from 3-3½ ft. high, the maximum weight being about 500 lb. or more. It is mainly confined to India, Java and Sumatra; but has greatly decreased in numbers in the thickly populated districts of India. The coat is red-tawn and white beneath, with white markings on face and ears, and black transverse stripes on the body. The tiger lives chiefly on various species of deer, wild pigs and antelopes, but it will kill cattle and also eat porcupines, monkeys, etc. It is hunted in India, both on foot and by shooting from elephant-back or from tree-platforms (machans).



TIGER

Tiger Lily (*Lilium tigrinum*), a fine lily with scarlet spotted flowers, indigenous to China, where its bulbs and shoots are an article of food, but now grown in European gardens.

Tigré, a northern region of Abyssinia, containing the towns of Adowa, until 1936 its capital, and Axum, the former religious capital of the country.

Tigris, an important river of Western Asia, mainly in Iraq; rises in the mountains of Kurdistan, flows S.E. to Diar-bekir, E. to TII (where it receives the Tigris) and hence S.E. through a flat and arid country, till, after a course of 1,100 m., it unites with the Euphrates to form the Shatt-el-Arab, which debouches into the Persian Gulf 90 m. lower; is navigable for 500 m. to Bagdad; on its banks are the ruins of Nineveh, Seleucia, and Ctesiphon, and the modern towns of Kut, Basra, Samarra and Mosul.

Tilbury, town in Essex, England, on the new part of Thurrock Urban District; it has large docks which can accommodate ocean-going liners, and is the centre of a trade to the Netherlands. Pop. c. 17,000.

Tilden, William Tatem, American lawn-tennis player; born at Germantown, Pa. Held championships of U.S.A., 1920-1925, 1929. Played continually in Davis Cup matches. Defeated G. L. Patterson for world championship, Wimbledon, 1920, retaining the title in 1921, and regaining it in 1930, after which he became a professional; professional champion of America, 1931. He is author of many books on tennis. (1893-).

Tile, a piece of baked clay, used for covering a roof, or of earthenware or porcelain, glazed or coloured, and often embossed or painted with a design, for decorative purposes, such tiles when painted being known as encaustic tiles. Tiles of baked clay were in ancient times used for preserving written records, especially in Assyria and Babylonia. Roofing tiles are sometimes made with a concave (pantiles) or ridged surface.

Tillett, Benjamin, English Labour leader, born at Easton, Bristol. Began work at the age of 9 in a brickyard, afterwards earning a living as a circus performer, helper on a fishing-smack, and at sea in the Navy and merchant service. In 1887 he organized the Dockers' Union, of which he was General Secretary till its absorption in 1922, and helped to promote the Dock Strike of 1889, in consequence of which he was tried for inciting to violence, but acquitted. Later he undertook organization of dock workers at Antwerp, Hamburg, in the British Dominions, etc.; from 1917 to 1924, and again from 1929 to 1931, was Member of Parliament for North Salford. (1860-).

Tillotson, John Robert, English divine, born at Sowerby, Yorkshire, of a Puritan family; studied at Clare Hall, Cambridge, came under the influence of Cudworth (q.v.), conformed to the Established Church at the Restoration and became King's chaplain and a prebend of Canterbury, till at length he rose to be Dean and Archbishop of Canterbury; was an eloquent preacher, a man of moderate views, and respected by all parties. (1630-1694).

Tilly, Johann Tserklies, Count of, one of the great generals of the Thirty Years' War (q.v.), born in Brabant; was intended for the priesthood and educated by Jesuits, but abandoned the Church for the army; was trained in the art of war by Parma and Alva, and proved himself a born soldier; reorganized the Bavarian army and, devoted to the Catholic cause, was given command of the Catholic army at the outbreak of the Thirty Years' War, during the course of which he won many notable battles, acting later on in conjunction with Wallenstein, whom in 1630 he succeeded as commander-in-chief of the Imperial forces; in the following year he soaked with merciless cruelty the town of Magdeburg, a deed which Gustavus Adolphus was swift to avenge by crushing the Catholic forces in two successive battles—at Breitenfeld and at Lech—in the latter of which Tilly was mortally wounded. (1559-1632).

Tilsit, a manufacturing town of East Prussia, on the Niemen, 85 m. N.E. of Königsberg. Here was signed in 1807 a treaty between Alexander I. of Russia and Napoleon, as the result of which Frederick-William III. of Prussia was deprived of the greater part of his dominions. Chemicals, soap, glass, etc., are manufactured. Pop. 57,300.

Timbuctoo (Timbuktu), city of the French Sudan, situated at the edge of the Sahara, 8 m. N. of the Upper Niger, at the centre of caravan routes which lead to all parts of N. Africa; carries on a large transit trade, exchanging European goods for native produce. It is connected by canal with the Niger R. Pop. 5,600.

Time, the measure of duration or continuous existence without reference to extension in space. Absolute time is unrelated to matter or motion, and is continuous, unlimited, and infinitely divisible. Relative time, by which duration is measured with reference to events, is of several kinds; sidereal time is based on the rotation of the earth with respect to the stars; solar time is based on the same movement with respect to the sun, and as the solar day varies in length both because of the earth's own movement in its orbit and the obliquity of the earth's axis, time as measured by clocks, chronometers, etc., is computed on the basis of an average or mean solar day which is always of the same length, and has no real existence. See also **Standard Time**.

Time, in music, the relative duration of a rest, measured by the rhythmical proportions of the notes, the semibreve being the unit or standard; the minim is half the semibreve, the crotchet half the minim, the quaver half the crotchet, and so on. There are two kinds of time: duple, with 2, 4 or 8 beats to the bar; and triple, with 3 beats.

Times, *The*, a London daily newspaper founded in 1785 as the *London Daily Universal Register*; it adopted its present name in 1788. Lord Northcliffe acquired control in 1908, but in 1923 a trust was formed to prevent the paper ever again falling completely into private hands. It is England's greatest national paper, and politically it is its traditional policy to give a general support to the Government of the day, irrespective of party. Its notable editors include John Delane and G. E. Buckle.

Timisoara (*Temesvar*), city of Rumania, on the Bega Canal, 75 m. NE. of Belgrade; has a handsome Gothic cathedral and ancient castle; manufactures tobacco, leather, flour, etc. Pop. 90,000.

Timor, the largest of the Lesser Sunda Is., 700 m. E. of Java; of volcanic formation, mountainous, wooded, and possessing deposits of various metals, but mainly exports maize, sandalwood, coffee, wax, tortoise-shell, etc.; population consists chiefly of Papuans with Chinese and Malay infiltration. The western portion belongs to Holland, the eastern to Portugal. E. of Timor lies a group of three low-lying islands of coral formation, known as Timor-Laut or Tenimber Is.; a Dutch possession; the largest island is Yamdena. Pop. c. 1,000,000.

Timothy, a convert, associate and deputy of St. Paul, to whom, when bishop of Ephesus, the Apostle wrote two epistles in the interval between his imprisonment and death at Rome. Modern criticism is inclined to doubt or deny their Pauline authorship.

Timur. See *Tamerlane*.

Tin, a metallic chemical element belonging to the same group as carbon, silicon, germanium and lead; it was one of the seven metals familiar to the ancients. Symbol Sn; atomic number 50; atomic weight 118.70. Its chief ore is cassiterite or stannite, which occurs in Malaya, Australia, Bolivia, Cornwall, and a few other localities. The metal is extracted by first roasting the ore to remove impurities such as arsenic and sulphur, and then smelting with powdered coal in a reverberatory furnace. It is a silvery-white metal with a low melting-point (232° C.), and when heated to a low temperature slowly changes to a powdery allotropic modification known as gray tin. Tin is largely used for wrapping cigarettes, chocolate, confectionery, etc. ("silver paper") and in the manufacture of tinfoil (g.s.). Alloys of tin include pewter (tin 80 parts, lead 20 parts), solder (g.s.), bronze (copper and tin), and tin-mercury, an alloy of tin and mercury

formerly used as the reflecting surface in the cheaper sorts of mirrors. The chlorides of tin are used as mordants in the calico-printing industry, while finely divided tin oxide, known as putty powder, is used for polishing glass, etc.

Tinplate is made by dipping thin sheets of iron, which have been given a bright surface by "pickling" in sulphuric acid, into molten tin covered with melted palm oil. The sheet then passes under a partition into molten tin covered with melted fat, and then through rollers to remove superfluous metal. It is chiefly used in motor-car manufacture for wings and under-shields.

Tintagel Head, a rocky headland, 300 ft. high, on the W. Cornish coast, England, 22 m. W. of Launceston; associated with the Arthurian legend as the site of King Arthur's castle and court; 6 m. distant lies Camelot, identified by some with the famous Camelot.

Tintern, village of Monmouthshire, England, on the R. Wye, 6 m. N. of Chepstow, with the ruins of a 12th Century Cistercian abbey, which are much visited by tourists. It is the subject of a poem by Wordsworth. Pop. c. 300.

Tintoretto, nickname of *Jacopo Robusti*, born in Venice; save for a few lessons under Titian he seems to have been self-taught; took for his models Titian and Michelangelo, and came especially to excel in grandeur of conception and in strong chiaroscuro effects. Amongst his most notable pictures are "Belshazzar's Feast," "The Last Supper," "The Crucifixion," "The Last Judgment," "The Resurrection," etc.; some of these are of enormous size. His "St. George and the Dragon" is in the National Gallery, London. (1518-1594).

Tipperary, a south-midland county of Eire (Ireland), in the province of Munster, stretching N. of Waterford, between Limerick (W.) and Kilkenny (E.); possesses a productive soil, which favours a considerable agricultural and dairy-farming industry; coal is also worked; the Suir is the principal stream; the generally flat surface is diversified in the S. by the Galtees (3,008 ft.) and Knockmealdown (2,600 ft.), besides smaller ranges elsewhere. The town of the same name (pop. 6,000), 110 m. SW. of Dublin, is noted for its butter market. The county is divided for administrative purposes into two Ridings; co. town of N. Riding, Nenagh; area, 771 sq. m. Pop. 59,400; co. town of S. Riding, Clonmel; area, 872 sq. m. Pop. 78,000.

Tipoo Sahib, son of Hyder Ali, whom he succeeded in the Sultanate of Mysore in 1782; already a trained and successful warrior in his father's struggles with the English, he set himself with implacable enmity to check the advance of British arms; in 1789 invaded Travancore, and in the subsequent war (1790-1792), after a desperate resistance, was overcome and deprived of half of his territories, and compelled to give in hostage his two sons; intrigued later with the French, and again engaged the English, but was defeated, and his capital, Seringapatam, captured after a month's siege, himself perishing in the final attack. He was popularly known as "the Tiger of Mysore." (1749-1799).

Tipstaff, an officer of the High Court whose duty it is to arrest and take to prison any person committed by that court who at the time is present there. The name is often extended to any constable, sheriff's officer, and court crier or usher, and is connected with the staff tipped with metal which was formerly his badge of office.

with him at his death. The New Testament contains an epistle addressed to him in the name of Paul, but its authenticity is a matter of doubt among modern critics.

Titus Flavius Vespasianus, Roman Emperor, born in Rome, the son of Vespasian, served in Germany and Britain, and under his father in Judaea. On his father's elevation to the throne he continued the operations against the Jews, laid siege to Jerusalem, and took the city in A.D. 70. On his accession to the throne he addressed himself to works of public beneficence, and became the idol of the citizens; but his death was sudden, and his reign lasted only three years. (41-81).

Tiverton, town of Devonshire, England, situated between the Exe and Loman, 12 m. N. by E. of Exeter; has a lace manufacture, and is the site of the well-known Blundell's school. Pop. 9,600.

Tivoli, a town of Italy, known to the ancients as Tibur, beautifully situated on the Teverone, 18 m. E. of Rome; was much resorted to by the wealthy Roman citizens, and is celebrated by Horace; is full of interesting remains, including those of a villa of the Emperor Hadrian. Pop. c. 15,000.

T.N.T. See Trinitrotoluene.

Toad, a genus (*Bufo*) of amphibians, marked by their warty skin and complete absence of teeth; the colour is generally brownish, their habit is shy, and they mainly seek their food, which consists of insects, worms, grubs, etc., by night. In spite of former common belief, they are not poisonous to human beings. There are two British species, the Common Toad (*Bufo vulgaris*) and the Natterjack Toad (*Bufo calamita*); about 80 others are known in various parts of the world.



COMMON TOAD

Toad-Flax, a genus (*Linaria*) of hedge and field plants of the order Scrophulariaceae. There are some 100 species, including seven found in Britain, of which the most important are the Yellow Toad-flax (*Linaria vulgaris*) resembling the flax plant, with yellow flowers and a long spurred labiate corolla, and the ivy-leaved toadflax (*Linaria cymbalaria*), a species found frequently on old walls.

Toadstool. See Fungus.

Tobacco, the name of several solanaceous plants of the genus *Nicotiana*, native to America, but now grown also in S. Central Africa, India, Malaysia, the Balkans, etc., the most important species being *Nicotiana glauca*, the dried leaves of which, made into cigarettes, cigars, snuff, and pipe tobacco, are one of the most important of the world's commercial products. The use of tobacco in the West began in the 16th Century; its introduction into England is attributed to Sir Walter Raleigh. In most modern states taxes on tobacco are one of the chief sources of revenue; in Great Britain the annual return from such taxes is about \$75,000,000. World production of tobacco is in the neighbourhood of three million tons annually.

Tobago, one of the Windward Is. (q.v.), the most southerly of the group; a British possession since 1763, politically attached to Trinidad; is hilly, picturesque and volcanic; exports rum, molasses, coconuts, and live-stock. Area, 115 sq. m. Pop. 26,000.

Tobit, one of the books of the Old Testament Apocrypha, recounting the story of a Jew of the captivity, Tobit, and

his son Tobias; it is one of the principal sources for the Christian conception of the nature and ministry of angels, Raphael (q.v.) being one of the chief characters. Its date and authorship are quite uncertain, and no Hebrew or Aram. is original is known.

Tobolsk, a town of the U.S.S.R., at the confluence of the Irtysh and Tobol, 2,000 m. E. of Leningrad; it was the first scene of the banishment of the Czar Nicholas II in 1917. Pop. c. 20,000.

Tocantins, one of the great rivers of Brazil, rises in the state of Goyas; flows northwards, and after a course of 1,500 m. enters the estuary of the Para, one of the mouths of the Amazon, 138 m. from the Atlantic; receives the Araguay from the S., an affluent 1,600 m. long.

Toc H, an international organization for derived its name from the army signaling abbreviation for Talbot House, a soldiers' club founded in Poperinghe in the Ypres Salient by the Rev. P. T. B. (Tubby) Clayton in 1915, and named after Reginald Talbot, a young officer killed in the early days of the war. It is organized in local branches known as "marks," at each of which a "lamp of maintenance" is lighted at every meeting in commemoration of deceased members.

Todhunter, Isaac, mathematician, born at Rye; educated at University College, London, and at Cambridge, where he graduated senior wrangler and Smith's prizeman in 1848; elected Fellow and principal mathematical lecturer of his college (St. John's), and soon became widely known in educational circles by his various and excellent handbooks and treatises on mathematical subjects. (1820-1884).

Todmorden, town of the W. Riding on the Calder, 21 m. N.E. of Manchester; coal abounds in the vicinity, and there are cotton manufactures. Pop. 22,000.

Toga, an outer garment in use among the classical Romans, usually of white wool, like a large blanket, folded about the person in a variety of ways, but generally thrown over the left shoulder and hanging down the back, leaving the right arm free. It was the badge of manhood and Roman citizenship in the days of the republic, but fell into disuse under the Empire.



TOGA

Togo, Heihachiro, Count, Japanese admiral; educated at the Naval College, Greenwich; was in command of the Japanese fleet during the Russo-Japanese War of 1904-1905, and led it to victory at the battle of Tsushima. In 1906 he became an honorary member of the British Order of Merit. (1847-1934).

Togoland, a former German colony in the Allies in 1914 and in 1919 divided as a mandatory territory between France and Great Britain. French Togoland, which produces cotton, coconuts, copra, and palm products, has Lomé for its capital, an area of 21,900 sq. m. and a pop. of 737,000. British Togoland is governed as part of the Gold Coast Colony; its exports are of similar materials. Area, 13,000 sq. m. Pop. 338,650.

Tokay, a Hungarian town on the Theiss, 130 m. N.E. of Budapest; greatly celebrated for its wines, of which it manufactures over 30 different sorts. Pop. 5,000.

Token, a piece of metal, leather, etc., issued by traders, local bodies, etc., to remedy a deficiency in state coinage. Such tokens were coined in large numbers in the Tudor and Stuart periods in England, and

circulated as readily as "coin of the realm." The name token coinage is given in modern economics to all coins whose value as metal is less than their exchange value, as is the case with practically all modern coinage other than gold.

Tokyo, or **Tokio**, formerly called **Yedo**, capital of the Japanese Empire, situated on a bay of the same name on the S.E. coast of Honshu, and partly built on the delta of the R. Sumida; is for the most part flat and intersected by canals and narrow, irregular streets, and has a finely-wooded riverside avenue 5 m. long; suffered enormous damage in the severe earthquake of Sept., 1923, since when it has been largely rebuilt, many of the buildings in reinforced concrete after the Western style. It is now the third largest city of the world, exceeded only by London and New York. It has few industries; its university is of great importance. Pop. 5,876,000.

Tolbooth, former Scottish name for a burgh gaol, especially the old gaol of Edinburgh, demolished in 1817. A tolbooth was originally a temporary hut of boards erected in a fair or market-place for imprisoning debtors or persons who had infringed some market law.

Toledo, a city of Spain, capital of a province, and formerly of the kingdom, occupies a commanding site amid hills on the Tagus, 40 m. S.W. of Madrid. Its appearance, both from without and from within, is imposing; it is the see of the primate of Spain, and possesses a noble Gothic cathedral, ruins of the Cid's castle, and remains of the Moorish occupation (712-1085). The manufacture of sword-blades, famous in Roman times, is still carried on near the city. It was occupied in 1936 by the rebel forces in the Civil War. Pop. 25,000 (prov. 509,000).

Toledo, city in Ohio, U.S.A., on the Erie, Maumee R., 8 m. W. of Lake Erie; has a large coal trade, and manufactures motor cars, clothing, glass, gloves, etc. Pop. 291,000.

Toleration, or the permission of freedom of worship to those holding religious beliefs other than that favoured by the state, first became a live issue in Great Britain under Elizabeth, with the Puritan secession from the Anglican Church.

Toleration Act, a statute passed in 1689 to relieve all Dissenters, excepting Roman Catholics and Unitarians, from many of the penalties to which they had previously been subject.

Toll, a monetary charge formerly collected at toll-gates set up at intervals on highways and at the approaches of bridges, the sums collected being devoted to their maintenance. A few such toll-gates still remain on private roads in various parts of Great Britain. The name is also often applied to market charges.

Toller, Ernst, German playwright, born at Samitschn; he took a prominent part in the Communist rising in Munich in 1919, being thereafter sentenced to 5 years' imprisonment in a fortress. Among his more famous plays are *Masses and Men*, *No More Peace*, and *The Machine Wreckers*. After the advent of Hitler he was deprived of German nationality and made his home in the U.S.A. (1893-).

Tolstoy, Count Leo Nikolaievich, Russian novelist and social reformer, born in Tula, of a noble family; served for a time in the army, soon retired from it, and travelled; married, and settled on his estate near Moscow in 1862. His two greatest novels are *War and Peace* (1865-1869) and *Anna Karenina* (1875-1878); but he also wrote many volumes of tracts on social and religious subjects, especially in

defence of the principles of non-resistance and of his personal interpretation of Christian teaching, as well as plays, short stories, etc. (1828-1910).

Toltecs, a people who according to tradition preceded the Aztecs in Mexico; they are specially associated with the ruins at Teotihuacan, a site about 25 m. from Mexico City. According to legend they were the introducers of the arts and culture to Mexico, from whom the Aztecs learned them.

Toluene, a liquid hydrocarbon found associated with benzene in coal-tar and East Indian petroleum. It closely resembles benzene in its chemical and physical properties, and is of great military importance as the raw material from which trinitrotoluene (q.v.) is manufactured.

Tomahawk, a weapon resembling an axe, once in common use among the Indian tribes of North America. It could be thrown a considerable distance with deadly accuracy. Originally it consisted of a stone head, but later a metal head, attached to a wooden handle.



TOMAHAWK.

Tomato (*Lycopersicon esculentum*), an annual of the family Solanaceae, a weak trailing plant, with a soft stem, winged leaves, and yellow flowers, native to S. America and cultivated in most warm countries on account of its fruit. In Britain it grows best when trained against walls. There are many varieties, some with red and some with yellow fruit, which is used for sauce.

Tomb, a grave in the form of a monument, whether cut in native rock, as was frequently done in the Middle East, Egypt, and Persia, or erected over a grave, as with the Egyptian pyramids, and many Greek and Asiatic sepulchral monuments. In Christian times the word has generally been used of a sepulchral monument, frequently incorporating a statue of the deceased person in a church or churchyard.

Tomsk, a town in the Siberian region of the U.S.S.R., on the Tom, 65 m. from its confluence with the Obi; has a university, and is an important depot on the trade-route to China. Pop. 128,400.

Ton, a British measure of weight, divided into 20 cwt., or 2,240 lb. avoirdupois. In the United States and Canada the word is commonly used of the "short ton," of 2,000 lb. or 100 cwt., the English measure being known as the "long ton." The metric ton, or tonne, is 1,000 kilograms, or 2,204.6 lb.

Tonbridge, market town in Kent on the Midway, 29 m. from London. It has an old castle and church, carries on brewing and tanning trades, and has a famous public school founded in 1553 by Sir Andrew Judd and endowed by the Skinners Company of London. Pop. 18,000.

Tone, Theobald Wolfe, Irish patriot, born in Dublin; called to the bar in 1789; was active in founding the "United Irishmen," whose intrigues with France got him into trouble and forced him to seek refuge in America, and subsequently France, where he schemed for a French invasion of Ireland; eventually was captured by the English while on his way with a small French squadron against Ireland; was condemned at Dublin, but escaped a death on the gallows by committing suicide in prison. (1763-1793).

Tonga Islands, or Friendly Islands, a group in the South Pacific, in 1900 made a British protectorate; has a native ruler and legislative assembly; bananas and copra are produced. The capital is Nukualofa. Area, 385 sq. m. Pop. 51,000.

Tongue, a fleshy muscular organ in the mouth, covered with mucous membrane, the muscular structure aiding mastication and articulation of speech, while papillae scattered over the mucous membrane render it sensitive to taste. There is a furrow along the middle called the raphe, which often ends in a depression called the foramen cæcum. The tongue is free at the forward end, the hinder end being attached to the hyoid bone and the lower jaw.

Tonic Sol-Fa, a system of notation in musical lines and dots take the place of notes. It is principally used in giving elementary instruction in singing. It was first used by a teacher in Norwich, a Miss Glover, about 1845, and was taken up by the Rev. John Curwen.

Tonking, Tonquin, or Tonkin, a fertile northern province of Annam (q.v.), ceded to France 1884; is richly productive of rice, maize, coal, tea, perumes, and castor oil. The capital is Hanoi (pop. 42,000); Haiphong is the principal port. Area, 40,500 sq. m. Pop. 3,860,000.

Tonnage, a ship's carrying capacity expressed in cubic tons. The gross tonnage is one hundredth part of the total cubic capacity of all enclosed parts of the ship, expressed in cubic feet; the net tonnage is the gross tonnage less deductions for space occupied by engines, crew's and passengers' quarters, and so forth. The displacement tonnage is the vessel's actual weight in tons when laden and floating at the load draught.

Tonnage and Poundage, the name given to certain duties first levied in Edward II.'s reign on every *tun* of imported wine, and on every *pound* weight of merchandise exported or imported; Charles I.'s attempt to levy these without parliamentary sanction was one of the complaints of his Long Parliament; they were swept away by the Customs Consolidation Act of 1787.

Tonsils, two lymphoid organs placed one on each side of the pharynx (q.v.) between the pillars of the fauces, which secrete a fluid believed to be helpful in respiration. They are subject to inflammation, or tonsillitis, either acute—when it is known as quinsy—or chronic. It is generally caused by bacterial infection, and is mostly an ailment of young persons and commoner in rheumatic subjects than in others.

Tonsure, the cutting off of a part of the hair of the head as a sign of dedication to God. In the Roman Church it takes the form for secular clergy of a small bare patch on the crown, which in the case of monks or religious is so enlarged as to cover almost the whole skull. The ancient Celtic monks shaved the front of the head, and the form of tonsure was one of the points of serious difference between the missionaries sent from Rome by Gregory to evangelize England and the earlier British clergy.

Tontine, a form of joint annuity named after its inventor, the Italian Lorenzo Tonti, by which annuities are paid to a group of persons on the understanding that on the death of any of them an amount equal to his share is divided annually among the survivors, the process being repeated until on the death of the last survivor the tontine completely lapses.

Toole, John Lawrence, English comedian, born in London; made a considerable reputation in the provinces before making his appearance at St. James's Theatre in London in 1864; became the leading low-comedian of his day, and in 1880 took over the management of the Folly Theatre, which he renamed Toole's Theatre; had unrivalled powers of blending pathos with burlesque, and in such characters as Paul

Pry, Caleb Plummer, and Chawles was a special favourite throughout the English-speaking world. (1832-1906).

Toowoomba, a town of Queensland, Australia, 100 m. W. of Brisbane. It is situated in the Darling Downs in an agricultural district. Pop. 28,000.

Topaz, a precious stone found in various colours, blue, white, and especially orange. It is a silicate of aluminium with fluorine. Oriental topaz (yellow) is one of the gems formed from transparent corundum (q.v.). Topazes are found specially in S. America, Ceylon, the Urals and Scotland.

Tope, or *Stupa*, a species of cuppla-shaped tumulus surmounted by a finial, in shape like an open parasol, these finials being often placed one upon the top of the other until a great height was reached. They were built originally to house or cover relics of the Buddha, and are found in various parts of India and Ceylon. A famous stupa at Sanchi, Central India, has a height of 42 ft. and a diameter of 105 ft.

Topeka, capital of Kansas, U.S.A., on the Kansas R., 65 m. W. of Kansas City; it has railway workshops, and manufactures of butter, machinery and woollens. Pop. 64,000.

Topiary, in landscape gardening, the art of clipping trees or shrubs into odd or ornamental shapes.

Topiary work was introduced in the Tudor period and increased in popularity during the ensuing two centuries, but has since waned in popularity, though it is often used in laying out formal gardens, particularly Dutch or Elizabethan. Small topiary schemes are suitable for garden frontages, tubs and lawns, while dwarf specimens are effective on steps round lily pools with statuary.



TOPIARY

Toplady, Augustus Montague, hymn-writer, born at Farnham, Surrey; became vicar of Broad Hembury, Devonshire, in 1768. An uncompromising Calvinist, he bitterly opposed the Methodists; survives as the author of *Book of Ages*, besides which he wrote *Poems on Sacred Subjects*, and compiled *Psalms and Hymns*, of which a few are his own. (1740-1778).

Tornado, a whirlwind or violent rotary storm over a small area, especially a storm accompanied by a spiral or funnel-shaped cloud, usually with thunder and rain. The tornado is commonest in the Southern United States and W. Africa; when travelling over sea it usually forms a waterspout.

Toronto, the second city of Canada, and capital of Ontario; situated on a small bay on the NW. coast of Lake Ontario, 315 m. SW. of Montreal; is a spacious and handsomely built city, with a splendidly equipped university, Parliament buildings, a fine technical school and City Hall; with a large shipping and transit trade, its main industries are meat packing, iron and steel founding, all kinds of metal work, and lumbering. Pop. 808,900.

Torpedo, a cigar-shaped steel weapon containing high explosive and a driving mechanism, launched from a surface ship or submarine through a special tube, and designed to propel itself through the water in a direction predetermined by the set of the rudders and a gyroscopic control. When the torpedo strikes a solid object with a sufficiently violent impact, the high explosive is fired by means of a detonating device in the

"nose," and the resulting explosion is of such violence as to be liable to hole even the thickest of armour plate. The first efficient torpedo was designed by Robert Whitehead (1823-1905), an English engineer, and, with numerous improvements and modifications, practically all modern torpedoes are constructed on Whitehead's system.

Torpedo Boat, a small naval vessel tubes, now superseded by the destroyer (q.v.).

Torpedo-Boat Destroyer.

See **Destroyer**.

Torquay, borough and holiday resort of S. Devon, England, on Tor Bay, 23 m. S. of Exeter. In caves in the neighbourhood antiquities of great interest have been discovered. It was the landing-place of William of Orange in 1689. Pop. 14,800.

Torque, an ornament worn by ancient Britons, Gauls and Germans. It consisted of a stiff collar, formed of a number of gold wires twisted together, and sometimes of a thin metal plate, generally of gold, and worn round the neck as a symbol of rank and command.

Torque, in mechanics, the movement of a system of forces applied to produce a rotatory motion, or the rotating force in a mechanism. See also **Torsion**.

Torquemada, Thomas de, Spanish born at Valladolid; prior of the Dominican monastery at Scgovia, he became connected with the Inquisition in 1483, and is notorious for the cruelty with which he exercised the office. (1420-1498).

Torrens, Sir Robert Richard, first premier of S. Australia; born at Cork, Ireland, educated at Trinity College, Dublin. Going to S. Australia in 1840, he became premier and treasurer on the grant of responsible government in 1857, and was in charge of the passage of the Act which laid the foundation of the Australian land registration system. On his return to England he sat in Parliament for Cambridge from 1868 to 1874. (1814-1884).

Torrens, Lake, a salt lake of S. Australia, 34 m. N. of Port Augusta. It is about 30 m. long and up to about 20 m. in width. It dwindles at times into a series of shallow, stagnant pools.

Torres Strait, 80 m. broad; separates Australia from New Guinea; owing to its numerous islands, shoals, and reefs is exceedingly difficult to navigate; takes its name from the Spaniard Torres, who first sailed through it in 1606. Pearl fishing is carried on.

Torres Vedras, a town of Portugal, 26 m. N. of Lisbon; celebrated for the great lines of defence Wellington constructed in 1810, and behind which he successfully withstood the siege of the French under Massena, thus saving Lisbon, and preparing the way for his subsequent expulsion of the French from the Peninsula.

Torricelli, Evangelista, Italian mathematician and physicist. He succeeded Galileo as professor at the Florentine Academy; discovered the scientific principle of the barometer, which is sometimes called the Torricellian tube, and made notable advances in mathematical and physical science, especially in connection with hydrodynamics; he improved the microscope and telescope. (1608-1647).

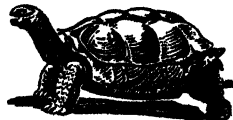
Torsion, in mechanics the force with similar body tends to return to its original position. The limits of torsion within which the body will return depend upon its elasticity (q.v.). The force of elasticity or torsion

is proportional to the angle through which the body has been twisted. If a wire be twisted by a "couple" (i.e., force) the torque or twist produced is proportional to the moment of the "couple." The result was used by Coulomb (q.v.) in his torsion balance for measuring the repulsion between two electric charges.

Tort, in common law, any actionable wrong caused to person or property, other than a breach of contract or trust or wrong arising out of a personal relationship such as that between husband and wife and excluding also criminal offences. Malice is material only in exceptional cases.

Tortoise, the popular name of a number of ber of reptiles of the order

Chelonia, differing little in form from the



TORTOISE

The typical land tortoise (*Testudo*) has a dome-shaped shell or carapace, which is covered with horny, mottled plates; the part below the body is called the plastron. Over forty species of tortoise are known; the animal commonly kept as a garden pet is the Greek Tortoise (*Testudo graeca*). The Elegant Tortoise (*T. elegans*) of S. Africa is remarkable for its beautiful colouring. Tortoises have a reputation for longevity, particularly the Giant Tortoises of the Galapagos Is. "Tortoise-shell" is mostly derived from the Hawksbill Turtle. See **Turtle**.

Torture, the infliction of bodily injury legal evidence or confessions; has always been contrary to the law of England (it is expressly banned in Magna Carta), but was not infrequently employed during the Middle Ages as an exercise of the Crown prerogative. In Scotland the use of certain kinds of torture, such as the thumbscrew, was formerly permissible by law. Torture by the rack and in other ways was in considerable use against Catholics in the Tudor and early Stuart periods; all the conspirators in the Gunpowder Plot, for example, were put to the torture. Torture was finally forbidden by statute in England in 1709, though even this Act permitted the continuance of *peine forte et dure* or pressing by weights in the case of prisoners who refused to plead.

Tory, name given, usually by his opponents, to a Conservative in politics, especially of the more uncompromising school; the name arose in the reign of Charles II., having been adopted from that borne by bands of irregulars who disputed English rule in Ireland.

Toscanini, Arturo, Italian musical conductor, born at Parma. After conducting for several years at Turin, he went to Milan in 1898 to conduct at La Scala, whence he removed to the Metropolitan Opera House, New York, until his return to the Scala in 1921. From 1926 he was guest, and afterwards permanent conductor of the New York Philharmonic Society. In 1930 he was festival conductor at Bayreuth. (1867-).

Tosti, Sir Francesco Paolo, musical composer, born at Ortona, Italy; he studied at Naples, became Court musician in Rome, and in 1880 settled in London and became naturalised; for some time singing-master to the Royal Family, he was knighted in 1898. *Forlès* and *Goodbye* proved the most popular of his many songs. (1846-1916).

Tostig, English statesman, son of Earl Harold II. (q.v.). He was made ruler of the northern parts of England by Edward the Confessor, but his harsh rule led to a rebellion and to his banishment; after Harold's accession he invaded England with Harold Hardrada, King of Norway, but was defeated and slain by Harold of England at Stamford Bridge. (d. 1066).

Totalisator, an automatic system for registering bets and working out the odds on winners according to the extent to which they have been backed. For long in vogue on the Continent and in Australia, the system was introduced in England in July, 1929, and has now been established at practically all race-courses in Great Britain. Tickets for bets of 2s., 10s., 21s., and £10 are issued, and after a deduction of 10 per cent. for expenses, the total sum received is divided among the backers of winning and placed horses in accordance with the odds offered.

Totemism, name applied to the various social-religious systems, found among most aboriginal peoples of Africa, America and Australia, by virtue of which their separate tribes or groupings claim a special connection with, and venerate, an animal, plant, or other object, called its "totem," the tribe usually considering itself descended therefrom.

Totnes, market town of Devonshire, England, overlooking the Dart, 29 m. SW. of Plymouth; has interesting Norman and other remains; a centre of agricultural industry. Pop. 4,500.

Tottenham, borough of Middlesex, London, on the R. Lea. It has numerous small industries, and is very largely a "dormitory suburb" for London workers. Pop. 148,600.

Toucan, the common name for the gaudy-plumaged, ungainly-looking birds of the family Rhamphastidae, with a large though light bill, sometimes 6 or 8 in. in length; found in the tropical parts of South and Central America. The bill is brightly coloured in tints of black, red and yellow, and at its base occupies the whole width of the head. The tongue has a curious feathered appearance, while the food, which consists chiefly of fruit, is swallowed by raising the bill to a vertical position and allowing the food to drop down the throat. There are some 60 known species.



RED-BILLED TOUCAN.

Touchstone, basanite, or Lydian Stone, a flinty jasper, or quartz of velvety-black hue, used for testing the purity of gold and its alloys. If an alloyed metal is rubbed over it, the colour of the streak left behind indicates the nature of the alloy.

Toulon, second naval station of France, 42 m. SE. of Marseilles; lies at the foot of the Pharon Hills, the heights of which are strongly fortified; has an 11th-Century cathedral, and theatre, forts, citadel, 940 acres of dockyard, arsenal, cannon foundry, etc.; here in 1793 Napoleon Bonaparte, then an artillery officer, first distinguished himself in a successful attack upon the English and Spaniards. Pop. 159,000.

Toulouse, city of S. France, capital of dept. of Haute-Garonne, pleasantly situated on a plain and touching on one side the Garonne (here spanned by a fine bridge) and on the other the Canal du

Midi, 160 m. SE. of Bordeaux; notable buildings are the cathedral, the Church of St. Sernin, and Palais de Justice; is the seat of an archbishop, has schools of medicine, law, and artillery, various academies, and a university; manufactures woollens, silks, etc.; in 1814 was the scene of a victory of Wellington over Soult and the French. Under the name of Tolosa it figures in Roman and medieval times as a centre of learning and literature, and was for a time capital of the kingdom of the Visigoths. Pop. 213,000.

Touraine, former province of W. central France, to the E. of Maine, Anjou and Poitou, and to the W. of Orléannais. In the 12th and 13th Centuries it was part of the Angevin Empire, but John lost all its strongholds to the French King Philip Augustus. The modern dept. of Indre-et-Loire corresponds roughly with it. The capital was Tours.

Tourcoing, a thriving textile manufactory, facturing town of France, 9 m. NE. of Lille, adjoining Roubaix. It has manufactures of woollen, cotton, silk and linen goods, dyeworks, and sugar refineries. Pop. 78,000.

Tourmaline, a crystalline mineral used in optical instruments for producing a beam of polarised light; it is composed of silica and alumina, with varying quantities of other minerals; it exists in various colours, and is in some request as a gem-stone.

Tournai (Doornik), a town of Hainault, Belgium, on the Scheldt, 35 m. SW. of Brussels; in the 5th Century was the seat of the Merovingian kings; is now a town of a handsome modern appearance; has a fine Romanesque cathedral and flourishing manufactures of hosiery, linen, carpets, and porcelain. Pop. 38,000.

Tournament, a real or mock fight by knights on horseback in proof of skill in the use of arms and in contests of honour.

Tourniquet, a surgical device for preventing hemorrhage from a wound. It consists of a pad placed against the artery from which the blood is flowing, fixed closely against the limb or affected part by a strap or similar compressing apparatus. In case of need one may be improvised by placing a bandage round the wound and tightening it as much as is necessary by twisting a stick between the bandage and the limb.

Tours, ancient city of France, on the Loire, in dept. of Indre-et-Loire, 145 m. SW. of Paris; is spacious and handsome in appearance, and contains a noble Gothic cathedral archbishop's palace, Palais de Justice, besides ancient châteaux and interesting ruins; is a centre of silk and woollen manufactures, and does a large printing trade; suffered greatly by the Revocation of the Edict of Nantes and during the Franco-Prussian War; became the seat of government in 1870 after the investment of Paris and until its capitulation to the Germans. Pop. 84,000.

Toussaint L'Ouverture, a negro hero of Haiti, born, the son of an African slave, in Breda; took part in the native insurrection of 1791; in 1797 he became a general of brigade in the service of the French, and by gallant soldiery cleared the English and Spanish out of Haiti; became president for life of the republic of Haiti, and began to work for the complete independence of the island; in 1801, when Napoleon endeavoured to re-introduce slavery, he revolted, but was subdued by a strong French force and taken to France, where he died in prison near Besançon; is the subject of a well-known sonnet by Wordsworth, who designates him the "most unhappy man of men." (1743-1803).

Tower Bridge, crosses the Thames near the Tower of London, E. of London Bridge; its central span measuring 200 ft. can be raised to let vessels through to the Basin; designed by Sir Horace Jones and Sir J. Wolfe Barry, it cost £1,000,000 and was opened in 1894.



TOWER BRIDGE

Tower Hamlets, a former parliamentary division of London, coterminous with the present metropolitan boroughs of Stepney and Poplar; the name arose from the area having originally consisted of a group of hamlets subject to the jurisdiction of the Lieutenant of the Tower.

Tower of London, a medieval fortress on the bank of the Thames, at the E. boundary of the City of London, used at different times in English history as a royal residence and State prison. The British Crown Jewels are housed there. The nucleus of the buildings is the White Tower, built about 1078, the keep of the original fortress. The corps of Tower wardens, or Beefeaters, with their medieval uniform, are a source of interest to visitors.

Towers of Silence, towers on the Zoroastrians or Parsis of Iran and India expose their dead bodies, so that the flesh may be removed from the bones by vultures, dogs, or similar agents.

Town, a collection of buildings near to another, constituting a semi-sufficient community with its own trading facilities and, usually, some degree of independent local government. The town in England and most of western Europe developed in the Middle Ages generally around either a religious house or the castle or manor of a feudal landowner, gradually gaining trading and judicial privileges: the growth of towns was generally supported by royal authority as a counterpoise to that of the nobles. The town is not under that name a local government unit in Great Britain. The larger towns which have obtained charters of incorporation or have been incorporated by statute are "boroughs," the others urban districts, save for the smaller country towns which are governed as part of the rural districts in which they are situated.

Town Council, a name commonly given to a borough council, the municipal governing body of a town. It consists in England of a body of elected councillors, a smaller number of co-opted aldermen, and a mayor chosen by the council itself. It has the power of imposing rates and making by-laws for local government purposes, and such other powers as may be accorded to it by general or local statute.

Town Planning, the development in such manner as to secure hygienic and pleasing conditions of living. Garden cities offer an illustration of such ideals. The earliest English legislative effort to enforce some such ideals dates from the Housing and Town Planning Act of 1909; later acts, especially one of 1932, have conferred on local authorities various powers for restricting the number of houses per acre, providing for the proper construction of roads, the prevention of ribbon building, the regulation of sites for shops and factories, the provision of open spaces, etc.

Townshend, Charles, second Viscount, at Raynham, Norfolk; was one of the commissioners who arranged the Scottish Union; accompanied Marlborough as joint-pleni-

potentiary to the Germantown Conference (1709); got into political trouble for signing the Barrier Treaty while acting as ambassador to the States-General; under George I. rose to high favour, became acknowledged leader of the Whigs, passed the Septennial Act, but after 1721 was eclipsed in the party by the greater abilities of Walpole, and after unpleasant rivalries was forced to withdraw from the ministry (1730); gave himself then to agricultural pursuits, and helped to improve the rotation of crops. (1674-1738).

Townshend, Charles, statesman and orator, grandson of preceding; entered Parliament in 1747 as a Whig, and after his great speech against the Marriage Bill of 1753 ranked among the foremost orators of his day; held important offices of State under various ministers, Bute, Chatham, and Rockingham, and as Chancellor of the Exchequer in 1787 was responsible for the imposition of the paper, tea, and other duties on the American colonies which provoked the War of Independence and led to the loss of the colonies; died when on the point of attaining the premiership. (1724-1787).

Townshend, Sir Charles Vere, British general. He saw service in the Boer War, and during the World War in Mesopotamia, where in April 1915 he began a march up the Tigris to Bagdad, but after several victories over the Turks retired to Kut, where after a five-months' siege he capitulated with his force and was interned till the end of the war. On retiring from the Army in 1920 he entered Parliament for a time. (1861-1924).

Townsville, a port on the N.E. coast of Queensland, Australia. It is situated on Cleveland Bay and is a centre for the export of local products. Pop. 23,800.

Towton, a village of Yorkshire, England, 3 m. S.E. of Tadcaster, where in 1461 Edward IV. at the head of the Yorkists completely routed the Lancastrians under the Duke of Somerset.

Towyn, market town and holiday resort of Merionethshire, Wales. Stone is quarried, and lead mined. Pop. 3,800.

Toxicology, that branch of pathology or medicine which deals with antidotes, their chemical action, their presence, the effects of their presence, and the effects of their absence.

"Toys" seems to go back to the earliest ages, as archaeological finds in Egypt, India, and classical lands have included dolls, animals, etc., not widely different from those in use to-day. The 19th and 20th Centuries, however, have seen a great advance in the variety and skill of construction of toys, which now include model railway trains and tines, steam and motor boats, aeroplanes, engineering sets, miniature motor cars and cycles, and, indeed, small replicas of almost every mechanical device. Dolls are largely made in France and Germany, and toys of various kinds in Switzerland, Germany, Czechoslovakia and Japan.

Toynbee Hall, an institution in Whitechapel, London, founded in 1885 for social and educational work among the poor in the district, established in memory of Arnold Toynbee (1852-1883), an economist who took a deep interest in the working classes.

Tracery, in architecture, the ornamental Gothic window formed in the head of a Gothic window by the mullions there diverging into arches, curves, and flowing lines, intersecting in various ways and enriched with foliations, and later extending from the windows to many other parts of the building. The nature of the tracery varied with the development of the Gothic style, and the Decorated, Perpendicular, and Flamboyant periods of Gothic were

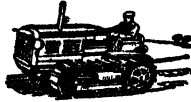
their name to the particular character of their window and other tracery.

Trachea, or **Windpipe**, a fibrous and muscular tube, the wall of which is rendered somewhat rigid by C-shaped hoops of cartilage embedded in the fibrous tissue, forming the air-passage between the back of the mouth and the lungs. At its lower end it divides into the two bronchi, which connect it directly with the lungs.

Tracheotomy, in surgery, the operation of making an opening in the trachea (q.v.) so that air may obtain direct access to the lower air passages. This operation is sometimes necessary after diphtheria or in cases of tumour in the larynx, where breathing has become dangerously impeded. After the operation tubes are inserted to help breathing, and these must in some cases be worn permanently.

Tractor, any small mobile power-unit, used for haulage, farm work, road-construction, etc.

Tractors are generally driven by an internal combustion engine, though for the larger machines steam engines are used, while some are electrically driven.



Tractors are either fitted with wheels or with caterpillar tracks like tanks. In the wheeled variety grips or "spuds" are fixed on the rear wheels, while the front, which are smaller, are made to steer. Tracked machines are steered by braking one track and driving the other.

Trade, commerce or business carried on for purposes of gain. In the commercial sense, trade includes all those departments of business which are concerned with the production and exchange of commodities, but excludes those professions whose services do not result in producing "corporeal" wealth.

Trade Board, a Government department established in 1786, consisting in theory of a President (in the Cabinet), the Lord Chancellor, Archbishop of Canterbury, First Lord of the Treasury, the principal Secretaries of State, Chancellor of the Exchequer, the Speaker, and others. The Board never meets, all its functions, which include supervision of all matters relating to trade and industry, mines, the coastguard, merchant shipping and navigation, bankruptcy, etc., being exercised by the President.

Trade Boards, statutory bodies established under Acts of 1909 and 1919 as part of the negotiating machinery in settling industrial disputes. An Act of 1909 instituted boards for four trades in which sweating conditions obtained, composed of representatives of workpeople and employers with neutral members. To-day there are upwards of forty boards, whose chief duty is to fix minimum wage rates, to be confirmed by the Ministry of Labour, under whose control the boards work.

Trade Disputes Act, a measure 1906 sanctioning peaceful picketing and safeguarding union funds against seizure for damages due from individual members. Its effect was greatly to increase the power of Trade Unions, but it was modified in 1927 by the Trade Unions Act (q.v.).

Trade Marks, marks placed on their origin, composition, certification, or other trade qualification, and identifying them as coming from a certain source. A trader has the exclusive right to use a mark which has become associated with his goods; and a register of Trade Marks is kept at the Patent Office, London. A registered trade mark must comply with certain regulations,

and may not be a word in common use merely descriptive of the articles, nor the mere name of a person or business firm. The legal remedies for infringement are by injunction or action for damages.

Trades Union Congress,

the body, initiated in 1868, to which most of the British Trade Unions are affiliated; its executive organ is the General Council, elected annually by the Congress. It is affiliated to the International Federation of Trades Unions, is closely connected with the Labour Party, and supports Research and Publicity Departments. Its constituent unions have a membership of some 3½ millions.

Trade Unions,

associations of workmen banded together to secure better conditions of labour. They grew up after the industrial revolution of the 19th Century, and especially after the repeal in 1824 of the Anti-Combination Laws which forbade their existence. In 1871 trade unions were given full legal status, and their funds some measure of protection, but picketing was illegal till 1875. The next step in the growth of the power of unions arose out of the legal decision in *Taff Vale Railway Co. v. Amalgamated Society of Railway Servants* in 1901, that a union was liable for damage arising from the actions of its agents; this was followed by the 1906 Trade Disputes Act (q.v.), which gave union funds complete immunity from claims for damages. In 1868 the Trades Union Congress (q.v.) was established, and in 1926 this body ordered a general strike in support of the miners, an action which led to some curtailment of union powers by the Trade Unions Act (q.v.). The oldest union is the Amalgamated Society of Engineers, founded in 1850. The number of registered unions in Great Britain is now 535, with a total membership of about 4,275,000, a total income from members, unemployment insurance, and other sources of over £10,000,000, and expenditure of over £8,000,000. Their total funds approximate to £16,500,000. There are, in addition, about 500 unregistered unions in Great Britain and Northern Ireland. Most of the unions are affiliated to the Trades Union Congress (q.v.).

Trade Unions Act,

a measure passed in 1927 curtailing the power of trade unions. Its principal clauses were those making general strikes illegal, forbidding intimidation of non-strikers, and making subscription to political funds entirely voluntary by substituting a system of "contracting in" for such subscriptions for the old system of "contracting out" by those who did not want to pay.

Trade Winds,

the winds which blow in tropical seas; north of the Equator they have a south-westerly direction and are called the N.E. trades, south of it they blow towards the NW. and are called the S.E. trades. In the Indian Ocean the main direction is modified according to the season, and they are called monsoons. The *Antitrades* extend from the trade-wind regions to near the poles; they are variable, but their general direction is towards the poles.

Trafalgar, Cape, on the S. coast of Spain, at the NW. entrance of the Strait of Gibraltar, off which was fought the naval battle in which Nelson lost his life after, inflicting (October 21, 1805) a crushing defeat on the fleets of France and Spain.

Trafalgar Square, a square in central London, in the City of Westminster, from which radiate the Strand, Northumberland Avenue, Whitehall, Pall Mall, Charing Cross Road and

St. Martin's Lane. It was laid out in the second quarter of the 19th Century, and contains the Nelson Monument, 170 ft. high, with Landseer's lions round the base, and several other statues. It is surrounded by many fine buildings, including the National Gallery, Canada Building, and South Africa House.

Traffic. With the rapid increase of population and multiplication of the mechanically-propelled vehicles road traffic has assumed proportions which necessitate elaborate regulation and control. In 1937 road tax returns showed that there were in Great Britain about 1,800,000 cars, close on 500,000 motor-cycles, 420,000 goods vehicles of all kinds (including over 2,000 electrically propelled), 85,000 taxis and motor hackneys, 11,000 tram-cars and 20,000 horse-drawn vehicles. Road traffic is controlled by the Ministry of Transport and the Police jointly. Improvement in control has been effected in the past decade by the installation of automatic green ("go") red ("stop") and amber (transition) lights; yellow globe-shaped beacons ("Belisha," beacons) for pedestrian crossings; "halt" and "slow" signs at major roads; cross-road, bend, school, and road-junction signs; official tests for motor drivers; one-way roads and roundabouts, and road-railings at specially congested spots. The Ministry has also issued, at the price of 1d., a Highway Code, which contains useful hints addressed to all road-users, coupled with an explanation of the signals given by police constables and by others engaged in the regulation of traffic; and a statement of the signals which should be given by drivers and cyclists to indicate their intentions.

Tragedy, like comedy, arose out of the "tragic" or Bacchic worship; the "tragic" or members of the tragic chorus in the old Greek satyr-plays were merely mummers dressed as goatherds, whose performances, given originally in honour of Adrastus, were later transferred to the service of Dionysos (Bacchus). In the age of Aeschylus the satyr-play developed into "tragedy," the comic "satyrol" being replaced by more serious figures and the subject-matter becoming more regularly drawn from the Greek epics. With Aeschylus the name "tragodia" attained to dignity and sublimity, and thereafter became restricted to such themes. The essential idea of tragedy is its "kathartic" element, that of heroic man emotionally doomed from the necessities of his character to ruin at the hands of Fate. Among the world's greatest tragic dramatists are Aeschylus, Sophocles, Shakespeare, Racine, Corneille, Lessing, Schiller, Marlowe, and Ben Jonson.

Traherne, Thomas, English poet, born in Herefordshire; author of *Centuries of Meditations* and of a number of religious poems collected and edited by Bertram Dobell in the 20th Century. (c. 1637-1674).

Trajan, Marcus Ulpius, Roman emperor, born in Spain; his great deeds in arms won him a consulship in 91, and in 97 Nerva invited him to be his colleague and successor; a year later he became sole emperor, ruled the empire with wisdom and vigour, set right the finances, upheld an impartial justice, and set on foot various schemes of improvement; suppressed the Christians as politically dangerous, but without extreme steps; remained above all a warrior and true leader of the legions, and crowned his military fame by his successful conquest of Dacia in 101-105, in commemoration of which he is said to have erected the famous Trajan Column, which still stands in Rome. (c. 53-117).

Trajan's Column, a column erected by Trajan in the Forum at Rome in memory of his

U.E.

victory over the Dacians, and sculptured with the story of his exploits; is 125 ft. in height, and ascended by 185 steps; was surmounted by a statue of Trajan, for which Pope Sixtus V. substituted one of St. Peter.

Trajectory, in dynamics, the path as a planet, comet, or projectile, under the action of given forces. In geometry, a curve or surface which cuts all the curves or surfaces of a given system at a constant angle.

Trams, road vehicles running on rails. They originated in New York in

1855, and in England, Birkenhead was a pioneer in 1860; London followed in the ensuing year. In 1884 a steam cable tram was tried in London, and this was followed about 1900 by the adoption of electricity; the greater mobility and saving in capital outlay of the motor omnibus has tended to render the tram an obsolete form of locomotion, and in many towns it has been or is being replaced by the petrol omnibus or the trolleybus (q.v.).



LONDON TRAM (1861)

Trance, a condition of suspended consciousness, resembling sleep. It is found most commonly among hysterical subjects, and usually involves reduction of breathing and a weakening of the heart's action. It may last from an hour or two to a period of several weeks. The trance state not infrequently leads to vivid dreams or visions during the period of unconsciousness.

Transcaucasia, an extensive tract of territory attached to the Union of Socialist Soviet Republics, stretching E. and W. between the Caucasus (N.) and Turkey in Asia and Iran (S.). It is included in the three Socialist Soviet Republics of Armenia, Georgia, and Azerbaijan, which, until the new U.S.S.R. constitution of 1937, were federated into the Transcaucasian Federal S.S.R., with an area of 75,000 sq. m. and a pop. of about 6 millions. See separate articles on these countries.

Transcendentalism, name now employed to denote the doctrine of Kant and his school, that there are principles of *a priori* derivation, that is, antecedent to experience, that are regulative and constitutive of not only our thoughts but also our perceptions, and whose operation is antecedent to and sovereign over all our mental processes; such principles are denominated the categories of thought. The name is also employed to characterize every system which grounds itself on a belief in a supernatural basis of which the natural is but the embodiment and manifestation.

Transept, any large division of a building lying across, or in a direction opposite to, the main axis. In a Christian church it consists of two wings thrown out between the nave and choir, so as to give the building a cruciform shape; in some cases a second pair of transepts is found between choir and chancel, so that the building as a whole takes the form of a double-armed Greek or archiepiscopal cross.

Transfiguration, the glorification of Jesus Christ on the Mount of Tabor, recorded in the Gospels of Matthew and Mark. A feast in commemoration of it is kept in the Roman Catholic and some branches of the Anglican Church on August 6th.

Transformer, an electrical contrivance consisting of two coils for increasing or decreasing the voltage of an alternating current supply. It is found to be more economical to transmit

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electrical power for long distances at a high voltage and to "step down" the voltage at sub-stations in the neighbourhood where the power is required, thus increasing the current.

Transfusion, the transference of blood from one person to another, resorted to in cases of serious loss of blood or exhaustion. A society exists of persons who have expressed their readiness to allow their blood to be used for transfusion in cases of need. It is essential that the person from whom the blood is taken belong to a blood group compatible with that of the person to whom his blood is to be transferred.

Transit, in astronomy, the passage of a heavenly body over the meridian or that of an inferior planet, Mercury or Venus, over the sun's disc. The transits of Venus are important to astronomers for working out the earth's distance from the sun. A transit-instrument is a telescope mounted on a horizontal axis for finding the right ascension of a star.

Trans-Jordan, a country extending to the Gulf of Akaba in the S., and divided from Palestine by the Ra. Jordan and Yarmak and the Dead Sea. There is a local Arab administration under an Emir, Abdullah ibn Hussein (son of the late King Hussein of Hejaz), but the administration generally is under the Mandate of Great Britain, whose High Commissioner in Palestine acts in the same capacity for Trans-Jordan. The northern part is elevated country, 4,000 ft. above sea level, falling on its western margin abruptly to the narrow fertile plain of the Jordan valley, and, at the eastern, more gradually to the grass-lands through which runs the Hejaz Railway, and which merges into the desert. This grass-land strip forms the summer pastures of Bedouin tribes who in the winter move farther E. for pasturage. W. of the railway line are wheat and barley lands, but there are frequent failures of crops. Perennial water is found in the deep lateral valleys, which is used to irrigate the culturable land in the valleys, and the large area of fertile land in the Jordan depression. In the N. are many large villages, but the only towns of any size are Amman (the capital), Salt, Kerak and Irbid. The British Government makes an annual grant-in-aid of £80,000 for the administration. The area is about 34,750 sq. m.; the population is believed to lie between 250,000 and 300,000.

Transmigration, a doctrine taught by the Pythagoreans in ancient Greece and by many Eastern religions, that the human soul or spirit after death passes into some other body, human or animal. See Metempsychosis, Re-incarnation.

Transmutation of the Elements. One of the main objects of

alchemy (q.v.) was to discover some method of changing base metals into gold. Though it was unsuccessful in its quest, which for many centuries indeed appeared ridiculous, the work of M. and Mme. Curie in connection with radium showed that this element was spontaneously disintegrating and continuously emitting another element, viz., helium, and finally giving a residue of a third element, viz., lead. With growing knowledge, it was realized that the chemical atom is not an indivisible, homogeneous body, but a complex of electrical particles, on whose number and arrangement in its atoms its individuality depends. Hence if a method could be found of altering the electrical architecture of an atom, transmutation would be an experimental fact. Lord Rutherford (1871-1937) and other scientists have shown that by bombarding atoms with electrically charged particles moving at enormous speeds, suc-

cessional direct hits can be registered, followed by disintegration of the atoms into new atoms of a different species; thus from nitrogen atoms, as a consequence of such bombardment, Lord Rutherford was able to get hydrogen and helium, and since then many other small-scale transmutations have been effected.

Transpiration, the evaporation of exposed surfaces of plants. It takes place generally by the passage of water through the stomata, or tiny openings in the epidermis of the stems and leaves, and is regulated by guard-cells that close and open. It enables the plant to regulate its temperature and the concentration of mineral salts in its sap.

Transport, Ministry of, a government department established in 1919 to take over the duties of the Board of Trade in connection with road and rail transport. All existing departmental powers in relation to railways, tramways, canals, roads and traffic thereon, bridges, harbours and docks were transferred to it. A separate department dealing with roads is attached to the Ministry. Control of public service vehicles and goods vehicles is exercised through Traffic Commissioners appointed by the Minister. The Ministry is responsible for the testing of applicants for motor driving licences. It also carries out the Government's powers and duties dealing with electricity supply.

Transport and General

Workers' Union, a British trade union formed in 1922 by the amalgamation of the National Union of Dock Labourers, the National Union of Vehicle Workers, and certain other unions concerned in the transport industry. In 1938 it had a membership of over 600,000.

Transportation, the exile of a person convicted of crime to a penal settlement. The practice developed from the earlier punishment of banishment or abjuration of the realm. Convicts were at first sent to the N. American settlements, becoming in effect the slaves of the settlers; after the War of Independence Australia was substituted, and later, Van Diemen's Land, Norfolk Island, the Cape of Good Hope, and Bermuda. In 1855 penal servitude partly, and in 1857 finally, superseded transportation.

Transubstantiation, the doctrine, since the Council of Trent obligatory upon Roman Catholics, that the bread and wine of the Eucharist is, after consecration by a priest, converted into the body and blood of Christ, the substances of the bread and wine being annihilated, though their appearance or "accidents" remain. The doctrine is held by a party in the Church of England, though the "Romish" doctrine of transubstantiation is condemned by the 39 Articles.

Transvaal, a country of SE. Africa of South Africa, stretching northwards from the Vaal R., and bounded N. by Matabeleland, E. by Portuguese E. Africa and Swaziland, S. by Natal and the Orange River Colony, and W. by Bechuanaland and Bechuanaland Protectorate; comprises elevated plateaux, but is mountainous in the E.; has a good soil and climate favourable for agriculture and stock-raising, to which latter industry the Dutch farmer chiefly devotes himself; its chief wealth, however, lies in its extremely rich deposits of gold, especially those of the "Rand," of which it exports more than any country in the world; Johannesburg (q.v.) is the largest town, and Pretoria the seat of Government.

In 1856 the region was ceded by Dutch farmers, who had "broken" from Natal (recently annexed by Britain) to escape

British rule. In 1877 the Republic came under the care of the British, by whom the natives were reduced and the finances restored. In 1880 a rising of the Boers to regain complete independence resulted in the Conventions of 1881 and 1884, by which the independence of the Republic was recognized, subject to the right of Britain to control its foreign relations. In 1900, during the South African War, it was annexed by Great Britain, and in 1909 became part of the Union of South Africa (q.v.). Area 110,450 sq. m. Pop. 3,340,000.

Transylvania, a district of Rumania; a tableland enclosed NE. and S. by the Carpathians, containing wide tracts of forest, and one-half under tillage or in pasture; yields large crops of grain and a variety of fruits, and has mines of gold, silver, copper, iron, etc., though the manufactures are insignificant; the population is mixed, consisting of Rumanians, Hungarians, and Germans; it was united to Hungary in 1868, and formed part of the Austrian Empire till 1919, when it was ceded to Rumania. Area, 24,000 sq. m. Pop. 3,400,000.

Trapani, an ancient seaport of Sicily, Drepanum, in the NW., 40 m. W. of Palermo; presents now a handsome modern appearance, and trades in wheat, wine, olives, etc. Pop. 63,500.

Trapezium, a quadrilateral having parallel, one pair of opposite sides parallel. A trapezoid is a quadrilateral none of whose sides are parallel.

Trappists, a name given to Cistercian (q.v.) monks from the Abbey of La Trappe, Orne, France, reformed in the 17th Century by Abbot Armand de Rancé, who gave its monks a rule of extreme strictness, including perpetual silence, hard manual labour, and continual abstinence from flesh food.

Trasimene Lake, an historic lake of Italy; lies amid hills between the towns Cortona and Perugia; shallow and reedy, 10 m. long; associated with Hannibal's memorable victory over the Romans 217 B.C.

Travancore, a native state in S. India, under British protection, between the Western Ghats and the Arabian Sea; it is connected with the Madras Presidency. It is traversed by spurs of the Western Ghats, beyond which, westward, is a plain 10 m. wide, covered with coconut and areca palms. Rice, cardamoms, pepper, tapioca, etc., are produced. The population are mainly Hindus, with a fair number of native Christians. Trivandrum is the capital. Area 7,600 sq. m. Pop. 5,100,000.

Traveller's Joy. See *Clematis*.

Trawling, a method of deep-sea fishing by dragging long triangular nets in the direction of the tide over the sea-bottom. It is practised largely for fishing cod, haddock, and flat fish. The trawling vessels operating off the British coasts usually stay at sea for several weeks at a time, their catch being removed at intervals by fast-sailing boats.

Treadmill,

a form of punishment formerly involved in a sentence of hard labour. It consisted of a large wheel with steps fixed on its periphery, several such wheels being coupled together when necessary for a number of prisoners; the prisoners tread the steps while the warder regulated the speed.



TREADMILL

Though occasionally used as a source of power, it was generally a completely aimless activity.

Treason, any breach of the allegiance, faith, or obedience due from a subject to the state. The Treason Act, 1351, makes it treason to compass the death of the king, queen, or their eldest son and heir; to violate the king's wife or eldest daughter unmarried; to levy war, etc.; and other Acts passed in 1361, 1381, and 1816, specify similar acts of treachery, such as contriving acts of violence against the sovereign or the realm. It is also treason to endeavour to prevent the person entitled to the Crown under the Act of Settlement from succeeding to it. High Treason, under the 1351 Act, is punishable by death. The sole conviction within recent times was that of Sir Roger Casement, who was executed in 1916 for treason in Ireland during the World War. Treason-felony under the later acts is punishable by penal servitude.

Treasure Trove, wealth for which forthcoming; it covers money, plate and bullion. Legally the right of ownership is in the Crown, but on surrender of the property the finder is usually allowed to keep it. Inquests may be held by a coroner on the finding of treasure.

Treasury, the Government department and expenditure of the public revenue. Since the 17th Century the old office of Lord High Treasurer has not been filled, and the office has been placed in Commission under Lords of the Treasury, the titular head being the First Lord, an office usually held by the Prime Minister. The minister actually responsible is the Chancellor of the Exchequer.

Treasury Bills, documents issued in return for money borrowed on short-term loans at low rates of interest; they are generally sold by tender to banks. In 1937 the unfunded internal debt of the nation included over £763,000,000 in Treasury Bills.

Treasury Bonds, securities for money borrowed by the Treasury for a fixed term, usually five years, and repayable at par, though sometimes sold below par. In 1937 the National Debt included over £170,000,000 in Treasury Bonds at various rates of interest payable up to 1942.

Treasury Notes, currency notes for £1 and 10s., first issued by the Treasury in August, 1914, and superseded in 1928 by notes for the same amounts issued by the Bank of England.

Treaty, a contract between two states, sovereign, or occasionally, as with the Anglo-Irish Treaty of 1922, between a Sovereign State and a community which aspires to that status. In constitutional law the treaty-making power is the prerogative of the Crown or other chief executive, as is the power to conclude peace. A treaty is not binding on its signatories until it has been ratified by the legislatures or governing bodies of the countries between whom it is made. The Covenant of the League of Nations provides that no treaty between members of the League shall be binding till it is registered with that body.

Treaty Ports, certain ports in China by treaty to the commerce of European nations. The first of such treaty arrangements was made soon after the war of 1856 between Britain and China. There are 43 such treaty ports, in addition to a number of other places open to international trade.

Trebizond

Trabzon, the ancient Trebizond, a city and seaport in the NE. of Asia Minor, in Turkey, capital

of a vilayet of the same name on the Black Sea; it has a considerable export trade for Persian and Armenian produce. Pop. (vilayet) 361,000; (town) 29,700.

Treble, the highest part in vocal music, sung by boys with unbroken voices or by soprano.

Tredegar, a town of Monmouthshire, Aberavenny, on the Sirhowy R. It owes its rise to the iron-works established at the beginning of the 18th Century. Coal-mining is also carried on. Pop. 23,000.

Tree, any woody plant springing from the root with a single stem or trunk having knots or branches, and perennial in duration. There are four classes of gymnosperm trees; cycads, or sago-palms, maidenhair trees, gnetums and conifers. The maidenhair is an ornamental tree, and sole survivor of an ancient group; low shrubs, and a few varieties of large, broad-leaved tropical trees constitute the gnetums; the conifers include pine, fir, cypress and monkey-puzzle. Of angiosperm trees monocotyledonous examples are palms, bamboos, banana, dragon-trees, yuccas, and screw-pines. The most typical, abundant and important trees are dicotyledonous, comprising the following families: oak, beech, chestnut; poplar and willow; maple; horse-chestnut; laurel, camphor and sassafras; ash and olive; tulip trees and magnolias; elm, fig and mulberry; leguminous trees, e.g., broom, gorse, acacia; rose, apple, plum, and other trees of the Rosaceae family; cinchona and coffee, and others of the Rubiaceae family; and various herbaceous trees.

Tree, Sir Herbert Beerbohm, British actor, born in London; making his name with vivid character studies, especially as the curate in *The Private Secretary*, he became lessee of the Haymarket and His Majesty's theatres in London. His chief successes were in Shakespearean revivals and dramatized versions of Dickens' novels; in 1909 he was knighted. (1853-1917).



SIR H. BEER-BOHM TREE

Tree-Creeper

(Certhiidae), a family of small climbing birds with long-curved beaks with which they extract their food, insects, from the bark of trees. The species of the typical genus *Certhia* have long, pointed tail-feathers like the Woodpeckers, all others square tails. Included in the genus *Certhia* is the Common Tree-Creeper (*C. familiaris*) of English woods and copse. It is about 5 in. long, brown and white in colouring.

Tree Frog, a family (Hylidae) of tailless expanded into discs which enable them to climb trees and shrubs by adhesion to the surface. They are generally found in warm climates; they are not represented in Britain. There is a European species, *Hyla arborea*, bright green above and white below; it is sometimes kept as a domestic pet.

Treforest, a town in Glamorganshire, S. Wales, 1 m. S. of Pontypridd. It contains the South Wales and Monmouthshire School of Mines, established in 1814 for training colliery officials. Pop. c. 12,000.

Treitschke, Heinrich von, German historian and political writer, born at Dresden. After studying at Bonn and Leipzig he became lecturer in history at Leipzig University in 1855, and Professor at Freiburg, 1863. In 1866 he removed to Berlin, and afterwards held appointments at Kiel and Heidelberg; Professor at Berlin from 1874, and member of Reichstag from

1871. His works include a *History of Germany in the 19th Century*. His trenchant writings had considerable influence on German public opinion before the World War. (1834-1896).

Trench, in warfare an excavation to cover the advance of an attacking force or to resist that of the enemy. In the Russo-Japanese War of 1905 it became evident that trench warfare combined with modern explosives was profoundly modifying military tactics, and in the World War they were the characteristic features of fighting on both Eastern and Western fronts, considerable attention being paid to their preparation, fortification and intercommunication. A line of trenches should follow the natural line of the valley, hill, etc., on which it is constructed, and as far as possible be in a concealed position.

Trenchard, Hugh Montague, first Baron, British soldier and airman. Entering the army at the age of 20, he served in the Boer War and later took an active interest in flying. In 1914 he was in charge of the Central Flying School; in 1918 he was made chief of the Royal Air Force Staff, and in 1922 was made Air Chief Marshal, and Marshal of the Air Force in 1927; he was knighted in 1918, and became a baron in 1930, and viscount in 1936; from 1931 to 1935 he was Commissioner of Metropolitan Police. (1873-).

Trent, an English river, rises in NW. Staffordshire, flows NE. and unites with the Ouse, 15 m. W. of Hull. Stoke-on-Trent, Nottingham and Gainsborough are on its banks. The Humber is the joint estuary of the Trent and the Ouse.

Trent, Council of, an oecumenical council, the eighteenth, held at Trento, whose sittings, with sundry adjournments, extended from December 13, 1545, until December 4, 1563. Its object was to define the position and creed of the Church of Rome in opposition to the doctrines and claims of the Churches of the Reformation.

Trentino, a mountainous region of the Adige flows, the chief town of which is Trento. Before the World War it was part of the Austrian Tyrol, but was restored to Italy by the Treaty of St. Germain. The desire to emancipate the Italian population of the Trentino was one of the chief reasons for Italy's participation in the War. There was heavy fighting in the region, especially in May-June, 1916.

Trento, an Italian town in the Trentino, in a valley on the Adige, 80 m. N. of Verona. It was in Austrian possession from 1814 until after the World War, and was the seat of the Council of Trent (q.v.). Pop. 44,000.

Trenton, capital of New Jersey, U.S.A., on the Delaware R., 57 m. SW. of New York; is the great emporium in the United States of crockery and pottery manufactures, and also produces wire, rubber, tiles, etc. Pop. 123,000.

Trepanning, an operation in surgery the skull are removed by means of an instrument called a trepan, which consists of a small cylindrical saw; it is necessary in the case of operations on the brain.

Trespass, in a wide sense any transgression, whether relating to person or property; popularly, any unauthorized entry on to another man's land, or interference with his possession of any chattel. Theoretically, every invasion of property, however slight, is a trespass; but despite the familiar notices "Trespassers will be prosecuted," any action for mere trespass would result only in nominal damages being granted, though the costs of the action might be against the trespasser.

Trevelyan, Sir Charles Phillips, British politician, son of Sir George Trevelyan (q.v.). He entered the House of Commons in 1899, served as parliamentary secretary of the Board of Education under Liberal governments from 1908 to 1914, and was President of the Board of Education in the Labour governments of 1924 and 1929. (1870-).

Trevelyan, George Macaulay, British of Modern History at Cambridge since 1927. His works include *England in the Age of Wycliffe*, *England under the Stuarts*, *Garibaldi and the Making of Italy*, *History of the Nineteenth Century*, *History of England*, and *Lives of Bright and Earl Grey*. (1876-).

Trevelyan, Sir George Otto, British at Rothley Temple, Leicestershire; entered Parliament as a Liberal in 1865; held successively the offices of Parliamentary Secretary to the Board of Admiralty, Chief Secretary for Ireland, Chancellor of the Duchy of Lancaster, with a seat in the Cabinet, and Secretary for Scotland; resigned his seat in 1897; wrote *Life and Letters of Lord Macaulay*, *Early History of Charles James Fox*, *The American Revolution*, etc., characterized by admirable lucidity and grace of style. (1838-1928).

Trevithick, Richard, British engineer, invented a steam engine for road traffic in 1796, and has claims to be considered the inventor of the locomotive as later used on steam railways (1771-1833).

Trial, a law-court's investigation of and decision in a cause. In Anglo-Saxon times facts in criminal cases were determined by compurgation ("compurgators" swore to a man's good character and credibility) or by ordeal; and wager of battle was a customary mode of trial in civil actions. Criminal cases must be tried before a judge or judges and a jury, except that minor offences may be disposed of summarily. (See *Justice of the Peace*; *Magistrate*; *Summary Jurisdiction*.) Civil actions are tried before a judge or judges; before judge and jury; or before an official referee (q.v.). In Admiralty cases the court is reinforced by nautical assessors. See also *Appeal*. In actions for slander, libel, false imprisonment, malicious prosecution, seduction or breach of promise, either party can secure a trial by jury as of right merely by giving notice; in all other cases the trial will be by judge alone, unless an order be made at chambers for a jury. Trial by jury is never allowed in the Chancery Division.

Triangle, in geometry, a plane figure bounded by three straight lines and having three angles, which together amount to 180 degrees. In a right-angled triangle, one angle is a right-angle and the other two less than a right-angle. An obtuse-angled triangle has one angle greater than a right angle.

Trianon, Treaty of, signed between the Allies and Hungary, June 4th, 1920; under it the Dual Monarchy came to an end, parts of Hungary being assigned to Czechoslovakia, Yugoslavia and Rumania, on the ground of the racial affinities of their populations.

Triassic, the geological strata at the base of the mesozoic; the deposits are chiefly sandstones laid down in inland lakes, where the thick deposits of salts typical of this age were formed, as in Cheshire and parts of Germany; in other parts of Europe the triassic age is represented by

limestones of oceanic origin, e.g. the Eastern Alps.

Tribunes, in ancient Rome officers elected by the plebs to preserve their liberties and protect them from the tyranny of the aristocratic party, their institution dating from 493 B.C., on the occasion of a civil tumult.

Trichinopoly, capital of a district of same name in Madras Presidency, on the Kaveri, 88 m. inland; it has an imposing citadel, barracks, hospital, etc.; noted for its cheroots and jewellery. Pop. 143,000.

Trichinosis, a disease caused by a small worm, *Trichina spiralis*, which invades the muscular tissues, setting up inflammation. The disease is, so far as is known, incurable.

Tricolour, the flag of the French Republic, first adopted by the French Revolutionists in 1789, and consisting of three vertical stripes, blue, white and red, the blue next the staff.

Trident, three-pronged fork used by fishermen, and the symbol, in the hands of Poseidon, or Neptune, and Britannia, of sovereignty over the sea.

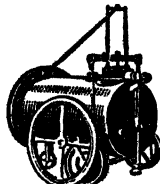
Triennial Act, a measure passed by in 1641, fixed the life of a Parliament at three years. It was repealed by Charles II, re-enacted in 1694, and finally repealed in 1716 by the Septennial Act, which extended the life of Parliament to seven years. The Parliament Act of 1911 reduced the period to five years.

Trier (Trèves), city of Prussia, Germany, beautifully situated on the Moselle, 69 m. SW. of Coblenz; it claims to be the oldest German city, is full of most striking Roman remains, and possesses an interesting 11th Century cathedral, having among many relics the celebrated seamless "Holy Coat," said to have been the one worn by Christ; manufactures woollens, cottons, linens, and wine. Pop. 77,000.

Trieste, an ancient town and seaport of Italy, at the head of the NE. arm of the Adriatic, 214 m. SW. of Vienna; an imperial free city after 1849; consists of an old and a new town on the level fronting the sea; has a fine harbour and extensive manufactures, embracing ship-building and rope-making. It was occupied by Italy at the end of the World War. Pop. 248,000.

Triforium, in architecture, a gallery above the nave, or arcade in the wall of a church over the arches at the sides of the nave and choir, and sometimes of the transepts in large churches.

Trigonometry, a branch of mathematics based on the relationships that exist between the angles, sides and area of a triangle, but also including a wide variety of mathematical operations of which the simplest are as follows:—Imagine a right-angled triangle PQR with the right-angle PRQ and two acute angles QPR and PQR ; QR is at right-angles to PR , and, as regards the angle QPR , we may call PR the base, QR the perpendicular, and PQ the hypotenuse. Then, of the angle QPR , the ratio QR/PQ is called the sine, the ratio PR/PQ is the cosine, the ratio QR/PR is the tangent, the ratio PR/QR is the cotangent, the ratio PQ/PR is the secant, and the ratio PQ/QR is the cosecant. Whatever the size of the triangle, the numerical values of all these ratios remain constant as long as the angle QPR is the same. By a simple use of the ratios, many everyday problems may be solved, e.g., finding the height of a tree by observing the angle between lines drawn from the observer's position to the base and apex respectively, and then measuring the base line. Similar methods, of a much greater



TREVITHICK'S
STEAM ENGINE

complex mathematical character, are used to solve difficult problems in surveying, astronomy, aeronomics, etc.

Trillium, a genus of perennial plants of the order Liliaceae, with a pink, purple or white single flower. The best-known species is the Wake Robin, *Trillium grandiflorum*, with white flowers, or rose in another variety of the same species.

Trilobites, an extinct marine crustaceans with three-lobed bodies, abundant as fossils particularly in the Lower Palaeozoic; their remains are of great assistance to geologists in assigning dates to fossil strata.



FOSSIL
TRILOBITE

Trimurti, a representation of the three Hindu gods, Brahma, Vishnu, and Shiva, in the form of a three-headed body, the head of Brahma being in the centre, of Vishnu on the right, and of Shiva on the left.

Trincomalee, naval station and seaport on the N.E. coast of Ceylon, 110 m. N.E. of Kandy; has barracks, official residences, and a fine harbour, a haven of shelter to shipping during the monsoons, and is strongly fortified. Pop. 10,000.

Tring, market town of Hertfordshire, England, 32 m. N.W. of London. The Grand Junction canal passes through the parish. At Tring Park, near the town, are the Rothschild zoological collections. Pop. 4,400.

Trinidad, the largest of the Windward Antilles (q.v.); lies off the mouth of the Orinoco, 7 m. from the coast of Venezuela; is of great fertility, with a hot, humid, but not unhealthy climate; petroleum, asphalt, cocoa, and sugar are the chief exports; a wonderful pitch lake, despite the immense quantities annually taken from it, shows no perceptible diminution; inhabitants are mainly French; taken by the British in 1797, it forms, with Tobago, a crown colony. There was considerable unrest in 1937 due largely to deteriorated social conditions among wage-earners. Capital, Port of Spain. Area, 1,860 sq. m. Pop. 448,000.

Trinitrophenol, See Lyddite and Picric Acid.

Trinitrotoluene, or T.N.T., a yellow crystalline solid used as a military high explosive, made by the action of a mixture of concentrated nitric and sulphuric acids upon toluene (q.v.). It is much less liable to explode accidentally than picric acid or lyddite, but its explosive force is not greatly lower. A mixture of T.N.T. with a quarter of its weight of ammonium nitrate, known as amatol, is the principal high explosive of the British services.

Trinity, the doctrine that in the god are three persons, respectively denominated Father, Son, and Spirit—Father, from whom; Son, to whom; and Spirit, through whom are all things. It is held by most of the organised Christian churches, except some of the more recently founded sects.

Trinity House, a body controlling light-houses, nightships, and pilots, founded in 1514 and having its headquarters on Tower Hill, London. The governing officers, known as Elder Brethren, also sit as assessors with the judges of the Admiralty Court when hearing maritime cases.

Trinity Sunday, the Sunday next after Whit-Sunday, kept in the Roman Catholic and Anglican churches as a feast of the Holy Trinity. The feast was instituted for the whole Church by Pope John XIII. in 1334.

Tripitaka, (the three baskets), name given to the collection of the sacred books of Hinayana Buddhism, originally written in Pali. The three sections are the *Sutta-pitaka* (mainly on discipline), *Vinaya-pitaka* (doctrine) and *Abhidhamma-pitaka* (metaphysics).

Triple Alliance, The name given to the understanding between Germany, Austria, and Italy reached in 1882, and maintained until 1914, when Italy declined to enter the World War with her two allies.

Tripod, a seat with three legs, especially that on which the priestess of Apollo at Delphi sat when delivering her oracles.

Tripoli, the NW. province of Libya, the Italian possession on the N. coast of Africa, adjoining Tunis on the E. Previously under Turkish domination, it was annexed by Italy in 1912. Much of the coast zone is sub-desert; parts of the hinterland are suited to agriculture, and barley and wheat are grown. Parts are suitable for the culture of dates, oranges and olives. Sponge and tunny fishing are carried on off the coast. The largest town is Tripoli (pop. c. 100,000).

Tripolis, a seaport of Syria, 40 m. N.E. of Beirut; a place of great antiquity, and successively in the hands of the Phoenicians, Crusaders, and Mamelukes; it has many interesting Saracenic and other remains; as a trade centre it is losing importance owing to the growth of Beirut. Pop. c. 37,000.

Tripes, the final Honours examination for the degree of B.A. at Cambridge University, so named because when the undergraduates were admitted to their degrees the University Champion sat on a three-legged stool. Originally used only of the examination in mathematics, the term has been extended to cover the final honours examinations in other subjects, such as Classics and Modern Languages.

Triptych, a picture or carving in a set of three compartments side by side and hinged together, each showing a different subject. Such an arrangement was popular with painters of altar pieces, especially in the Renaissance period.

Tireme, an ancient galley carrying three ranks of oars on each side, one above another; it was the common form of warship among Greeks and Romans.

The length was often as much as 120 ft., with 150 oarsmen.



GREEK TRIREME

Tristan da Cunha, the largest of small islands lying in the S. Atlantic, about 1,300 m. S.W. of St. Helena; 20 m. in circumference; taken possession of by the British in 1817, and utilized as a military and naval station during Napoleon's captivity on St. Helena; now occupied by a small pop. of about 160, who live by fruit and potato growing, fishing, and poultry rearing. The islands are dependencies of St. Helena.

Tristram, or *Tristram*, one of the three tales of whose adventures, love for Isolt, and tragic end forms an episode in various versions of the Arthurian legend, and is the subject of an opera by Wagner.

Triton, in Greek mythology, a sea deity, son of Poseidon and Amphitrite, with the upper part of a man and a dolphin's tail; often represented as blowing a large spiral shell; there were several of them, serving as heralds of Poseidon.

Triumph, the processional entry into general, the leader he had vanquished being sometimes led in chains, with a representative selection of his troops: thus the Celtic hero, Caratacus, figured in the triumph of Claudius. The victor entered by the Porta Triumphalis, in a chariot drawn by four horses, clothed in an embroidered robe with a laurel-wreath on his brow; and having passed along the Via Sacra and through the Forum, entered the Capitol and offered sacrifice to Jupiter.

Triumvir, one of a board of three officials in ancient Rome, such as the triumvirate formed by Julius Caesar, Pompey, and Crassus, 59 B.C.; later, triumvirates were established with constitutional powers limited to a period of five years.

Troglodytes, a race of ancient cave-dwellers supposed by the classical peoples to have lived in Egypt in former times.

Troilus, a son of Priam, King of Troy, killed by Achilles, to whom he had sent a challenge, after oracles had declared that so long as he lived Troy could not be captured. The story of his love for Cressida is the subject of a play by Shakespeare.

Trojan War, a ten years' war between the Greeks and Trojans, consequent upon the abduction of Helen of Troy by Paris; a legendary version of the struggle is the subject of Homer's *Iliad*; it ended with the fall of Troy. Modern research suggests that the legend enshrines memories of a war between the powers on either side of the Aegean for the control of trade routes.

Troll, in Norse myth, one of a race of supernatural beings at one time held to be giants, but later, in Swedish and Danish mythology, conceived as imps or dwarfs dwelling in caves.

Trolleybus, a road passenger vehicle running without rails by electric power obtained from overhead wires by "trolley poles" connected with the roof of the vehicle and running along the wires on grooved wheels. Twofold wiring and a double pole is necessary, to provide for reception and return of current. By reason of its greater mobility, the trolleybus is superseding the tram (q.v.) in many English and other cities; the whole tramway system of London is to be replaced by trolleybuses by 1940.

Trollope, Anthony, English novelist; both his mother, Frances (1780-1863) and his brother, Thomas Adolphus (1810-1892) were also prolific novel-writers. He served in the Post Office, being credited with the invention of the pillar-box. His numerous novels depict the clerical and provincial life of England in his time, among them being *Barchester Towers*, *Framley Parsonage*, and *Dr. Thorne*; he also wrote a life of Thackeray. His reputation has increased considerably in the 20th Century. (1815-1882).

Trombone, a powerful brass musical instrument of the trumpet kind, consisting of a long sliding tube terminating in a bell-shaped mouth, the length of the tube being adjustable by means of a slide so as to produce the required note.

Tromp, Martin Harpensteezen van, Dutch admiral, born at Briel; trained to the sea from his boyhood, in 1637 was created lieutenant-admiral, and in two years' time had twice scattered Spanish fleets; defeated by Blake in 1652, but six months later beat back the English fleet in the Straits of Dover; after which he is said to have sailed down the Channel with a broom to his mast-head as a sign he had swept his enemies from the seas; in 1653 Blake renewed the attack and inflicted defeat on him after a three days' struggle; in June and July Tromp was again

defeated by the English, and in the last engagement off the coast of Holland was shot dead. (1597-1653).

Tromsø, a port of NW. Norway, on an island at the mouth of the Bals Fjord, occupied in fishing. Pop. 10,908.

Trondhjem, former name of Nidaros, the ancient capital of Norway, on Trondhjem Fjord, 250 m. N. of Oslo; possesses a fine 13th-Century cathedral, where the kings of Norway are crowned; carries on a trade in copper ore, herrings and timber. Pop. 54,500.

Troon, a seaport of Ayrshire, Scotland, in the parish of Dundonald, 75 m. S.W. of Edinburgh. It has a safe harbour and two dry docks. Ship-building is carried on. Pop. 8,500.

Tropical Medicine, the branch dealing with diseases peculiar to or generally contracted in the tropics. It has become of great importance owing to the facility with which white men in hot countries contract diseases to which the native races are frequently almost immune, such as malaria, dysentery, yellow fever, trypanosomiasis, etc. Important research work has been carried on at the London School of Tropical Medicine, and at the schools at Liverpool, Paris and Berlin; and the greatest English name in the field of their study is that of Sir Ronald Ross.

Tropics, two parallels of latitude on either side of the Equator at a distance of 23½° therefrom, which mark the limits N. and S. of the area in which the sun cannot be vertically overhead. The northern tropic is called the Tropic of Cancer, the southern that of Capricorn.

Trossachs, a romantic pass in the Perthshire Highlands, 8 m. W. of Callander, stretching for about a mile between Lochs Katrine and Achray.

Trotsky, Lev Davidovich, Russian politician, born at Kherson, his original surname being Bronstein. When 22 he was exiled to Siberia for revolutionary activities, and took a prominent part in the 1905 revolution, after which he had a second period in exile. He escaped to France after a few months, and did not return to Russia till 1917, when he helped to engineer the revolution that overthrew Kerensky (q.v.). Under Lenin he became Commissioner for Foreign Affairs and for War, and remained a power throughout Lenin's life-time, but on Stalin's accession to power their difference of views as to the development of the approach to Communism became acute, and Trotsky was first of all exiled to the Turkestan frontier and later banished from Russia, after which he was allowed to reside successively in the island of Prinkipo, France, Norway, and Mexico. His followers, actual and alleged, in Russia were suppressed and in many cases executed, but his great influence outside that country drew round him many left-wing elements who did not agree with Stalin's policy, and by 1938 he was the recognised centre of a "Fourth International" with branches in many countries. (1879-).

Trotting, a sport in which horses race wheeled vehicle. It is very popular in the U.S.A. and Canada, but in Great Britain, although it is followed to some extent at one or two courses, it has not attained great popularity.

Troubadours, a class of poets who flourished in Provence, E. Spain and N. Italy from the 11th to the 13th Centuries, whose songs in the *Langue d'Oc* were devoted to subjects lyrical and amatory. They were not infrequently men of noble birth and bore arms as knights, and were thus distinguished from the *jongleurs*, who were strolling minstrels.

Trout, the name of a number of fish of the family Salmonidae, closely resembling the salmon, but smaller, found in lakes, rivers and seas of the temperate and colder regions of the Northern Hemisphere. The common river trout

COMMON TROUT

(*Salmo fario*) is abundant in Britain, and runs usually from 1 to 1½ lb. in weight, though much larger fish are recorded. Its back is mottled with dark red-brown spots on a yellow ground, while the under-parts are silvery-white. There are a number of other species found in the British Isles, both sea- and stream-dwelling, the former visiting inland waters for spawning. They include the Sea Trout (*Salmo trutta*), the Bull Trout (*Salmo eriox*), the Gillaroo Trout (*S. elanaticus*), the Loch Leven Trout (*S. levenensis*), etc.

Trouvères, a class of ancient poets in Northern France, who like the Troubadours of Southern France were of court standing, but whose poems, unlike those of the Troubadours, were mainly narrative or epic.

Trouville, holiday resort and fishing town of France, in the dept. of Calvados, 10 m. S. of Havre, on the R. Touques opposite Deauville. Pop. 6,500.

Trover, in law an action which lay for a personal chattel, so that the person entitled thereto was deprived of it or of its use. Both action and name are now obsolete, other methods of gaining redress having replaced it.

Trowbridge, a market town of Wiltshire, England, 25 m. NW. of Salisbury; has a fine 15th Century Perpendicular church, in which the poet Crabbe is buried; has woollen and fine cloth manufactures. Pop. 12,000.

Troy, a city of Troas, a territory NW. of Mysia, Asia Minor, celebrated as the scene of the world-famous legend immortalized by the *Iliad* of Homer. The site of the city was identified in 1870 by Schliemann at Hisarlik, where a number of successive settlements have been traced, the sixth of these being the Troy of the Homeric story.

Troy, city of New York State, U.S.A., on the Hudson R., 5 m. above Albany; it manufactures hosiery, underwear and machinery. Pop. 73,000.

Troyes, town of France, capital of the dept. of Aube, on the Seine, 100 m. SE. of Paris; possesses a fine Flamboyant Gothic cathedral, founded in 872, and several handsome old churches; has flourishing manufactures of textile fabrics and trades in agricultural produce; here in 1420 was signed the Treaty of Troyes, making good the claims of Henry V. of England to the French crown. The name "Troy weight" comes from that of the town. Pop. 58,000.

Troy Weight, a system of weights in the precious metals; it is based on the troy grain, of which 7,000 make an avoirdupois pound. 24 troy grains make one pennyweight (abbreviated dwt.), and 30 pennyweights one ounce. There is no troy pound.

Truce, a cessation of hostilities by agreement for a fixed time; in international law it is the same as an armistice (q.v.). The Declaration of Brussels and the Hague Conventions contain, however, only very vague provisions on truces, and it appears that if the duration is not agreed upon the belligerents may resume operations at any time, on due warning being given. The banner of a flag of truce is inviolable, though his immunity is lost on proof positive that he has taken advantage of his position to provoke or commit an act of treachery.

Truck System, the partial or entire payment of wages in goods in place of money; it was common in the early days of the factory system, when works were often situated at a distance from living centres. The supply of inferior goods and other abuses led to legislation (such as the Truck Acts) forbidding employers to lay down conditions as to the way workmen shall dispose of their wages.

Truffle, a subterranean fungus, especially those of the genus *Tuber*, the commonest being *Tuber aestivum*, black and warty in exterior, found in oak and beech woods in this country. They are highly esteemed by epicures, and are collected in Southern France and in Italy for eating. Pigs and dogs are used to hunt for truffles.

Trujillo, Ciudad, modern name of the Republic, capital of the Dominican Republic. It is better known as Santo Domingo.

Trumpet, a brass wind instrument, of tubular shape, with a cup-shaped mouthpiece. It is one of the oldest of musical instruments, and has been used in war and for religious purposes since very early times. The modern trumpet is frequently coiled, and fitted with valves and slides which have considerably increased its compass.

Trumpet Flower, or *Bignonia*, a climbing plant with large tubular flowers. There are 150 species, all native to tropical or hot countries, but some cultivated in England as greenhouse plants.

Truro, episcopal city and seaport of Cornwall, England; exports tin and copper from surrounding mines; its cathedral, consecrated in 1887, was, except for St. Paul's, London, the first built in England since the Reformation. Pop. 11,800.

Trust, an equitable obligation binding a person or persons called the trustee or trustees to deal with property under his control for the benefit of others called the beneficiaries or *cestui que trust*; the trustee himself may be one of the latter, and any beneficiary may take steps to enforce the obligation. A trustee generally has what is called the "legal ownership" of the trust property. An original trustee is generally appointed by the creator of the trust either expressly or by implication. No one can be compelled to act as trustee. Trusts do not fall by a failure of trustees, and if necessary the court will appoint trustees, or new trustees may be appointed by the person, if any, nominated in the trust instrument to do so. Trustees can only invest their trust funds in certain specified securities, and most deeds or wills appointing trustees indicate in what securities the trust may be invested. See also Public Trustee. Charitable Trusts are trusts for the relief of poverty, the advancement of education or religion, or other purposes beneficial to the community, and, unlike a trust for public purposes, there need be no great degree of certainty as to the objects intended to be benefited, provided only the donor manifests a general intention of charity.

Trust, or Combine, a union of business organizations or firms, designed generally to eliminate competition and reduce costs, and thereby to control prices. Commercial trusts figured prominently in American politics before the World War. The Standard Oil Trust, instrumental in making the vast Rockefeller fortune, was the most powerful of such combines. Legislation intended to prevent their formation has been passed in the U.S.A., but without a great deal of success. The name cartel, also in use for such combinations, is taken from the list of prices (Ger. *Kartell*) agreed on in common by the combining companies or firms.

Tsar, or *Czar*, a name derived, like *Cæsar*, from the personal name *Cæsar*, used as a title by various Slavonic rulers, including the Russian emperors from Peter the Great to 1917, the medieval rulers of Serbia and Bulgaria, and the modern Bulgarian kings.

Tsarskoye Selo, town in the U.S.S.R., 15 m. from Leningrad, now renamed Detское Selo; the summer palace of the tsar or Cæsar was situated here.

Tsetse-Fly, an African genus (*Glossina*) of dipterous insects, many

of which act as carriers of parasites, called trypanosomes, which are responsible for several tropical diseases of animals and man. There are eighteen recognised species, of which two are carriers of the parasite *Trypanosoma gambiense*, responsible for sleeping sickness (q.v.) and most of the others, including *Glossina brevipalpis*, carriers of fly-disease or nagana of cattle, camels, horses, etc.

Tsinanfu, capital of Shantung province, China, close to the Yellow R., about 180 m. W. of Kiaochow; it trades in silk and precious stones. Pop. 621,000.

Tsingtao, treaty port of China, on the province of Shantung. Leased to Germany before the World War, it was captured in 1914 by a British-Japanese force, and in 1922 was restored to China by Japan. Pop. 515,000.

Tsushima, island of Japan, S. of Korea, from which it is separated by Tsushima Strait, the scene of a Russian naval defeat by the Japanese during the Russo-Japanese War. Area 262 sq. m. Pop. 39,000.

Tuaregs. See *Barbers*.

Tuba, the deepest-toned of the brass wind musical instruments, introduced by Wagner into the orchestra. It is also called the bombardon.

Tuber, in botany, the swollen end of an root-tubers are swollen adventitious roots. The swollen stems in the rhizome of plants are thus enlarged to allow of a storage of carbon-compounds for renewal of growth, as in the stem tubers of the artichoke and potato.

Tuberculosis, an infective disease produced in man and cattle by a tiny organism, *bacillus tuberculosis*, isolated by Koch in 1882. Tiny nodules or tubercles are formed in the tissues, and the symptoms are cough, feverishness, difficulty in respiration, and gradual wasting. Any tissue may be attacked, but the commonest seats of the disease are the lungs, joints, bones, and intestines. A rapid form ("galloping consumption") and a more gradual chronic form are recognised. Although the disease is probably not hereditary, a predisposition to it is: certain occupations such as coal mining, lack of fresh air, poor nutrition, and many other causes render its onset more likely. Infection is frequently conveyed by the sputum of sufferers. Attempts at tuberculosis prevention are among the most important activities of sanitary authorities, and many local authorities have established clinics and sanatoria for treatment of the disease.

Tübingen, university town of Württemberg, Germany, 18 m. SW. of Stuttgart. Under Melanchthon and Reuchlin the old university became a dis-

tinguished seat of learning, and later, during the professorship of Baur (q.v.), acquired celebrity as a school of advanced Biblical criticism. Pop. c. 29,000.

Tudor, the family name of the royal house that occupied the English throne from 1485 (accession of Henry VII.) to 1603 (death of Queen Elizabeth), founded by Owen Tudor, a Welsh gentleman, who became Clerk of the Household, and subsequently the husband of Catherine of Valois, widow of Henry V.; their son, Edmund, Earl of Richmond, married Margaret Beaufort, a direct descendant of Edward III., and became the father of Henry VII.

Tuesday, third day of the week, named after Tiw, an old Saxon god.

Tugela, a river in Natal running eastwards for about 300 m. to the sea from the Drakensberg and ending in the Indian Ocean near Port Durnford. It was the scene of a series of engagements in mid-winter 1899-1900 in the Boer War, Buller making several attempts to cross it to reach Ladysmith, and succeeding after six reverses.

Tuileries, an old royal palace in Paris, of which only the gardens now remain. The palace was built in 1664 on the site of a former tiltyard, whence its name. Louis XVI. lived there after his arrest during the French revolution, as did subsequent rulers, until the palace was destroyed in the fighting during the Commune in 1871.

Tula, capital of a former government of the same name in Central Russia, 107 m. S. of Moscow, a busy centre of firearms, cutlery, and other manufactures. Pop. 200,000.

Tulip, a genus (*Tulipa*) of bulbous plants of the order Liliaceae, most of the garden varieties, of which there are over 1,000, being derived probably from *Tulipa persiana*, native to the Near East, and introduced into Europe in the 16th Century. The flower became extraordinarily popular in the Netherlands, and huge prices were paid for rare specimens by the Dutch about 1630, giving rise to a craze which received the name of "tulipomania." Tulips of the large double variety are very showy flowers, the best being *Imperator rubrum*, *Duke of York*, *La Candeur*, etc. Tulips are suitable for forcing in pots. Their colours, which vary over a very wide range, include rich crimsons bordered with orange, pure white, scarlet and yellow, and crimson pink or scarlet markings.



TULIP

Tulip Tree (*Liriodendron tulipifera*), a tall American forest tree, of the order Magnoliaceae, whose flowers superficially resemble those of the tulip. It grows to a height of over 120 ft., and its light, compact wood is used for many purposes.

Tulle, a town of France, capital of the dept. of Corrèze, 115 m. N.E. of Bordeaux. It is a cathedral city with manufactures of firearms, playing cards, etc. The fine silk fabric which takes its name from it is no longer manufactured here. Pop. 17,000.

Tulsa, city of Oklahoma, U.S.A., 120 m. N.E. of Oklahoma City, in the midst of a great oil-producing region; bricks, trees, pipes, glass, and machinery are among its manufactures. Pop. 141,000.

Tumbrel, a covered cart used for the transport of army stores; the name was also applied to the carts in which prisoners in the French revolution were conveyed to execution, and to the solid-stools or ducking-stools in which women accused of nagging were formerly ducked in ponds.

Tumor, any morbid parasitic bodily growth, generally, but not always, accompanied by swelling. Tumors are usually divided into simple and malignant. The latter include cancer (q.v.) and sarcoma (q.v.). Simple tumors may be either tumors of normal tissue or hollow tumors or cysts. Simple tumors may be growths from a gland (adenoma); tumors of fibrous tissue (fibroma); growths on a nerve (neuroma); growths on a bone (osteoma); and so on. Treatment is generally operative, though X-rays and radium may give relief.

Tumulus, an artificial burial mound, varying considerably in size and shape, erected by primitive races almost all over the world. Many examples exist in England, especially in the neighbourhood of Wiltshire, a particularly imposing example being Silbury Hill, over 100 ft. in height, near Avebury. Excavations have frequently revealed burial urns, stone coffins, domestic implements, etc.

Tunbridge Wells, spa and residential town in Kent, England, on the Sussex border, popularized by King Charles II.; 34 m. S.E. of London, and 4 m. S. of Tonbridge (q.v.). It has a Pump Room and chalybeate springs. Pop. 33,500.

Tundra, name for the immense tracts of marshland which cover the northern regions of Asia, Europe and America around the Arctic Circle. They are mainly covered with mosses and lichens, with some flowering plants, but in winter are frozen and snow-covered. The scanty population consists of food-gatherers (hunters and fishers). The animal life is mainly reindeer and caribou.

Tungsten, a metallic chemical element belonging to the same group as chromium, molybdenum and uranium. Symbol W; atomic number 74; atomic weight 184.6. Its commonest ore, found in Cornwall and elsewhere, is wolfram or ferrous tungstate, from which the metal is extracted by boiling with hydrochloric acid to get the trioxide, and then strongly heating the latter with carbon. Tungsten is chiefly used in making alloys and special forms of steel, and as the material of the filaments in electric lamps.

Tunis, a country of N. Africa, since 1882 a protectorate of France; forms an eastern continuation of Algeria, fronting the Mediterranean to the N. and E., and stretching S. to the Sahara and Tripoli. The inhabitants are mainly Bedouin Arabs, the European population of about 215,000 being mainly French and Italian in almost equal numbers. It presents a hilly, and in parts even mountainous aspect: its fertile soil favours the culture of fruits, olives, wheat, dates and esparto; the exports include grain, marble, phosphates, dates, vegetable oils and wines. The chief towns are Tunis, the capital, a few miles from the ruins of Carthage (pop. 250,000), Sfax, Sousse, and Kalsouan. Area, 45,500 sq. m. Pop. 2,665,000.

Tunnel, a horizontal or slightly inclined gallery beneath the surface of the ground; generally used for the passage of a railway, road, canal or aqueduct. The method and rate of tunnelling depend mainly on the nature of the soil to be excavated, which is generally ascertained by boring and trial shafts. The roofs and walls are supported by arched masonry or concrete, excepting where the rock will hold without support; this lining is usually carried over the floor so as to form a tubular structure. Drainage is effected by side channels in the floor, or by culvert, all tunnels being constructed with a gradient to allow the water to drain off; a sewer is also constructed down the middle of the tunnel under the surface, having inlets from galleries on either side. Ventilation is

effected by vertical shafts or, in some cases, by fans. The London tube railway tunnels, excavated in clay, are lined with triple segments of iron rings bolted together, thus making of the tube a complete circle. The longest tunnel in England, apart from those of the London tube railways, is the Severn Tunnel, 4½ m. long; the longest in Europe is the Simplon tunnel, in the Alps, 64,970 ft. (over 12 m.) in length.

Tunny, or Tuna (*Thunnus*), a genus of the most important species being the Common or Short-finned Tunny (*Thunnus thynnus*), a dark-blue and grey marine edible fish, with a large mouth and conical teeth; useful also for its oil; it sometimes reaches 12 ft. and more in length and weighs up to three-quarters of a ton. It is found in all warm seas, especially the Mediterranean, and, during summer, in British waters. It is caught either by netting and clubbing or by rod and line, when it is one of the largest and best sporting sea fish. The fish was esteemed by the Carthaginians and Romans.



TUNNY

Tunstall, a market town of Staffordshire, England, 4½ m. N.E. of Newcastle-under-Lyme, with coal mines, potteries and ironworks. It is now a part of the city of Stoke-upon-Trent (q.v.).

Tupper, Martin Farquhar, English author, born in Marylebone; wrote some 40 works, all forgotten, but the *Proverbial Philosophy* (1838), though little read now, had a quite phenomenal success, having sold in hundreds of thousands, as well as being translated into various foreign languages. (1810-1889).

Turban, an Eastern male headdress, made by coiling a length of linen, silk, taffeta, muslin, etc., either round a cylindrical cap or directly round the head. In some countries its colour and style vary with the rank or occupation of the wearer. It is a part of the uniform of many Indian military regiments.

Turbine, a device in which steam from a boiler at high pressure is directed by jets, or by guide vanes, against blades fixed to the outer surface of a drum, the energy of the escaping steam causing the drum and its blades to rotate. The steam is allowed to expand in a number of separate stages. The steam from the boiler passes first through jets, or a set of fixed blades, where it expands slightly, and a fraction of its pressure energy is used in setting the steam in motion. The moving steam now falls on a set of moving blades and in passing through them gives up its kinetic energy to the blades. The steam is now allowed to expand in passing through a further set of jets or stationary blades, and is directed against a second set of moving blades, and so on. In this way the expansion of the steam is so controlled that its speed, at all stages, is that required for efficient working. Water turbines work in a similar way, but only one set of moving blades is required in each turbine. If the head of water is low, the rotor may have blades similar to those of the propeller of a ship. For medium heads, up to about 500 ft., the water may be delivered horizontally against the blades of a rotor, whose axis is horizontal and whose blades are upright. The Pelton wheel, used for heads greater than 700 ft., has curved buckets mounted like those of a water wheel, and is driven by jets of water directed into the buckets.

Turbot (*Scophthalmus maximus*), a large sole-like flat fish with scattered tiny tubercles on the left or eyed side, varying in colour from grey to brown. It resembles a

weight of over 1 lb. and is a valuable food fish.

Turenne, *Vicomte de* (Henri de la Tour d'Auvergne), Marshal of France, born at Sedan; was trained in the art of war under his uncles Maurice and Henry of Nassau in Holland, and entered the French service in 1630 under the patronage of Richelieu; gained great renown during the Thirty Years' War; during the wars of the Fronde (q.v.) first sided with the "Frondeurs," but subsequently joined Mazarin and the court party; crushed his former chief, Condé; successfully invaded the Spanish Netherlands, and so brought the revolt to an end; was created Marshal-General of France in 1660; subsequently conducted to a triumphant issue wars within Spain (1667), Holland (1672), and during 1674 conquered and devastated the Palatinate, but during strategical operations conducted against the Austrian general Montecuccoli was killed by a cannon-ball. (1611-1675).

Turgenev, *Ivan*, Russian novelist and short story writer; he was the first of the writers of his country to achieve international fame, and was also the inventor of the name "Nihilist" to describe the Russian anarchist movement; he was a keen progressive thinker, and lived for many years in Paris. Among his works are *Smoke*, *Fathers and Sons*, *Virgin Soil*. (1818-1883).

Turin, (*Torino*), city of N. Italy, and 80 m. NW. of Genoa; from 1860 to 1865 it was the headquarters of the Italian government. It contains a Renaissance cathedral, royal palace, university, and military academy; its manufactures are mainly of textiles, paper, and earthenware. Pop. 630,000.

Turkestan, a wide region in Central China and Russia; the Chinese portion forms the province of Sinkiang (q.v.), while Russian Turkestan is included in the Turkmen, Uzbek and Tadshik Soviet Republics (q.v.). The inhabitants are of mixed Mongol and Aryan race, the former predominating; the chief religions are Islam and Buddhism. A considerable part of the population is still nomad, but under Russian influence the country is being rapidly industrialized and settled.

Turkey, a republic in Western Asia and Eastern Europe, occupying the whole of Asia Minor or Anatolia, and in Europe a part of Eastern Thrace, including the city of Constantinople (Istanbul) and its hinterland. The principal industry is agriculture, wheat, barley, cotton, tobacco, olives, figs and fruits being produced; minerals are not as yet greatly worked. Industrialization is rapidly proceeding, textiles, glass and paper being the main industrial products. The people are mostly Mohammedans, but there is no longer a state religion. Education is rapidly progressing, especially since the adoption of the Latin in place of the Arabic alphabet in 1928. There is a university at Istanbul. The capital is Angora (pop. 123,000); other large towns are Istanbul, Izmir (Smirna), Adana and Bursa.

Of Central Asian origin, the Turks or Ottomans conquered the Eastern Roman Empire, and captured Constantinople in 1453, spreading later throughout the Balkans, even reaching Hungary. From 1700 parts of the Ottoman Empire broke away; after the Treaty of London that ended the first Balkan War in 1913 the boundary of Turkey in Europe became a line from Enos to Midia, thus excluding Adrianople, which was regained in the second Balkan War; after the World War Turkey was forced to cede Syria, Palestine, Mesopotamia, and all her other Arabian possessions. In 1923 the government, under Mustafa Kemal, was moved to Angora, and the country began to advance rapidly

on Western lines; government is carried on by a National Assembly or Kamunay, with a President. In 1936 Turkey regained the right to militarize the Dardanelles and Bosphorus, which had been forfeited after the World War. Area, 294,500 sq. m. Pop. 16,160,000.

Turkey, a genus (*Meleagris*) of gallinaceous birds, native to N. and Central America, largely bred for food both in the U.S.A. and Britain. The common species is the Mexican Turkey (*Meleagris gallopavo*), from which all domesticated varieties descend; it is bronze-red in colour, with bright red wattles in the male. The Honduras turkey, *Meleagris ocellata*, is remarkable for its beautiful and brilliant plumage and "eyed" tail feathers.



TURKEY

Turkmenistan, a republic of the U.S.S.R., S. of Kazakhstan, N. of Iran and Afghanistan, and E. of the Caspian Sea. The population are mainly Turkomans (q.v.) of the Mohammedan faith; agriculture is the main occupation. Cotton, wool, Astrakhan fur, horses, and carpets are produced. The capital is Ashkhabad; other towns are Merv and Leninik. Area, 171,400 sq. m. Pop. 1,269,000.

Turkomans, a nomad Mohammedan race found in Northern Iran and the surrounding countries, especially Turkmenistan (q.v.).

Turks Islands, a group of small West Indian islands, forming with the Caicos Is. a dependency of Jamaica, but geographically part of the Bahamas. The seat of government is Grand Turk. (Pop. 1,600).

Turmeric (*Curcuma longa*), a plant of the ginger family, cultivated in the E. Indies for the sake of its roots, which contain a resin used as a yellow dye. It is also used as a testing material for alkalis in chemistry, and for a condiment in curries.

Turner, Joseph Mallord William, English landscape painter, born in

London; began to exhibit at 15; was elected Associate of the Royal Academy at 24, and made an Academician at 28; in 1808 he became professor of perspective at the Academy. One of the greatest of landscape painters, his work was greatly admired and popularized by Ruskin. A large number of his paintings, remarkable for their vivid colour effects and especially for their sunsets, are in the National Gallery, among them "Ulysses deriding Polyphemus," "The Evening Star," "A Frosty Morning," and "The Fighting Temeraire." (1775-1861).



J. M. W. TURNER

Turnip (*Brassica campestris rapa*), a biennial of the cabbage family (Cruciferae), indigenous to Europe, cultivated as a food plant for both men and animals. The turnip proper is a rounded root, broader than it is long, with lobed root leaves, and a rough and hairy surface. The young two-year shoots called turnip-tops are used as early table greens. The root contains little nutriment, as it is 90 per cent. water.

Turnpike, a barrier on a highway or collected from passengers, vehicles, animals, etc.,

in passage, the receipts being used to pay for the upkeep of the road. The turnpike is now almost extinct, but a few local instances still survive in England.

Turnstone (*Arenaria interpres*), a small, widely distributed shore-bird so called from its habit of turning over pebbles in search of crustaceans and other prey. It is a winter visitor to Britain and breeds in the Orkneys and Shetlands. The plumage is reddish-brown above and white below, the breast, head and neck being strongly marked with black, legs orange.

Turpentine, a mixture of resin and oil secreted in the stems of pine trees and other conifers, such as the Palestinian terebinth. The oil in which the resins are dissolved, known as oil of turpentine, is a colourless fluid used in making paints and varnishes, and in medicine as an irritant. There are several varieties, generally named after their country of origin.

Turpin, Dick, English highwayman, born in Essex, and a hero of popular legend; celebrated in Ainsworth's *Rookwood* for his ride to York though actually the deed with which he is credited was performed by Nevson, a fellow-highwayman. He was hanged at York for horse-stealing. (1706-1739).

Turquoise, an opaque azure gemstone, a basic aluminium phosphate, blue or green in colour, generally found in slate rock. The trachyte veins of Nishapur in Iran yield a good ornamental variety, and the mineral is also found in the Sinai peninsula, and in New Mexico in the U.S.A.

Turret, a small tower, forming part of the angles of a building for ornamental purposes, notably in Tudor architecture. In mediæval castles turrets were erected both for observational and defensive purposes. The cylindrical rotating tower of a battleship in which the guns are carried so that they can be ranged in any required direction is also given the name.

Turtle, general name for members of the Reptilia, especially of the marine species of True Turtles of the family Cheloniidae. They have compressed, fin-shaped non-retractile feet, with toes enclosed in a common skin, from which only one or two claws project. The most prized is the Green Turtle (*Chelone mydas*) from which turtle soup is made; it sometimes attains a length of 4 ft. The Hawksbill Turtle (*Chelone imbricata*) with a hooked beak is the species whose horny shields furnish much of the tortoise-shell of commerce. *Dermochelys* tortoise, or the marine Leathery Turtle, is the largest, reaching 7 ft. in length; in it the carapace is replaced by a number of small plates embedded in the skin. The Snapper and Alligator Turtles of the family Chelydridæ are found in N. America in fresh water.



LEATHERY TURTLE

Turtle Dove (*Streptopelia turtur*), the smallest of the British doves; haunting woods and coverts, it is generally pinkish below and reddish-brown above, with grey neck and head and white-tipped tail feathers. It is a summer visitor to England, arriving about the middle of May.

Turton, urban district of Lancashire, England, 4 m. N. of Bolton. It is chiefly engaged in the cotton industry. Pop. 11,806.

Tuscany, a dept. of Italy, incorporated in the kingdom in 1859, before which it was an independent

grand duchy; lies S. and W. of the Apennines, fronting the Tyrrhenian Sea on the W.; mountainous in the N. and E., but otherwise consisting of fertile dale and plain, in which the vine, olive, and fruits abound; silk is an important manufacture, and the marble quarries of Siena are noted; formed a portion of ancient Etruria (q.v.); the largest town is Florence; other towns are Siena, Arezzo, Pisa, Lucca, and Leghorn. Area, 8,850 sq. m. Pop. 2,975,000.

Tussaud's, Madame, a well-known exhibition of waxwork figures in London, established by a Swiss woman, Madame Tussaud, born in Berne, who brought her collection of waxworks from Paris to London in 1802. The exhibits include politicians, royal personages, criminals, sportsmen, writers and artists, and other public figures of all kinds. The building in which it was housed in Marylebone Road was destroyed by fire in 1925, but has since been rebuilt and the collection replaced.

Tussock, or Tussock Grass (*Dactylis cæspitosa*), a species of tall grass, native to the Falkland Is., which has been introduced into Britain as a fodder plant. In its native islands the stem and shoots are eaten as a human food.

Tutankhamen, a king of Egypt of the 18th dynasty, who flourished about 1350 B.C. The Earl of Carnarvon discovered his tomb at Luxor in 1922, finding his mummy intact and the tomb full of priceless treasures.

Tver (now Kalinin), city and river port of Russia, in the Moscow industrial area, on the Volga, 90 m. NW. of Moscow. Woollens, cotton and leather are made. Pop. 145,000.

Twain, Mark, pen name of Samuel Langhorne Clemens (q.v.).

Tweed, a fabric of wool, or cotton and wool, much used for clothing, and manufactured largely in Ireland ("Donegal" tweeds) and Scotland, especially the Hebrides ("Harris" tweeds). It is frequently woven in two colours from yarns dyed before weaving.

Tweed, a river of Scotland, rises in the S. of Peebleshire, and flows for 97 m. in a generally north-eastward direction; enters the North Sea at Berwick; it is a favourite resort of salmon fishers.

Twelfth Night, the eve of the feast of the Epiphany, and at one time an occasion for revels, particularly the baking and eating of a so-called Twelfth Cake.

Twickenham, borough of Middlesex, on the Thames, 11½ m. SW. of London; a fashionable resort in the 18th Century; the dwelling-place of Pope, Horace Walpole, Turner, and others. It now includes Teddington and Hampton (q.v.), with Hampton Court Palace. It is the headquarters of the English Rugby Union, on whose ground here international matches are played. Pop. 80,000.

Twins, name given to two individuals produced at a single birth; they may result either from the simultaneous fertilisation of two ova ("uterine twins"), or from the division of a single ovum after fertilisation ("true" or "identical" twins). Twins of the latter variety are always, those of the former not necessarily, of the same sex, and frequently resemble each other very closely in physical and mental characteristics.

Tyburn, a turnpike gate that formerly stood close to the present site of the Marble Arch, London; it was the practice publicly to hang criminals here, after drawing them on a hurdle from Newgate Prison, the last such execution occurring in 1782. The name was derived from that of a small tributary of the Thames, rising in Hampstead and now flowing underground.

Tyler, John, tenth president of the United States, born at Charles City, Virginia; became a barrister; elected vice-president of the United States in 1840, and on the death of Harrison succeeded to the presidential office; showed much independence and strength of mind, exercising his veto on several occasions; the Ashburton Treaty and the annexation of Texas were the principal events of his presidency; made strenuous endeavours to secure peace in 1861, but falling sided with the South, and was a member of the Confederate Congress. (1790-1862).

Tyler, Wat, a tiler in Dartford, Kent, who roused into rebellion the long-discontented and over-taxed peasantry of England by striking dead in 1381 a tax-gatherer who had offered insult to his young daughter. Under Tyler and Jack Straw, a peasant army was mustered in Kent and Essex, and a descent made on London. The revolters were disconcerted by the tact of the young king Richard II. (q.v.), and in a scuffle Tyler was killed by Watworth, Mayor of London. See *Peasants' Revolt*.

Tympanum, the membranous drum of the ear. In music the name is applied to orchestral kettle-drums, often in the Italian form *timpano*. In architecture, the triangular or semi-circular space between a door and its pediment, or above a door set in an arch, is called a tympanum; such spaces are frequently ornamented with sculptures in relief or with mosaics.

Tyndale, William, one of the translators of the Bible and a Protestant martyr, born in Gloucestershire; came under the influence of Erasmus while at Cambridge, and in Cologne commenced his version of the New Testament; was engaged upon Old Testament work previous to his martyrdom at the stake. (c. 1490-1836).



WM. TYNDALE

Tyndall, John, Irish physicist, born in Co. Carlow; succeeded Faraday at the Royal Institution; wrote on electricity, sound, light, and heat as well as on the structure and motion of the glaciers; his greatest work was in connection with researches into molecular physics and radiant heat, as well as acoustics; president of the British Association at Belfast in 1874. (1820-1893).

Tyne, river of North England, formed by the confluence near Hexham of the N. Tyne from the Cheviots, and the S. Tyne, which rises on Cross Fell, in E. Cumberland; forms the boundary between Durham and Northumberland, and after a course of 32 m. enters the sea between Tyne-mouth and South Shields.

Tynemouth, county borough and port of Northumberland, England, at the mouth of the Tyne, 9 m. E. of Newcastle. It has shipyards, and exports coal, and is in some favour as a holiday resort. North Shields lies within the borough boundaries. Pop. 67,000.

Tynwald, the legislative body of the Governor, the Legislative Council, and the House of Keys. Its laws take effect only after they have been publicly propagated on the "Tynwald Hill," in English and Manx, on the "Tynwald Day" (July 5) following their signature by the Governor.

Typewriter, a mechanical contrivance for producing letters by the impact of inked types on paper clamped round a cylinder or platen. The essential features are a movement for bringing the type to a common printing centre; an

inking contrivance, whether ribbon or pad; a movement for impressing the type on the paper, generally simply by depressing the different keys, which are usually arranged on levers in a standard layout; and a contrivance for spacing words and lines. The modern typewriter was invented about 1870 in America. The platen is mounted on a carriage which automatically by means of a coiled tension spring moves in the direction of its length; while the platen is made to revolve a certain fixed distance which determines the space between the lines. The letters are generally arranged in three rows, and the numerals, brackets, etc., in one line of keys above these; capital letters are cast on the same lever as the corresponding small letter, the impression of a capital being produced by depressing a shift key.

Typhoid Fever, an infectious disease, also known as low, or enteric, fever, gastric fever, and infantile remittent fever. Its cause is a specific bacillus from discharges of previous typhoid cases. All insanitary conditions in respect of drainage promote the spread of typhoid, and flies may be the means of contamination during an epidemic. Early symptoms are headache, lassitude, insomnia and feverishness; later, abdominal distention, enlargement of the spleen and a rose-coloured eruption on the front of the body.

Typhoon, a hurricane prevalent in the October, sweeping over the Philippine and Japanese Islands and part of the Chinese coast.

Typhus, or Gaol Fever, an acute infectious continued fever generally lasting some 14 days, greatly impairing the bodily strength and accompanied by severe nervous symptoms, and a peculiar skin eruption of dark red blotches which continues for about four or five days. The fever is accompanied by a nauseous odour and acute blunting of the mental faculties. Improved sanitation seems to have almost stamped it out in Great Britain.

Typography, the art of printing, those branches of it concerned with the designing, setting, and arrangement of type. Typesetting is nowadays generally done by machinery (see *Linotype*, *Monotype*), though hand-setting is still in use for specially-designed works of unusual character. Until the 20th Century there had been little change in type faces since the supersession of "black" or "Gothic" by "Roman" lettering, but in recent years type-designing has been revived as an art, and many new faces have been out from which linotype and monotype matrices are made. Type faces are nowadays measured by the "point" system, 72 points making an inch; thus, eight lines of "9-point" type occupy 1 in. in depth of paper.

Tyrant, in ancient Greece one who usurped or acquired supreme authority in a state at some political crisis, and exercised despotic and irresponsible rule, though not necessarily cruelly. In modern practice the name describes the nature rather than the origin of a ruler's exercise of power, and is applied to one who imposes his will by force without regard to the feelings or rights of his subjects.

Tyrconnel, Richard Talbot, Earl of, a Catholic politician and soldier who fought against Protestant rule in Ireland and in support of the Catholic Stuarts; was created an earl and lord-deputy of Ireland by James II.; fled to France after the battle of the Boyne. (1686-1691).

Tyre, a famous city of ancient Phoenicia (q.v.), about 30 m. N. of Haifa; comprised two towns, one on the mainland, the other on an island opposite; damaged

and captured in 339 B.C. by Alexander the Great, who connected the towns by a causeway, which, by silted sands, has grown into the present isthmus; its history goes back to the 10th Century B.C., when it was held by Hiram, the friend of Solomon, and sustained sieges by Nebuchadnezzar and others; was reduced by Caesar Augustus, but again rose to be one of the most flourishing cities of the East in the 4th Century A.D.; fell into ruins under the Turks, and is now reduced to a population of a few thousands.

Tyre, a renewable forged flanged steel ring, shrunk on to the rim of a locomotive driving- or coupled-wheel; serves to strengthen the cast wheel centre and provide fresh wearing surfaces for the tread and flange; or a rim-cover of rubber or other material attached to a wheel to lessen the jar. For motor cars and bicycles pneumatic tyres, comprising an outer cover with an inflated inner tube, have long ago superseded "cushion" and solid rubber tyres, such as are still used for perambulators.

Tyrol, a district partly in N. Italy and partly in Austria; traversed by three ranges of the Alps and by the rivers Inn and Adige; it is famed for the beauty of its scenery; inhabited by Catholic Germans and Italians; sheep-farming, mining, and forest, fruit, and wine cultivation are the chief industries; it was the scene of severe fighting in the World War between Italy and Austria, British troops assisting the former; part of it was ceded to Italy in 1919. The Austrian province so

named has an area of 4,680 sq. m., and a population of 350,000; its chief town is Innsbruck.

Tyrone, a central county of Ulster, Northern Ireland; hilly, picturesque, and fertile in the lower districts; a considerable portion is taken up by barren mountain slopes and bog-land; coal and marble are wrought; Omagh is the county town, others being Strabane and Dungannon. Area, 1,218 sq. m. Pop. 127,600.

Tyrrell of Avon, Sir William George Tyrrell, first Baron.

Entering the Foreign Office in 1889, he became Private Secretary to Sir Edward Grey from 1907 to 1915, and Permanent Under-Secretary from 1925 to 1928, when he went to Paris as British Ambassador until 1934. On retirement from the diplomatic service he became chief of the British Board of Film Censors. He received the Grand Cordon of the Legion of Honour in 1934. (1866-).

Tyrrhenian Sea, an arm of the Mediterranean, stretching between Corsica, Sardinia, and Sicily on the W., and Italy on the E.

Tyrwhitt, Sir Reginald Yorke, British admiral. He entered the navy at 16 and came into prominence in 1914 as commander of the destroyer flotillas at Heligoland and again at the Dogger Bank. He was knighted in 1917, made a baronet two years later, and in 1921 given command of the 3rd light cruiser squadron in the Mediterranean. He became an Admiral of the Fleet in 1934. (1870-).

U

Ubangi, an African river rising near the thence W. and S. to join the Congo near Coquilhatville; length about 1,500 m.

U-boats, German submarines, so called from the letter U (for Unterseeboot) prefixed to their number. They were extensively used in the World War, especially after 1916, and to combat them Q-boats (q.v.) were adopted by the British Navy; in all, some 800 U-boats were sunk. Their main base was at Bruges, entering the sea via Zebrugge, and it was to stop this outlet that the naval raid on Zebrugge was made on April 23, 1918.

Udaipur, or Mewar, native state of Rajputana agency, India, situated S. of Ajmer-Merwara. Its capital, Udaipur, picturesquely situated beside a lake, has beautiful palaces and other buildings. Area (state), 12,694 sq. m. Pop. (state) 1,567,000; (city) 35,000.

Udall, Nicholas, English playwright, born master of Eton in 1534, but, ejected for scandalous conduct, was appointed headmaster of Westminster school in 1555; he is remembered as the author of *Ralph Roister Doister*, the earliest extant English comedy. (1504?-1558).

Udine, city of N.E. Italy, in a province of the same name, 85 m. N.E. of Venice. It was an Italian army base in the World War, and has a Romance cathedral. Pop. 43,100.

Uganda, British protectorate in E. Africa, bordered by the Sudan on the N., Tanganyika Territory on the S., the Belgian Congo on the W., and Kenya on the E. Much of the country is covered with swamps and dense forests, rich in big game. Mt. Ruwenzori rises to over 14,000 ft. on the E.

border, while the snow-capped Ruwenzori range (16,800 ft.) dominates the W. The territory contains Lakes George, Kioga and Salisbury, and parts of Lakes Victoria, Edward and Albert; other great natural features include the Ripon and Murchison Falls, the great Semliki, Budonga and other forests and the head waters of the Nile. Cotton is the chief product, and coffee, ivory, hides, tin and sugar are also exported. Entebbe is the British headquarters, while other settlements are Kampala, the native capital, Jinja, Port Bell and Iganga. The territory first came under British influence in 1890 and was declared a protectorate in 1894; there was much trouble with the natives and foreign colonizers before it was finally pacified. Area, 94,000 sq. m. Pop. 3,690,000 (2,000 whites).

Uhlan, originally Polish light cavalry, armed with lance and sword. In 1740 Uhlan regiments were formed in the Prussian army, but after the World War they were reduced to about 40 squadrons, distributed among the German cavalry.

Uist, name of two islands (N. Uist and S. Uist) of the Outer Hebrides, forming part of Inverness-shire; N. Uist is 13 m. in length and 7 m. in average breadth. Pop. 2,800. S. Uist, 7 m. to the S., has a maximum length of 27 m. Pop. 4,200. Crofting, fishing and cattle-rearing are carried on.

Uitlander, a foreigner in the South African Republic of 1893. The majority of the Uitlanders were British subjects, and their grievances, originating in the resolve of the Boer authorities to maintain the Dutch social and political systems, helped to provoke the South African war.

Ukase, an edict issued by the former Czar of Russia, having the force of a law.

Ukraine, republic of the U.S.S.R., bounded N. by the White Russian republic and the Western and Central Black Sea Areas, S. by the Black Sea, E. by the N. Caucasian Area and W. by Poland and Rumania. The richly fertile soil produces chiefly wheat and sugar-beet; there are large coal, iron and manganese mines, and the engineering industries are important. Kiev is the capital, other large towns being Kharkov, Odessa, Dnepropetrovsk, Stalin and Nikolaev. Area, 171,000 sq. m. Pop. 32,000,000.

Ukulele, a four-stringed instrument, originating in Hawaii, played by finger-plucking; it resembles a small guitar.

Ulcer, an open sore on the surface of the body, with secretion of pus. Ulcers may be simple sores, due to some local infection or inflammation, or, like gastric ulcers, to digestive disorders; or they may be of the more serious kind, due to cancer, syphilis or other venereal disease, or to cardiac inflammation, such as ulcerative endocarditis.

Ulphilas, or **Ulphilas**, apostle of the Goths; an Arian, he was made a bishop in 341 and sent to convert the Visigoths, for whom he made a Gothic translation of the Scriptures, a work of unique philological value which only exists now in fragments. (c. 311-383).

Ulianovsk (formerly Simbirsk), town of the U.S.S.R., on the Volga, 120 m. SW. of Samara; it was the birthplace of Lenin, and has a university. Pop. 73,700.

Ullswater, lake of England, situated in the Lake District, in Cumberland and Westmorland, about 74 m. in length and 4 m. in average breadth. It is famous for its beauty, and much of the land round its shores has been preserved by the National Trust.

Ullswater, James William Lowther, first Viscount, British politician; called to the bar in 1879, he entered Parliament in 1883, and in 1891 became Foreign Under-Secretary; Deputy Speaker in 1895, he became Speaker in 1905, resigning in 1921, when he was made a peer. He was chairman of many commissions, notably of the "Ullswater commission," 1936, which reported on the B.B.C. (1855-).

Ulm, city and river port of Germany, in Württemberg, on the Danube, 46 m. SE. of Stuttgart. It is famed for its cathedral, which for size ranks next to Cologne, as well as for its town-hall. There are textile factories, foundries and breweries. The town is strongly fortified. Here General Mack, with 23,000 Austrians, surrendered to Napoleon in 1805. Pop. 62,500.

Ulster, former province of Ireland, occupying the N. of the country and comprising the counties of Donegal, Antrim, Londonderry, Tyrone, Cavan, Fermanagh, Monaghan, Armagh and Down. It became an English settlement in 1611, and was largely colonised from Scotland. It is the most Protestant part of Ireland, and the most enterprising and prosperous; agriculture, flax-growing and spinning are the chief industries. By the Government of Ireland Act, 1920, Donegal, Cavan and Monaghan were attached to the Irish Free State, and the remaining counties were united as Northern Ireland, with its own constitution. See Northern Ireland; Eire.

Ultramarine, a manufactured form of the natural mineral lapis lazuli. The latter has been known since antiquity, but the artificial substance was first prepared by Gmelin in 1828. It is made

by strongly heating kaolin (china-clay) with soda (anhydrous sodium carbonate), sulphur and resin. The product is mixed with sulphur, and again heated, when blue ultramarine is formed. Green, violet and red ultramarines are also known; all varieties consist essentially of sodium aluminium silicate, combined with sulphur or a sulphur compound. Blue ultramarine is the familiar "washing blue," and is widely used as a pigment.

Ultramontanism, name given to the doctrine arrogating supreme power and authority to the Pope in both temporal and spiritual affairs. The term came into general use in France in the 19th Century, in reference to the opinions prevailing in Rome, "on the other side of the mountains (the Alps)."

Ultra-Violet Rays, that part of the solar spectrum beyond the violet end which is invisible to the eye but affects a fluorescent screen and possesses strong chemical properties; these rays are not so penetrating as visible light and are absorbed by glass. They produce the valuable vitamin D in the human body, and so are efficacious in cases of rickets and other deficiency diseases. Artificially, they are produced by mercury vapour lamps and arc lamps.

Ultra Vires. An act performed by a corporate body in excess of its legal powers is said to be *ultra vires*. Thus a company acts *ultra vires* if it undertakes operations which are not contemplated in its Memorandum of Association. An act, though within the powers of the company, may be *ultra vires* the particular person or persons who does it in their name, if he has not been authorized to do so by the company. Acts *ultra vires* are void in law.

Ulysses (Greek, *Odysseus*), chieftain of Ithaca, one of the Greek heroes in the Trojan War. He is less famed for his exploits before Troy than for what befell him in his ten years' wandering during the homeward voyage, as recorded by Homer in the *Odyssey*. His numerous adventures include his stay among the lotus-eaters, his encounter with Polyphemus, the enchantments of Circe, the Sirens, and Calypso, and his triumphant return to his wife Penelope and his son Telemachus.

Umbelliferae, a large family of dicotyledonous plants, bearing five petalled flowers in umbels (i.e., the flower stalks springing from the head of the main stalk in such a way as to produce a flat or convex flower-head). Many of them are important as human foods. There are some 200 genera and 2,700 species, including the carrot, celery, hemlock, parsley and parsnip. They are mostly native to the temperate regions of the northern hemisphere.

Umbel, a natural earth pigment, consisting chiefly of hydrated oxides of iron and manganese. Raw umbel is calcined to form "burnt umbel," a fine, warm brown colour; it can be ground in water, oil or turpentine and mixes well with other pigments.

Umbrella. The umbrella is of oriental origin, having been used in very early times in Babylonia and Assyria and neighbouring countries, essentially as an emblem of royalty. It was introduced into Europe for more practical purposes by James Hanway (1712-1786), the oriental traveller and philanthropist, and at first aroused much ridicule and opposition, especially from



UKULELE



UMBEL

hackney cabmen, who saw in the umbrella a menace to their business.

Umbria, a division of ancient Italy, between Cisalpine Gaul and the territory of the Sabines; inhabited originally by a powerful Latin race, the Umbri, who, after being harried by the Etruscans and Senones, were subdued by the Romans, 307 B.C.; under Augustus the territory became the sixth region of Italy. The modern Umbria is a dept., covering 3,277 sq. m. and comprising the provinces of Perugia and Terni. Pop. 726,000.

Uncial Letters, large round characters or letters used in ancient MSS., so called as approximating to an inch in size, from Latin *uncia*, the twelfth part of a foot.

Uncle Sam, name given to the United States Government, possibly derived from a humorous translation of the initials U.S.

Unconscious. See *Subconscious*.

Underground Railways. The first underground railway in London was the Metropolitan line from Paddington to the City, opened in 1855. The first "tube" was that from Stockwell to the City, constructed by Henry Greathead (1844-1896), and opened in 1890; the "Twopenny Tube," so called because at first a uniform fare of twopenny was charged, was opened from Shepherd's Bush to the Bank in 1900. In 1938 the mileage of "tube" railways in London, apart from the Metropolitan and District lines, was about 14. Other cities with underground railway systems are Glasgow, Paris, Berlin, New York, Chicago and Madrid; others are projected in Rome, Munich and elsewhere.

Underwriter, the term applied to one, generally a member of Lloyd's, who in return for a share of the premium agrees by subscribing or "underwriting" his name to accept a proportion of a risk and to pay his share of the compensation in the event of a loss. The term was originally used in relation to marine insurance, but nowadays underwriters often accept other classes of insurance. See *Insurance*.

Undine. See *Elemental Spirits*.

Undset, Sigrid, Norwegian novelist, born at Kalundborg, Denmark; as a clerk in a business house, she had opportunities to observe the lives of her companions, and made use of her experiences in *Fru Maria Oulie*, 1907, and *Jenny*, 1912; her best-known work was *Kristin Lavransdatter*, 1920, a 14th Century historical novel, which was followed by *Olav Audunsson*, 1925, another period novel; later works were *The Wild Orchid*, 1931, *Ida Elisabeth*, 1933, *Saga of Orm*, 1934; she received a Nobel Prize in 1928. (1882-).

Unemployment Insurance,

a system originated in Great Britain in 1911 by which workers are insured by the State against unemployment by payment of weekly contributions represented by stamps affixed to a card. The operation of the system has been gradually extended until it covers practically all manual workers, and all employed persons earning not more than £250 per annum. Contributions are also made to the Unemployment Fund by the employer and the State. The present (1938) weekly rates of contribution by the employee in non-agricultural employment are: for males aged 14 to 16, 6d.; 16 to 18, 6d.; 18 to 21, 6d.; 21 to 65, 10d.; for females within the same age limits, 2d.; 41d.; 5d.; and 6d. respectively. At the age of 65 the employee's contributions cease. The weekly rates of benefit in non-

agricultural employment are: for females aged 16, 5s.; aged 17, 7s. 6d.; 18 to 21, 12s.; over 21, 15s.; for males at the same ages, 6s.; 9s.; 14s.; and 17s. respectively. Additional benefits are payable in respect of dependents at the rate of 3s. for each child and 9s. for each adult.

Ungulata ("hoofed animals"), an order of mammals, including many of those most useful to man; its main sub-classes are Perissodactyla, including the horse and rhinoceros; Artiodactyla, divided into ruminants (cattle, sheep, goats, deer, camels, giraffes) and non-ruminants (swine, hippopotami); Proboscidea (elephants); and Hydracoele (coney). There are several other sub-classes containing extinct forms.

Unicorn, a fabulous animal with the limbs of a deer, a lion's tail and, essentially, a single long horn on its forehead; formerly vessels of reputed unicorn's horn were in demand for their supposed efficacy against poison. The unicorn figures frequently in heraldry, and was adopted by James I. as the symbol of Scotland on the royal arms.

Uniform. The use of uniforms, "such as had been worn by the 'Blackshirts' or British Union of Fascists, the Social Credit Party, and other political organizations, was prohibited in Great Britain by the Public Order Act, 1936. The Act, while providing no definition of a uniform, makes it clear that it is not intended to forbid the wearing of simple badges indicating affiliation to a political party, and allows the use of Trade Union insignia and similar regalia on special occasions. It has no application to uniforms which have no political significance, such as those of the Salvation Army or Boy Scouts.

Uniformity, Act of, an Act passed in England in 1662 regulating the form of public prayers and rites to be observed in all churches, which had the effect of driving hundreds of clergymen from the Established Church into the ranks of the Nonconformists.

Union, The name applied in English history to three separate political amalgamations: (1) the Union of England and Scotland in 1603 under one crown, by the accession of James VI. of Scotland to the throne of England on the death of Queen Elizabeth; (2) the Union of the English and Scottish Parliaments in 1707, in one parliament seated at Westminster; and (3) the Union of the British and Irish Parliaments in 1800; this union was in part dissolved by the legislation of 1920-1922 which established the Irish Free State.

Union Day, the day celebrated as a public holiday in South Africa in commemoration of the establishment of the Union of South Africa on May 31, 1910.

Unionists, a British political party in 1885 and recruited from Liberals who were opposed to Home Rule. Known at first as Liberal-Unionists, they eventually joined forces with the Conservatives, and in 1912 the official name of the organization became the National Union of Conservative and Unionist Associations. The name was retained after Ireland was granted Home Rule.

Union Jack, the national flag of Great Britain, formed by the union of St. George's cross for England (a scarlet cross upon a white field), St. Andrew's cross for Scotland (a white diagonal cross upon a blue field), and St. Patrick's cross for Ireland (a red diagonal cross upon a white



HERALDIC
UNICORN

field). Technically the name should be Union Flag, the Union Jack strictly being the small Union Flag which is flown from the jackstaff of a ship. See Flag.

Unitarians, a term applied to those who profess belief in one God, denying the Church doctrine of the Trinity and in particular the divinity of Christ, though they acknowledge His paramount importance as a teacher and inspired prophet. In England their ranks were largely increased by the clergy expelled from their livings by the Act of Uniformity, 1662.

United Free Church of Scotland.

See Scotland, Church of.

United Irishmen, an association of Irishmen founded by Wolfe Tone and others in 1791 for the purpose of agitating for emancipation of Irish Roman Catholics and other religious bodies. The agitation culminated in the rebellion of 1798, after the suppression of which the association came to an end.

United Kingdom, the name given in 1800 to the Kingdom of Great Britain and Ireland, as established by the union of the British and Irish Parliaments (see Union, The). This union was dissolved in 1922, and to-day the United Kingdom means Great Britain and Northern Ireland, i.e., the areas represented in the parliament at Westminster.

United Methodists, an English formist body, formed in 1907 by the union of three Methodist denominations—the Methodist New Connexion, the Bible Christians and the United Methodist Free Church—which had seceded at different times from the original Methodist Church. In 1932 the United Methodists and other Methodist seceders were united in the Methodist Church.

United Provinces of Agra

and Oudh, province of British India, bounded N. and N.E. by Tibet and Nepal, S. by Central India, W. by the Punjab and Rajputana, and E. by Bihar and Orissa. It covers an area of 112,200 sq. m., mainly in the valley of the Upper Ganges and its tributaries; the Himalayas enclose the province on the N. Agriculture and the manufacture of textiles, leather, opium and indigo are carried on; there is an extensive irrigation system, with further schemes in project. Lucknow is the largest city, while other important centres are Cawnpore, Benares, Agra, Allahabad, Bareilly and Meerut; the people are chiefly Hindus. Oudh, annexed in 1856, was joined with the Agra presidency in 1877, and in 1902 the territory was styled the United Provinces; it became a governorship in 1921, and in 1937 autonomous government, by governor and council, was introduced. Pop. 48,409,000.

United States of America

(U.S.A.), the greatest state of the New World, occupying an area of 3,926,789 sq. m.—nearly as large as Europe. It is bounded on the N. by the Dominion of Canada, on the E. by the Atlantic, on the S. by Mexico and the Gulf of Mexico, and on the W. by the Pacific, and it extends 2,900 m. from E. to W., and on an average 1,600 m. from N. to S. There are two great mountain systems, the Appalachians on the E., and the Rockies, Cascade range, etc., on the W., which divide the territory into four regions—an eastern, which slopes from the Appalachians to the Atlantic, and is the most thickly populated part; a central, which slopes S. and comprises a vast undulating plain, largely agricultural

and pastoral, formed by the Mississippi Valley; a plateau supported by the Rocky and Cascade ranges, largely a metalliferous region; and the fertile Pacific slope, inclining westward from the Coast range.

The great rivers are in the Mississippi Valley, though there are rivers important both for navigation and water-power on the Atlantic and Pacific slopes. The climate is of every variety, from sub-arctic to sub-tropic, with extremes of temperature and moisture, in consequence of which the vegetation and animal life are immensely varied. The mineral wealth is enormous, and includes, besides large beds of coal, all the useful metals. Large forests of valuable timber still exist in the eastern states, while agriculture, and cotton and fruit-growing are flourishing industries.

As a manufacturing country the United States has built up a commanding position. Its vast resources, exploited to the utmost by the virile population, have brought great wealth, while railways have been developed with enterprise and energy. Non-contiguous territory of the United States includes Alaska, Hawaii, Puerto Rico, the Philippine Is., the Virgin Is., American Samoa, the Pacific island of Guam and the Panama Canal Zone. The capital of the States is Washington, but the largest and most important city is New York. Other cities with a population exceeding 500,000 are Chicago, Philadelphia, Detroit, Los Angeles, Cleveland, St. Louis, Baltimore, Boston, Pittsburg, San Francisco, Milwaukee and Buffalo.

The population is largely of British, German and Scandinavian descent, but there is a large foreign-born population drawn from all European countries. In 1938 the population was estimated at 129,250,000, including nearly 12,000,000 negroes and over 2,000,000 of other races, the chief being Mexicans, Indians, Chinese and Japanese. The Government is a federal republic of 48 states, 1 federal district (District of Columbia, including the city of Washington, the seat of government) and 2 organized territories, i.e., Hawaii and Alaska. The executive power is vested in a President, who is elected for four years, is commander-in-chief of the army and navy, and appoints the Cabinet officers. The legislature consists of a Congress of two houses, the Senate, to which each state elects two members for six years, and a House of Representatives elected every second year by the votes of qualified citizens, the number of representatives for each state being determined by population.

The origin of the United States is to be traced to the colonists, chiefly English and Dutch, who settled on the Atlantic seaboard in the 16th and 17th Centuries. Virginia was founded by Raleigh in 1585, and later Jamestown and Maryland were established. In 1620 the celebrated Pilgrim Fathers set up another colony in Massachusetts, while Pennsylvania was founded by Governor James Oglethorpe in 1732 as a home for debtors from English jails. The colony of New York was founded by the Dutch as New Amsterdam, while Pennsylvania was settled by the Quakers, led by William Penn. After the middle of the 17th Century the English began to take the lead, and for decades they were occupied in meeting good their foothold and repelling the Indians and French, with British military assistance, in the struggle known as the French and Indian wars.

After the Peace of Paris, 1763, which ended hostilities, and extinguished French influence, the colonists began to chafe against taxation and trade restrictions imposed by the British Government which they deemed unjust, and in 1775 a revolt broke out, which ended eight years later in the victory of the colonists; on July 4, 1776, the Declaration of Independence from British rule had been drawn up by the

13 original colonies; on this the constitution of the new republic was based, with Washington, their victorious general, as first President.

The chief progress now was in the direction of territorial expansion, the greater part of the country being hitherto unexplored. The fertile valley of the Mississippi was settled, and in 1800 the rich agricultural area known as Louisiana, covering a million sq. m., was bought from France. Florida was acquired from Spain in 1822, while New Mexico was annexed after the Mexican War of 1846-48, and by the middle of the 19th Century the continental area of the republic was substantially the same as it is to-day. In 1848 gold was discovered in California, which became the Mecca of thousands.

Meanwhile, agitation had long been on foot for the suppression of slavery, and in 1861, upon the secession of the southern States from the Union, war broke out between the South, or Confederates, and the North, or Federals. After years of bitter fighting and the loss of half a million lives, the North triumphed in 1865 under the leadership of their President, Abraham Lincoln, who was assassinated in the moment of victory. Slavery was ended, but the years of reconstruction following the Civil War were marked by every kind of lawlessness, unrest and political jugglery and corruption. In 1898 came the war with Spain over the Spanish maladministration in Cuba, which terminated with the annexation of the Philippine Is. by the U.S.A., and the firm establishment of American interests in Cuba, which was declared an independent republic. It was in this war that Theodore Roosevelt became a national hero, and in 1901 he was elected president, devoting himself with success to the task of suppressing the corruption that was everywhere rife, and to increasing the prestige of his country in world estimation.

During the World War there was much German sympathy in the United States, where the German element is considerable, but in 1917—largely provoked by the loss of American lives in the *Lusitania* outrage—the Americans came in on the Allies' side and materially assisted victory. American diplomats were prominent at the Peace Conference in 1919, and it was President Woodrow Wilson who was instrumental in establishing the League of Nations, of which his country has consistently refused to become a member.

In 1919 the prohibition of liquor became law, and until 1933, when the measure was rescinded, the crimes of violence arising from illicit liquor traffic became a regular feature of the national life; but the outstanding occurrence in post-war U.S.A. was the great financial crisis which began in 1929 and led to an upheaval in social conditions and an almost entire disruption of the financial life of the country, coupled with acute unemployment. In 1933 Franklin Delano Roosevelt, a Democrat and a relation of Theodore Roosevelt, became President and instituted the National Recovery scheme to restore prosperity; in spite of adverse criticism and many set-backs, Roosevelt's measures were in the main effective, and in 1936 he was once more returned to office. In 1937 disastrous floods in the valleys of the Ohio and the Mississippi caused the loss of hundreds of lives and called for relief measures upon an unprecedented scale.

Universalists, a denomination of Christians who profess belief in the final harmony of all souls with God and the ultimate triumph of good over evil in each individual soul: the movement was founded in the United States in 1770 by the Rev. J. Murray as a protest against the doctrine of endless punishment; it was largely developed by Anne Ballou (1771-1852), under whom it took on a Unitarian aspect; in 1926 there were 500 Universalist churches

in the U.S.A., with a membership of about 55,000.

Universal Language. Many attempts have been made to invent a language comprehensible to people of all nations. Such a language is necessarily artificial. The best known are Volapük, invented by Schleyer in 1880, and greatly improved as Idiom Neutral in 1898; Esperanto, invented by Dr. L. L. Zamenhof in 1887, and Ido, a simplified form of Esperanto, devised in 1907. Of these, Esperanto is the best known, and there is a British Esperanto Association in London. A simplified form of English, known as "Basic English," the invention of Mr. C. K. Ogden, in which it is claimed that any idea can be expressed by the use of a small number of English root words, has lately attained some importance as a possible medium of international communication, especially in the East.

Universe, the whole system of created things. Until the 17th Century the earth was regarded as the centre of the universe, with the sun, moon and stars revolving round it. In 1632, however, Galileo showed that the earth moved round the sun, and the work of Newton and Kepler led to the accurate forecasting of the movements of all the planetary bodies. The improvement of the telescope (q.v.) led to the discovery of more and more stars—with the consequent extension of the universe far beyond the bounds of the solar system—and spectroscopy enabled their distances and constitution to be estimated. To-day, astronomers estimate that the universe contains at least 2,000 million stars, the nearest being not less than 25,500,000 million miles from the earth. The stars are themselves suns, and it is probable that a very great many of them are the centres of other solar systems. By many modern astronomers the universe is considered finite but boundless, in the sense that light travels in a curved path, a theory proved by the experiments of Einstein (see *Relativity*). Evidence shows that the material bodies of the universe have been created by a process of evolution, stars being formed by concentration from nebulae, while planets consist of portions thrown off by the stars.

University, a corporation of teachers and students which has a recognised power and authority to grant degrees under certain defined conditions. The earliest European university was that at Salerno in Italy, which was already famous as a medical centre in the 9th Century and endured until 1811; the most ancient existing university is that of Bologna, founded in the 11th Century as a school of law. Oxford University originated about 1167, while Cambridge was probably established, partly as an off-shoot from Oxford, about 1209. Other British universities are those of London, Durham, Manchester, Liverpool, Birmingham, Leeds, Sheffield, Bristol and Reading; the University of Wales has several affiliated colleges, while in Scotland there are universities at St. Andrews, Glasgow, Aberdeen and Edinburgh; Ireland has the University of Dublin and the National University of Ireland; there are numerous universities and university colleges throughout the rest of the British Empire.

Unknown Warrior, a British soldier of unknown identity, regarded as typifying the fallen in the World War. His remains were taken from his grave in France and buried in Westminster Abbey on November 11, 1920, King George V. acting as one of the pall-bearers. The United States, France and other countries later adopted the idea and have Unknown Warriors of their own, to whose ashes they pay the same tributes.

Unterwalden, a canton of Switzerland, of Lucerne, consisting of the two "half-cantons," or administrative districts, of Obwalden (capital, Sarnen) and Nidwalden (capital, Stans), with areas of 180 sq. m. and 106 sq. m., respectively; drained by the two rivers Aa, it contains Lakes Sarnen and Lungern and much forest land. Pop. Obwalden, 18,400; Nidwalden, 16,000.

Upas Tree, a name for the anchor tree (*Antiaris toxicaria*), of the fig (Moraceae) family, a native of Java; it grows to a height of 80 ft. or more before branching; and the bark yields a gum used as an arrow poison; when first discovered by Europeans, it was credited with the sinister power of destroying all animal life for miles around.

Uppingham, market-town of Rutlandshire, 7 m. S. of Oakham. It has a famous public school, founded in 1684. Pop. 2,500.

Uppsala, city of Sweden, on the Sala, 21 m. NW. of Stockholm, the metropolitan see of the Swedish Church and the seat of a celebrated university, founded in 1477. It is rich in historical associations and has memories of Linnæus and other famous men; its cathedral is one of the finest buildings in Sweden. Pop. 35,200.

Ur, ancient city of S. Babylonia, Iraq, on the Euphrates; the Biblical Ur of the Chaldees, the original home of Abraham, its site is marked by the modern Mugheir, 110 m. W. of Basrah. Excavations by Sir C. L. Woolley and others have traced the 2½-m. circuit of its walls, and the construction of its harbour—it was formerly at the mouth of the river, the Persian Gulf having since receded—and many temples, tombs and inscriptions have been revealed, including the great ziggurat, built on an artificial hill about 2,400 B.C.



STATUETTE FROM THE ROYAL GRAVES AT UR

Uremia, a condition of the blood, generally consequent on kidney disease and the resultant accumulation in the system of toxins normally disposed of by the kidneys. Its symptoms include headache, gastric pains, difficult respiration, convulsions, and often eventual paralysis and coma. It may be a result, and one of the most serious, of nephritis (Bright's Disease) and treatment is the same.

Ural, river of Russia, which rises in the E. of the Urals and forms part of the boundary between Europe and Asia, falling after a course of about 1,500 m. into the Caspian Sea by a number of mouths.

Uralite, a form of augite (q.v.), the crystals of which are composed of hornblende prisms. It occurs in a green porphyritic rock in the Ural Mts. but since it was first discovered has been found in many other rocks.

Urals, mountain range of Russia, extending from the Arctic Ocean to the Caspian Sea, a distance of over 1,500 m., with a maximum height of 5,433 ft.; it is rich in iron, coal, copper, salt and precious metals and stones.

160 m. SW. of Orenburg. Pop. 36,000.

Urania, the muse of astronomy, the daughter of Zeus and Mnemosyne; she is represented with a globe in her hand, to which she points with a small staff.

Uranium, a metallic chemical element, belonging to the same group as chromium, molybdenum and tungsten. Symbol, U; atomic number, 92; atomic weight, 238.14; density, 18.7. Uranium is obtained, for the most part, from pitchblende, the most celebrated deposit being at Joachimsthal, Czechoslovakia; it is also found in the Belgian Congo and in Canada, near the Great Bear Lake. Carnotite, an ore occurring in the U.S.A. and elsewhere, is also a valuable source. Uranium is a whitish metal melting at about 1850° C.; and is radioactive, radium being formed during its atomic disintegration. Uranium compounds are used for producing a yellowish-green fluorescent colour in glass, and are also employed in photography and dyeing.

Uranus, the 7th major planet in order of distance from the sun, from which its mean distance is 1,782,800,000 m., and around which it requires over 84 years to revolve. Its diameter is four times that of the earth, and it is accompanied by four moons. It was discovered in 1781 by Herschel, and was at first called Georgium Sidus in honour of George III.

Uranus (Heaven), in Greek mythology, the father of the Titans by Ge (the earth); he hated his children, and after their birth thrust them down to Tartarus, but at the instigation of Ge, Kronos, the youngest born, mutilated Uranus and seized the throne of the Universe.

Urban, the name of eight Popes; **Urban I.**, Pope from 223 to 230; **Urban II.**, Pope from 1088 to 1099, a promoter of the first Crusade; **Urban III.**, Pope from 1185 to 1187; **Urban IV.**, Pope from 1261 to 1264; **Urban V.**, Pope from 1362 to 1370; a reformer and ascetic, he was beatified in 1870; **Urban VI.**, Pope from 1378 to 1389; in his reign the schism in the papacy began which lasted about 50 years; **Urban VII.**, Pope in 1590; and **Urban VIII.**, Pope from 1623 to 1644; founded the College of the Propaganda.

Urban District, an area with government less than those of a municipal borough but greater than those of a rural district council. The constitution of an Urban District Council is provided for by the Local Government Act of 1894; among other duties, it is responsible for the maintenance of drainage, highways, etc. Where the population exceeds 20,000 the Urban District Council is responsible for elementary education.

Ure, river of Yorkshire, England, rising in the Pennines, in the N. Riding, and flowing E. and SE. through Wensleydale to form, with the Swale, the Yorkshire Ouse; its length is about 70 m.

Urea, or Carbamide, a white crystalline solid (melting-point 132° C.) discovered by the French chemist H. M. Rouelle in 1773. It is found in the urine of all mammals, having been formed by the decomposition of proteins. An adult human being excretes about 30 grams (rather more than 1 oz.) of urea daily. Urea was prepared artificially by Wöhler in 1828, and is now manufactured on a large scale (from carbon dioxide and ammonia, and in other ways) for use as a nitrogenous fertilizer, having none of the harmful effects upon soil exerted by certain other fertilizers. It is also used in making plastics and in the preparation of several drugs, e.g., veronal.

Urga, or Ulan Bator, capital of the republic of Outer Mongolia, situated 170 m. S. of Kiakhta. It is the holy city of the Mongols and the seat of the "Living Buddha" or Bogdo Khan; it has a trade in hides, furs and wool, and a motor service over the Gobi Desert connects it with Kalgan. Pop. 100,000.

Uri, canton of Switzerland, lying S. of Lake Lucerne, with an area of 415 sq. m.; mountainous, with steep valleys, it is almost entirely pastoral; Atdorf is the capital. Pop. 23,000.

Urial (*Ovis vignei*), a wild sheep with heavy curved horns and standing about 3 ft. high. It is found in the Himalayas and in the Punjab.



URIAL

Uric Acid, an organic acid occurring in urinary calculi and in urine, in which it was discovered by C. W. Scheele in 1776. Its ammonium salt, ammonium urate, is contained in the excrement of birds and reptiles. Uric acid is a white crystalline solid, which on heating decomposes into a variety of products, including urea (g.v.) and ammonia; it is practically insoluble in water and in most other solvents. Uric acid is a member of an important class of compounds known as purine derivatives. Sodium and ammonium urates are deposited in the joints in gouty, rheumatic and arthritic patients, and uric acid salts occur also in the bladder in those suffering from "stone."

Urim and Thummim, among ancient Hebrews, two ornaments kept in a square pouch on the breast of the high priest, who obtained from them oracular responses.

Urine, the fluid secretion of the kidneys of man and the higher mammals, discharged from the bladder. It is waste material, and its chief constituents are urea, uric acid, calcium and magnesium sulphates, etc. Morbid states include aqueous urine, frequent in old age or in nervous ailments, and phosphatic urine, containing an excess of phosphatic salts; albuminuria is a more serious condition, especially if due to lesions of the kidney.

Ursa Major, or the Great Bear, a hemisphere, also known as the Plough, the Dipper, or Charles's Wain. It consists of seven bright stars, two of which are known as "the pointers," since a line joining them will, if produced, pass close to the celestial pole and the star Polaris.

Ursa Minor, the Lesser Bear, an inclination of which the 2nd magnitude star Polaris, or the pole-star, is situated near the celestial pole.

Ursula, St., virgin saint, daughter of a British king, who is said to have been martyred at Cologne, together with the Eleven Thousand Virgins, her companions, by the Huns; they are commemorated on Oct. 21. The origin of the legend, which has numerous variations, is obscure.

Ursulines, an order of nuns founded in 1535 by St. Angela Merici of Brescia in honour of St. Ursula; they are devoted to nursing and educational work.

Uruguay, republic of S. America, formerly called Banda Oriental; lies between Atlantic and the Uruguay R., and is bounded on the S. by the estuary of the Rio de la Plata. Wheat, barley, and maize are the principal crops, but the land is primarily pastoral, and the chief industries are cattle-rearing and sheep-farming, hides, wool, preserved meats, etc., being exported. Montevideo is the capital, other leading towns being Paysandu, Salto and Mercedes. A Spanish possession, Uruguay became subsequently a province of Brazil, but became independent in 1828, a republic being established two years later. Area, 72,163 sq. m. Pop. 2,084,000.

Uses, in law, a term denoting the beneficial interests in lands detached from and opposed to the legal ownership or "seisin." Uses were not recognised at common law; their real origin is unknown, but they were employed by ecclesiastical corporations to evade the Statute of Mortmain of 1279. In 1535 the Statute of Uses was passed to sweep away the "use" and to put an end to the separation of seisin and beneficial interest. Judicial decisions, however, defeated the main object of the statute and restored uses under the now more familiar name of "trusts," and thus brought about the whole modern system of "equitable estates." All modern conveyances are directly or indirectly founded on the doctrine of uses and trusts.

Ushant, island off the W. of steep and rugged, it supports sheep, while potatoes and cereals are grown and there is fishing round the coast. Off here, in the "battle of the 1st of June," 1794, Earl Howe gained a signal victory over the French. Pop. 3,000.

Usk, river of Wales and England, in Brecknockshire and flowing through Monmouthshire, to join the Bristol Channel at Newport, where there are docks. It is 70 m. in length and is celebrated for the beautiful scenery along its banks, on which stand the towns of Brecon, Abergavenny, Caerleon and Usk.

Uskub, or Skopje, town of Yugoslavia, on the Vardar R., 130 m. NW. of Salonika; it has a citadel, a palace and several mosques, and was a scene of operations in the World War. Pop. 64,700.

U.S.S.R. (Union of Socialist Soviet Republics), official name for the country of Europe and Asia known until 1917 as Russia (g.v.).

Usury, originally the payment of interest as consideration for the use of money, now the exacting of illegal or iniquitous interest. Under the Mosaic law usury was forbidden among the Hebrews, but was permitted between a Hebrew and a stranger (Deut. xxiii, 19). Various statutes have been passed regulating rates of interest, and pawnbrokers' charges are still strictly regulated.

Utah, a western state of the U.S.A., situated W. of Colorado and traversed by the Wasatch range, at the foot of which lies the Great Salt Lake. It is watered by the Colorado and Sevier R.; grain, fruit and sugar-beet are grown, also vegetables for canning, while cattle and sheep are reared extensively, and the mineral wealth is great. Salt Lake City is the capital. The state joined the Union in 1896; the majority of the people are Mormons. Area, 84,990 sq. m. Pop. 507,800.

Uterus, or Womb, a hollow, pear-shaped muscular organ, about 3 in. long and 2 in. broad, with very thick walls, situated in the cavity of the pelvis and communicating with the vagina. It is the organ in which the ovum is received periodically from the ovaries, through either of the Fallopian tubes, which join the uterus on each side at its broad upper part; and in it, after impregnation, the development of the fertilized ovum into a foetus takes place; in pregnancy it necessarily enlarges considerably. The uterus is subject to various disorders and displacements, which are studied in the branch of medicine known as gynecology.

Utgard (out-yard), in the Norse mythology, a place or circle of rocks on the extreme borders of the world, the abode of the giants, the same as Jötunheim.

Utica, city of the U.S.A., in New York State, 232 m. NW. of New York City; situated on the State Barge Canal, it has a large industry in knitted goods and other textiles. Pop. 101,749.

Utilitarianism, the theory which the object of life and maintains that actions are right in proportion as they tend to promote happiness, and wrong as they tend to produce the reverse. The chief advocates of this theory were John Stuart Mill and Jeremy Bentham.

Utopia, an imaginary island described by Sir Thomas More in his *Utopia*, 1516, and represented as possessing a perfect political organisation. It has given its name to all schemes which aim at the like impossible perfection, though often applied to such as are not so much impossible in themselves as impracticable for want of the virtue and courage to realize them. The name is derived from Greek words meaning "nowhere."

Utrecht, city of the Netherlands, the capital of the province of Utrecht, on the Crooked Rhine, 23 m. SE. of Amsterdam. Textiles, machinery, chemicals and glass are manufactured. Here was signed in 1713 the Treaty of Utrecht, which brought to an end the War of the Spanish Succession. The city has a Gothic Cathedral and a University. Pop. 162,000.

Uttoxeter, market town of Staffordshire, England, 14 m. NE. of Stafford. Brewing and the manufacture of agricultural instruments are carried on. Pop. 5,900.



Vaal, river of South Africa, which rises in the Drakensberg Mts., in the SE. of the Transvaal, which it separates from the Orange Free State, and after a course of about 760 m. in a SW. direction, joins the Orange R.

Vacation, the fixed periods of cessation from work in law courts and universities. In the High Court there are four vacations: Christmas, Easter, Whitsun and the Long Vacation—the last usually extending through August, September and the first two weeks of October, during which period a vacation judge sits to hear urgent cases.

Vaccine (and Vaccination), a preparation of dead bacteria of the variety responsible for a given disease, injected into the blood-stream of a patient suffering from that disease, or liable thereto, in order to increase his resistance to the complaint. Vaccine therapy is largely successful with such diseases as cholera, plague, typhoid, colitis and tuberculosis, but the immunity is not permanent, its length varying from a few weeks to several years. Vaccination with calf-lymph as a preventive of smallpox is compulsory in Great Britain, every child being required to be so vaccinated within 6 months of birth, either gratis by a public vaccinator or privately at the expense of the parents or guardians: but exemption may be obtained if the latter make a statutory declaration before a magistrate or commissioner for oaths that they conscientiously believe that vaccination would be prejudicial to the health of the child.

Vachell, Horace Annesley, English novelist and playwright, born at Brydenham. Among his better-known novels are *Romance of Judge Ketchum*, *The Hill*, *The Race of Clay*, *Quinnage*. His plays include:—*Quinnage*, *Count A.*, *Plus Four*, *A Woman in White*, *This was England*, *Moonville*, *My Pageantstage*. (1861-).

Uvula, a prolongation of the soft palate, at the back of the mouth, consisting of a small mass of tissue covered with mucous membrane.

Uxbridge, town of Middlesex, England, 16 m. W. of London, on the R. Colne and the Grand Union Canal. Brewing, iron-founding and market-gardening are carried on. The abortive conference between Parliament and the Royalists in 1645 was held in the Old Treaty House. Pop. 31,900.

Uzbek Republic, republic of the U.S.S.R., bordered N. by the Kazak republic, S. by Afghanistan, E. by the Kirghis republic and Sin-Kiang, and W. by the Turkoman republic. Irrigation is well developed, and there are numerous collective farms producing cotton, fruit, wool and silk. Agricultural machinery, cement, paper, leather, and textiles are also produced. Large towns include Tashkent (the capital), Bokhara, Khiva, Andijan and Samarkand. The republic was constituted in 1924 out of parts of Turkestan, Bokhara and Khorezm. Area 66,380 sq. m. Pop. 5,044,300.

Uzbeks, race of Central Asia; of Turkic descent and Mohammedan faith, they are the dominant people in Turkestan and the neighbouring regions, especially in the area forming the Uzbek republic.

Vacuum, a space entirely devoid of matter; in practice, a perfect vacuum is impossible of attainment, and the term is used in a relative sense to denote a space in which the amount of matter is very small. See Air-pumps.

Vacuum Cleaner, an apparatus for removing dirt and dust from floor surfaces, carpets, curtains, etc., a nozzle being passed over the surface or material, and the dirt being removed by suction into a vacuum, and thence passed to a bag. The vacuum is produced either by a small electric motor or by bellows operated by the running wheels which pass the apparatus over the surface to be cleaned.

Vacuum Tube, a glass tube containing gas at a low pressure. Between two electrodes in the tube a discharge of electricity is passed at high potential: the gas then frequently glows in a characteristic way, the reddish-orange glow of neon being familiar from its use in illuminated advertisements. At exceedingly low pressures, cathode rays (streams of negative electrons) are formed, and when these strike the anode (positive electrode) they excite X-rays (q.v.).

Vagrancy was formerly a serious crime in England, an Act of 1535 making it punishable by mutilation and death. To-day it is more leniently and effectively dealt with under the Vagrancy Act of 1824, which repealed the earlier laws and prescribed terms of imprisonment for offenders as "idle and disorderly persons," "incorrigible rogues," etc.; by the establishment of workhouses and casual wards in 1834 the social evils of vagrancy were much reduced.

Valais, canton of Switzerland, situated between the canton of Geneva on the N. and Italy on the S., in a wide valley at

the Rhône. Much of it is covered by glaciers, and there are also considerable forests. Cattle-rearing, agriculture and the production of wine are the chief industries. The capital is Sten. Area, 2,021 sq. m. Pop. 136,400.

Valdai Hills, mountain range of Russia (U.S.S.R.), situated between the Leningrad and Western Areas, with a maximum height of 1,150 ft.

Valence, town in France, on the Rhône, in dept. Drôme, of which it is the capital: it has a Romanesque cathedral, and manufactures confectionery, silks, and furniture. Pop. 35,000.

Valencia, city of Spain, the capital of the fertile province of Valencia, situated near the Mediterranean, 3 m. from the mouth of the Guadalquivir, and 300 m. ESE. of Madrid. An ancient and historic city, formerly the capital of an independent kingdom founded by the Moors, it contains a large Gothic cathedral, with a detached campanile, a picture gallery, and a university with a large library. Silk, cloth, leather, cigars, etc., are manufactured, and much fruit is exported, grown in the fertile huerta surrounding the town. During the Civil War, Valencia was the Government headquarters in 1937. Pop. 352,800.

Valencia, province of Spain, in the E. of the country, bordering the Mediterranean, with an area of 4,150 sq. m. Irrigation is highly developed, and the celebrated huertas, or gardens—of Moorish origin—produce fruit, especially oranges, grapes and dates, in abundance: rice, wheat, maize and esparto are also grown, and textiles, pottery, leather, iron goods and spirits are made. The capital is the city of Valencia. The province was formerly a part of the kingdom of Valencia, which was founded by the Moors and in 1238 was incorporated in Aragon. Pop. 1,092,400.

Valenciennes, town of France, in the dept. of Nord, standing on the Scheldt, 32m. SE. of Lille; it was once famous for its lace. One of the last battles of the World War was fought here in November, 1918, Canadian troops gaining a notable victory. Pop. 35,000.

Valency, a term used in chemistry to describe the combining capacity of an atom, and also applied to a single unit of this capacity. Thus we say that the valency of potassium is 1, and that it has one valency; or that the valency of oxygen is 2, and that it has two valencies. Hydrogen has the smallest degree of combining power, sharing this characteristic with certain other elements such as chlorine and sodium; hence it is regarded as having one unit of valency, and it is customary to define the valency of other elements as the number of atoms of hydrogen with which one atom of the element in question will combine. Recent research upon the structure of the atom has modified and extended the theory of valency, and the subject is now one of great complexity.

Valentia, island of Eire, in co. Kerry, 8 m. SW. of Cahirciveen. It is 7 m. long and 3 m. broad, and is the European terminus of the Atlantic submarine cable, also a meteorological station. Pop. 1,500.

Valentine's Day, the 14th of February, on which young people are wont to send love-letters to one another. St. Valentine was a Roman priest and martyr (d. 270), but his connection with "valentines" seems to be fortuitous.

Valentinian I., Roman emperor of the West from 364 to 375, born in Pannonia, of humble birth; distinguished himself by his capacity and valour, and was elected emperor by the troops at Nicæa. His reign was spent in repelling the

inroads of the barbarians; in 366 he crushed the Alemanni and in the same year drove the Saxon pirates out of Britain. He was in the act of upbraiding barbarians when he burst a blood-vessel and died. (A.D. 371-375).

Valerian (*Valeriana*), a genus of hercaceous perennial plants, typical of the natural order Valerianaceae. The commonest British species is the common valerian (*Valeriana officinalis*), also called St. George's herb, and notable for its small pink or white flowers, arranged in terminal clusters. The dried root is used medicinally: it contains a volatile oil with a powerful, unpleasant odour, and is used in hysteria. The plant is highly attractive to cats.



COMMON VALERIAN

Valetta, city, seaport and capital of Malta, situated on a promontory on the NE. coast of the island, between two bays; the streets are steep, and the harbour is strongly fortified; it contains several fine buildings, a cathedral, the palace of the Grand-Masters of the Knights of St. John, and the hospital of St. John; there are also a university and a large public library. It is an important British naval and military station. Pop. 22,800.

Valhalla, in Scandinavian mythology, the hall of Odin, the heaven of the brave, especially such as showed their valour by dying in battle, the "base and slavish" being sent to the realm of Hela, the Death-Goddess.

Valkyrs, in Scandinavian mythology, the handmaidens of Odin, nine in number, who selected such as were worthy to be slain in battle, and conducted them to Valhalla.

Valladolid, city of Spain, capital of the province of Valladolid, situated 150 m. N. of Madrid. It has a university and a 16th-Century granite cathedral, as well as other old churches; Cervantes lived here, his home being preserved. In the 15th and 16th Centuries the town was the capital of Spain. Pop. 97,000.

Valley, a depression in the earth's surface generally caused by the erosive action of a river, or carved out by glacial action. A rift valley is a similar depression caused by the sinking of a stretch of land between two geological faults; rift valleys are a prominent feature of African topography, one such great valley stretching across the continent from Lake Tanganyika by Lake Itudolf and across Ethiopia to the Red Sea, whence it is continued in Asia along the line of the Jordan. The central Scottish lowlands are also a rift valley formation.

Vallombrosa, pleasure resort of Italy, in the Apennines, 21 m. E. of Florence. Here there was a celebrated Benedictine monastery, founded in 1038, which had numerous offshoots; it was suppressed in 1866 and is now a forestry school.

Valmy, a village of France, 20 m. NE. of Chalons, where the Prussians, under the Duke of Brunswick, were defeated by the troops of the French Republic under Kellermann, Sept. 20, 1793.

Valois, an ancient county (after 1406 a duchy) of France, in Picardy, which now forms part of the depts. of Oise and Aisne. A succession of the counts and dukes of Valois occupied the throne of France, beginning with the accession of Philippe VI. in 1328 and ending with the death of Henri III. in 1589.

Valparaíso (Vale of Paradise), city of Chile, of which it is the chief seaport; situated 118 m. WNW. of Santiago, at the head of a beautiful semi-circular bay, it is largely built on the steep hills rising from the shore and is celebrated for its scenery. A modern commercial city, with excellent communications, it has a large shipping and export trade. It has suffered repeatedly from severe earthquakes, and was bombarded by a Spanish fleet in 1866 and sacked in the civil war of 1891. Pop. 193,200.

Valves (radio). Wireless valves depend for their action on thermionic emission from a hot filament. A number of electrodes are contained in a glass, metal, or silica vessel, which may be evacuated, or may contain a gas such as helium at low pressure. An electrically heated filament forms one electrode, and round this is a plate or anode, which is maintained at a potential above that of the filament. Between the plate and filament are one or more grids—spirals or lattices of wire. In a triode, one grid only is present. If this is at a potential higher than that of the filament, the electrons which leave the filament are attracted towards the grid, and most of these electrons pass through the grid to the anode. If the potential of the grid is considerably lower than that of the filament, the electrons which leave the latter are forced back to it. Hence the current between the filament and anode increases when the potential of the grid is raised, and decreases to a small value or zero when the grid potential falls.

Vampire, in folk-lore, the ghost of a dead person, fabled to issue from the grave at night and suck the blood of the living as they sleep. The belief is of Slavonic origin, and is still common among the Slavs.

Vampire Bat, the common name of a number of species of bats, including the False Vampires (*Megaderma*) of Asia, Africa and Australia, and a number of South African species of the genus (*Vampyrus*). There are, however, only three species of bloodsucking bat, all confined to S. America, the two chief being *Desmodus* *ecaudatus*, confined to Brazil, and *Desmodus* *rufus*, more widely distributed. They have two of the upper incisors very large and shear-like, meeting in the middle of the jaw and adapted for piercing the skin of their prey. They lurk by day in hollows of trees or holes, and come out at night to attack men and other warm-blooded animals.



BLOOD-SUCKING BAT

Van, town of Asiatic Turkey, capital of a vilayet, situated on the S.E. shore of Lake Van, 145 m. S.E. of Erzerum. In the neighbourhood are celebrated cuneiform inscriptions. Pop. 22,000.

Vanadium, a metallic chemical element belonging to the same group as niobium and tantalum. Symbol, V; atomic number 23; atomic weight, 50.95. Vanadium was discovered in 1830 by Sefström in a Swedish iron ore, and named in honour of the Scandinavian goddess Vanadis. Vanadium is fairly abundant, and is extracted (mainly in Peru) from the ore patronite, a mixture of vanadium sulphides. It is the hardest known metal, and is added to steel to increase the latter's tensile strength and toughness. Vanadium pentoxide is used as a catalyst in certain industrial operations, e.g., the manufacture of sulphuric acid by the contact process.

Vanbrugh, John, English architect, born at Exeter, his real name being Barnes. His first stage appearance was in Shakespeare at Margate; she joined the company of J. E. Beerbehn Tree, Sir George Alexander, and Arthur Bouchier; her extensive list of successes includes leading parts in *The Diary*, *Trelawney of the Wells*, *The Gay Lord Quex*, *The Admirable Crichton*, *Mr. Pin Passes By*, *Dinner at Eight*, *Victory Sarah* (1835), *The Old Maid* (1856). She married, in 1901, Dion Boudicant, who d. 1922. (1872-). Her sister, Violet Vanbrugh, also a talented and popular actress, was married to the late Arthur Bouchier; she took part in many plays with her sister, besides creating numerous independent roles, including prominent Shakespearean parts. (1867-).

Vanbrugh, Sir John, English dramatist and architect, born in London of Dutch extraction. In 1685 he entered the army, and in 1690 was arrested in Calais as a spy and imprisoned for two years at Vincennes and in the Bastille. His first comedy, *The Relapse*, 1696, was a great success; later, among others, appeared *The Provok'd Wife*, 1697 (written in the Bastille) and *The Confederacy*, 1705. As an architect, he designed several famous houses and buildings, chiefly in a heavy and pretentious style, including Blenheim Palace and Castle Howard. In 1704 he was appointed Clarenceux king-of-arms, and was knighted in 1714. (1684-1726).

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Van Buren, Martin, eighth President of the United States, born at Kinderhook, N.Y., the son of a tavern-keeper. He was admitted to the bar in 1803, and in 1812 entered the state senate as a republican; Attorney-General, 1815, he entered the U.S. Senate in 1821; in 1828 he became Governor of New York and the same year Secretary of State; in 1835 he was elected President, setting himself to restore the finances and opposing emancipation; he was not re-elected in 1840. (1782-1862).

Vancouver, city and seaport of British Columbia, the chief port of W. Canada, situated on Burrard Inlet, 1,480 m. W. of Winnipeg. It has a splendid harbour, with grain elevators and modern facilities and a huge export trade, and is also the terminus of the Canadian Pacific and Canadian National Railways, and a centre for numerous steamship lines; there are foundries, saw-mills, shipbuilding-yards and breweries, and numerous manufactures; at Point Grey is the University of British Columbia. Pop. 246,800.

Vancouver Island, largest island coast of N. America, belonging to British Columbia, from which it is separated by the Strait of Georgia and Queen Charlotte Sound. It is 285 m. long and from 40 m. to 80 m. wide, is covered with forests and only partially cultivated. It is rich in minerals, including coal, iron and copper, and has extensive fisheries. Victoria, the capital of British Columbia, is on the island, and other towns are Wellington, Port Alberni and Nanaimo. Area, 20,000 sq. m. Pop. 122,000.

Vandals, a former race of Teutonic who invaded and settled in various parts of Europe in the early centuries A.D. In 455, under Genseric, they seized and plundered Rome, mutilating and destroying the works of art, so that their name has become a byword for wanton destruction. In 534 they were crushed by Belisarius.

Vanderbilt, Cornelius, American financier and millionaire, born at Stapleton, Staten I. Beginning life as a ferryman, he acquired his fortune by enterprise in steamship navigation and speculating in railway extensions. He endowed Vanderbilt University, Nashville, Tennessee. (1794-1877).

Van Diemen's Land, former name of the island known since 1853 as Tasmania (q.v.).

Vandyck, *van Antwerp*: studied under Rubens, whose favourite pupil he was; visited Italy, and devoted himself to the study of the great masters; on his return to Antwerp painted "Christ Crucified Between Two Thieves"; came to England in 1632, and was patronized by Charles I., being knighted, and made court painter: painted the royal family, the King, Queen, and their children, and during the next eight years executed portraits of most of the court personages. His portraits are very numerous, the most celebrated being in England. (1599-1641).

Vane, *Sir Henry*, English statesman, born at Dobden, Essex; he entered the diplomatic service, but in 1636, being a strong Puritan, emigrated for a time to New England; on his return, he entered Parliament, took an active part against the Royalists and withstood Cromwell; his opposition to the Protectorate led to his imprisonment for a time; at the Restoration he was beheaded on Tower Hill. (1613-1682).

Van Gogh, *Vincent*, Dutch painter of school, born in N. Brabant; for a time, in 1876, he was a schoolmaster in England, but returned to Holland to study for the Church; in 1883 he began to study painting, eventually removing to Paris; for a while he was a patient in a lunatic asylum, and on his release shot himself; his works are characterized by convulsive movement and a mastery of vivid colour. (1853-1890).

Vanilla, a genus of climbing orchids

leaves; they attach themselves to trees by means of aerial rootlets. The dried seed-pods of *Vanilla planifolia* constitute the vanilla of commerce, used as a flavouring in confectionery, etc.; it is a native of Mexico, but is also cultivated in Java, Tahiti and elsewhere.



VANILLA PLANIFOLIA

Vannes, town and seaport in Brittany, France, capital of dept. Morbihan; it has a cathedral and a museum of Breton antiquities. Pop. 22,000.

Van Zeeland, *Paul*, Belgian statesman, born at Soignies; entered the Belgian National Bank in 1922, becoming a director in 1926. In 1928 he became a professor at Louvain University. In 1934 he entered the Belgian cabinet, and the following year became premier, holding that office until 1937, in which year he undertook at the request of Britain and France an international economic mission to enquire into the possibility of overcoming obstacles to international trade, issuing a report at the end of the year. (1893-).

Vaporization. See *Evaporation*.

Vapour, the term applied to a gas only at which it condenses into a liquid. Though there is no definite line of distinction between a vapour and a gas, it is generally understood that a vapour is in such a condition that it does not obey the laws (Boyle's and Charles') which describe the behaviour of true gases under changes of temperature and pressure.

Var, dept. of France, in the S.E. of the Alps, country, lying S. of the dept. of Basses Alpes. The N. and S. are mountains, and the centre is watered by the R. Argen; silk is cultivated and spun, tobacco and flowers are grown, and silk goods, soap, paper and

pottery are produced. Dragignan is the capital, and other towns include Toulon, Hyères, Fréjus and Brignoles. Area, 2,333 sq. m. Pop. 398,700.

Vardar, river of the Balkans, rising in SE. into the Gulf of Salonika, at Thessaloniki, Greece, after a course of about 200 m. Battles were fought on its banks in 1915, and 1918.

Variable Stars, stars the light of which fluctuates, sometimes with exact regularity, sometimes with approximate regularity, and sometimes with apparently complete irregularity. The best known are the "Cepheid variables," the cycle of light-variations in which ranges from about one hour to one year; each individual, however, follows its particular cycle with precision. The reasons for the variations are unknown, but it was discovered by Miss Leavitt (U.S.A.) in 1912 that the time of the cycle of a Cepheid variable is directly proportional to its brilliance—the greater the brilliance the longer the time taken for the cycle of light-variation to complete itself. The importance of this discovery is that all Cepheids of equal length of cycle must be of equal real brilliance; hence if two such stars are of apparently unequal brilliance, this must be because they are at different distances from the earth. In this way, it has been possible to measure interstellar distances in a new, reliable, and very accurate way.

Variation, in biology, a departure from the normal characteristics of a species. According to Darwin, in whose theory of evolution variations play an important part, minute variations take place in all directions round a given mean, and those creatures whose variations render them less fit in the struggle for existence, succumb first. Gradual variations such as these are called continuous variations. When a new characteristic appears, the term "discontinuous variation" is used. Many causes result in variations, such as change of environment, habit or food. Thus a newly acquired climbing habit will develop the limbs beyond their normal capacity, and the increased facility may be passed on to the offspring.

Varicose Veins, a morbid condition of the veins in which they become dilated and form hard, knotted swellings. The disease occurs commonly in the lower limbs, and is caused by local obstruction of the circulation of the blood, as by tight garters, the pressure of the womb in pregnancy, etc. The treatment consists of the application of suitable bandages, or an elastic stocking, while the limb must be rested in an elevated position. Varicose veins can now be permanently cured by injection. Varicose veins in the rectum are known as hæmorrhoids, or piles.

Varna, city and fortified seaport of Bulgaria, on a bay in the Black Sea; it has a Greek Orthodox cathedral and carries on a large trade. Here the Turks defeated the Hungarians, led by Hunyadi János, in 1444. Pop. 70,000.

Varnish, a resinous solution with or without colouring matter, applied to surfaces for decorative or preservative purposes. The resins and gums generally used include gum arabic, copal, dragon's blood, kauri, amber, lac, mastic, etc. Oil, turpentine, spirit and cellulose are among the chief solvents or "thinners" employed in varnishes.

Varus, *Publius Quinctilius*, Roman consul, 13 B.C., appointed by Augustus governor of Germany; being attacked by Arminius and overpowered with loss of three Roman legions under his command, he committed suicide; when the news of the disaster reached Rome Augustus was overwhelmed with grief, and in a paroxysm of despair called upon Varus to restore his legions; A.D. 9.

Vascular System, the circulatory system in animals and the higher plants. In the former, the term is applied to the whole system of arteries, veins, capillaries, lymphatics and lacteals connected with the circulation of the blood, the conveyance of nutrient materials, the removal of waste products, etc.

Vatican, the palace of the Pope in Rome, situated on the Vatican Hill, reputed scene of the martyrdom of St. Peter. Over the latter's tomb Constantine founded a basilica in 324, now the famous church of St. Peter, and this was the nucleus of the present vast assemblage of buildings, designed and decorated, in the main, by some of the greatest artists of the Renaissance. The huge Vatican library is full of bibliographical treasures, while the museums and art galleries house some of the world's finest collections.

Vatican City, the capital and all that remains of the Papal States, which at one time covered 16,000 sq. m. in Italy. It is an area of about 1 sq. m. in Rome around St. Peter's, and over it the Pope has full sovereignty, including power to issue coins and stamps and to send diplomatic representatives abroad. The Papal States were seized in 1870 by Italy, and the temporal sovereignty of the Holy See was not again recognized until the signing of the Lateran Treaty with the Italian Government in 1929. Pop. 1,025.

Vatican Council, an oecumenical council of the Roman Catholic Church attended by eminent ecclesiastics under the auspices of Pius IX., which assembled on Dec. 8, 1869, and by a large majority decreed the doctrine of Papal Infallibility.

Vauban, Sébastien le Prestre de, French soldier and military engineer; as Frondeur, he fought under Condé, but was enlisted in the royal service by Cardinal Mazarin. In 1655, he became engineer to King Louis XIV., and in this capacity designed and rebuilt fortresses and defensive works throughout France, besides directing numerous sieges; many of his fortresses stand to-day. He was made a marshal in 1703. (1633-1707).

Vaucluse, dept. of France, in the S.E., between the depts. of Drôme, on the N., and Bouches-du-Rhône, on the S. In parts mountainous, with spurs of the French Alps, it is well watered by the Durance and other streams and irrigation is actively practised. Wheat, potatoes, vegetables, fruit, sugar-beet and other crops are grown, as well as olives and the grape-vine. Silk-spinning and weaving and the manufacture of paper, pottery and tobacco are among the activities. Among the towns are Avignon (the capital), Apt, Carpentras and Orange. Area, 1,381 sq. m. Pop. 245,500.

Vaud, canton of Switzerland, in the SW., covering an area of 1,239 sq. m. between Lakes Neuchâtel and Geneva; it is hilly and in the Diablerets rises to 10,050 ft.; tobacco and the vine are grown, its white wine being celebrated; there are many health-resorts, with a large tourist traffic; the capital is Lausanne, while other centres are Vevey, Montreux and Château d'Oex. Pop. 331,900.

Vaudeville, a light entertainment sketches interspersed with songs, dances, and perhaps acrobatic feats; also known as a variety show. The name was originally applied to a topical popular song.

Vaudois. See Waldenses.

Vaughan, Henry, Welsh poet, self-styled the "Sibyl" (Latin, *Silvius*, the Welsh); he fought for Charles I. in 1645 and next year published his first poems, which

were followed by *Silva Scintillans*, 1656, *The Mount of Olives*, 1662, and other volumes of poetry, chiefly in a mystical vein reminiscent of George Herbert. (1632-1695).

Vaughan, Herbert, Cardinal, English abbot, Roman Catholic prelate, born at Gloucester; educated at Stonyhurst, Downside and abroad, he was ordained in 1854, and became vice-president of the college at Ware; he became Bishop of Salford, 1872, Archbishop of Westminster, 1892, and cardinal, 1893; he helped in the foundation of Westminster Cathedral. (1832-1903).

Vaughan Williams, Ralph, British musical composer. Born at Down Ampney, Gloucestershire, he studied privately at first and then at the Royal College of Music. Three symphonies, the *London*, *Sea*, and *Pastoral*, an opera, *Hugh the Drover*, several songs, including the cycle *On Wenlock Edge*, and a number of hymn tunes are among his compositions. O.M., 1935. (1872-).

Vault, an arched roof or roof-like covering of stone, brick, etc. The barrel-vault, of which the cross-section is an arc of a circle, is the earliest form, while the groined vault is one formed by two barrel-vaults intersecting at right angles; a vault with a semi-circular arch is known as a cylindrical vault. Romanesque vaulting has ribs at the groins, and was superseded by the pointed Gothic ribbed variety. In the vaulting of a Gothic roof the intermediate vault is a mere shell, all the strength being concentrated in the ribs, by which the weight is transferred to the walls and buttresses.



VAULT

Vauxhall Gardens, a popular seaside resort opened in 1661 and highly fashionable in the following century for concerts and gallantry; it was closed in 1859, the site being the modern district of Vauxhall.

Vedanta, in Hindu religion, "the end of the Upanishads, which conclude the Veda and consist of speculative commentaries upon the Vedic teaching. A Vedanta philosophy was developed which, in general, postulates existence as residing in God alone, upon Whom the individual soul is dependent for all its activities, being devoid of volition of its own.

Vedas, the sacred books of the Hindus, the oldest of which originated not later than 1000 B.C. and probably considerably earlier. They consist of hymns, liturgies and incantations to the gods, and comprise the *Rig Veda*, the *Atharva Veda*, the *Sama Veda* and the *Yajur Veda*, to each of which are attached commentaries in elucidation.

Veddas, an aboriginal race of Ceylon, between Kandy and the E. coast. Their chief characteristics are their low stature (averaging 60 in.), long black hair, dark skins and flat noses; they are monogamous, but otherwise live very primitively. Their language is a corrupt Sinhalese.

Vega, the bright star in the constellation Lyra located at a distance of 30.4 light-years from the earth. It is the approximate point towards which the whole solar system appears to be moving.

Vegetable, in common speech, a plant used for human food or for feeding cattle or other animals; the cabbages, potatoes, turnips, onions, carrots, beans, peas, etc. The term vegetable-kingdom, coined by Linnaeus, embraces all plants of whatever affinity, and in his *Systema Naturæ* he classified them into the three tribes, Monocotyledonous, Dicotyledonous and

Acotyledonous, a classification depending on whether the plant has one, two, or no seed-leaves. In *Linnæus'* description of vegetable life, a plant or vegetable possesses the powers of nutrition, and of reproduction, but though it has life it has no feeling.

Vegetable Marrow (*Cucurbita Pepo oifera*)

a kind of gourd, widely cultivated as a table vegetable. It is produced by an annual trailing plant, the seeds of which should be sown in April in pots, with mild heat; the seedlings should be planted out towards the end of May, being set a yard apart in a raised bed or refuse heap containing a good layer of half-decayed manure; the young plants should be protected against frost.

Vegetarianism, the practice of abstention from meat has been obligatory, chiefly on account of poverty, as in the case of the lower-class Hindus at all times, and also of the peasants of medieval Europe, while many races and sects have eschewed meat on religious and ethical grounds based on the objection to the bloodshed and suffering which meat-eating necessarily involves. The modern vegetarian movement dates from the middle of the last century; its followers base their objections to meat chiefly upon reasons of health, economy, eugenics (racial improvement), ethics, and humanitarianism.

Vehmgerichte, or *Fehmgericht*, a trial by parts of Germany during the Middle Ages, in connection with a secret organization under sanction of the emperor for the enforcement of justice and punishment of crime. These courts were held in secret places at night, and inspired great terror in the 13th and 14th centuries.

Veins, in anatomy, the blood-vessels that carry the blood from the tissues to the heart. They are devoid of elasticity and have no pulsation, the motion of the blood being secured by pressure of the moving muscles between which they are embedded. The venous blood returned from above the cardiac region is collected in one great vein, the *vena cava superior*, while all the blood from below enters by the *vena cava inferior*. The portal vein receives the blood from the intestines, stomach, etc.; the pulmonary vein and its branches return the oxygenated blood from the lungs to the left ventricle of the heart.

Velazquez (*Velazquez*), *Diego de Silva*, greatest of Spanish painters, born at Seville; studied under Herrera, who taught him to teach himself, so that he was a self-taught artist, and simply painted what he saw and as he saw it. He became court painter to Philip IV. of Spain, and executed numerous splendid portraits of the king and of other royal personages and notabilities. There are examples of his work in the National Gallery, London, and elsewhere, but the best collection is in Madrid. He painted historical, sacred, genre, and landscape as well as portraits. (1599-1660).

Veilum, a fine parchment made from calf-skin, rendered smooth and white. Before the general introduction of paper, it was a common writing material, but is now only rarely used, for addresses, charters, etc. It is still employed occasionally for binding books.

Velocity, in mechanics the speed of a particle in a certain direction; as it involves the ideas of both distance and time, it is measured in feet per second, inches per second, or by some similar standard; thus, absolute velocity, that at which light travels in a vacuum, is 186,000 m. per second.

Velvet, a pile fabric in which a & embedded in the silk basic texture. In the weaving process the warp is passed over wires, so as to leave rows of loops projecting from the backing; the loops are afterwards cut and form the pile. Velvet is a similar fabric in which, however, the base or backing is of cotton instead of silk.

Vendace, a fish allied to the salmon, of which two species, *Coregonus vendaceus* and *Coregonus gracilior*, are found in British waters. The fish—also known as whitefish—is esteemed by epicures. It is greenish above and silvery white below, about 6 in. in length.



VENDACE

Vendée, maritime dept. of France, on the Bay of Biscay, situated S. of Maine-et-Loire and Loire Inférieure; marshy on the W., wooded on the N., and with an open fertile tract in the middle and S. The chief towns are the capital, Le Roche-sur-Yon, Les Sables d'Olonne, Fontenay-le-Comte and Luçon. In this region, in 1793, a stubborn resistance to the French Revolution broke out and was only suppressed with difficulty. Area, 2,690 sq. m. Pop. 389,300.

Vendetta, a family feud in Corsica, whereby it was the duty of the relative of a murdered man to avenge his death by taking the life of his murderer or a relative of the latter.

Veneer, a thin layer of hard wood, of choice quality, such as mahogany or rosewood, glued on to the surface of an article made of an inferior wood, such as pine. The process of veneering is mainly used in furniture-making.

Venereal Diseases, diseases from infection with micro-organisms generally during sexual intercourse; they are syphilis, gonorrhoea, and soft chancre. Syphilis is one of the chief agents in filling the hospitals for the insane, the proportion due to this cause alone being as high as from 10 to 20 per cent. of all cases. It may also develop into certain organic diseases of the central nervous system, such as general paralysis of the insane and tabes dorsalis, or locomotor ataxia. Local authorities are empowered to provide medical practitioners with facilities for the full (voluntary) examination and treatment of patients. Harm may ensue from persons innocently or unknowingly spreading venereal diseases, hence treatment should be sought in the initial stages, or it may lead to incurable results.

Venezuela, republic of South America, on the Caribbean coast, between Brazil and British Guiana on the E., and S. and Colombia on the W. The surface is largely irregular and mountainous, save in the basin of the Orinoco, which traverses it; there are extensive llanos, or plains, and dense forests; on the llanos large herds of horses and cattle are reared. The agricultural products are cereals, cocoa, sugar, coffee, cotton, tobacco, etc.; the forests yield mahogany, ebony and rubber; while the mines yield iron, copper, etc., and there are extensive goldfields. The capital is Caracas, while Maracibo, Valencia, Trujillo, Barquisimeto and San Cristobal are other large towns. The republic was formed in 1830, by secession from Colombia. Area, 363,600 sq. m. Pop. 3,337,800.

Venice, city and seaport of Italy, situated at the head of the Adriatic, in a shallow lagoon dotted with some thirty islets. The city is built on piles, and many of the streets are canals traversed by

and motor launches and crossed by ... It dates from the year 432, when the islands were a place of refuge from the attacks of the Huns, and it took shape as an independent State with magistrates of its own about 697; it derived great wealth from its trade with the East, and during the Medieval and Renaissance periods ranked among the most powerful states in Europe. The chief magistrate, known as the doge, governed with the aid of a Council of Ten. With the discovery of the Cape route to India, 1486, a decline in Venetian prosperity set in which culminated in the republic's becoming an Austrian fief, 1797.

In 1866 the Aust Prussia, and Venice United Italy; in 19 at Marghera, on the mainland. Among the finest buildings of Venice, which is a vast museum of beautiful architecture and other works of art, are the doge's palace, St. Mark's Cathedral, with its famous square and library, the Rialto bridge, the scuole, or guild-halls, and scores of magnificent palaces, churches, campanili and monuments, rich in the productions of some of the world's greatest artists. To-day Venice is an important naval and mercantile port, with shipbuilding yards; separating the city from the open sea is the sand-bank known as the Lido, a fashionable bathing resort. Pop. 284,000.

Venison, the flesh of such wild animals, or game-birds as are taken in the chase (Latin *venatio*, hunting) and used for human food; in modern usage restricted to deer-flesh.

Venizelos, Eleutherios, Greek politician, born in Crete; a lawyer, he entered the Cretan Assembly, and took part in the 1897 rebellion that secured the island's independence. In 1910 he became Liberal Prime Minister of Greece, and helped to form the Balkan League against Turkey. In 1917 he forced King Constantine to abdicate, and brought Greece into the World War on the side of the Allies. Forced to leave Greece in 1920, he was recalled on the expulsion of George II. In 1922 and was elected prime minister, but soon resigned. From 1928 to 1932 he was again in power; in Crete he inspired a revolt against its acting regent, but the revolt was quelled, and he had to flee. (1864-1936).

Ventilation, the introduction of fresh air to and the expulsion of impure air from offices, factories, rooms, ships, etc. Experts agree that a minimum of 2,900 cubic ft. of fresh air an hour should be allowed for every cubic ft. of space, but otherwise the quantum of capacity per person differs with the type of building. Natural ventilation is secured by doors, windows and chimneys, but these may be supplemented by gratings in walls, inlet tubes and cowls for the escape of impure air. Ventilating fans are also suitable in some cases. Artificial ventilation is provided by tunnels and tubes which conduct currents of fresh air propelled by turbine fans, foul air being drawn out along similar ducts by suction. Ventilation of this kind is employed in many city offices and buildings which have no windows. The ventilation of tube railways, steamships and collieries requires special apparatus and technique; vertical or screw blowers are used for removing large volumes of air, and ventilating shafts are also sunk and in the case of tube railways the air is sometimes mixed with ozone.

Ventnor, a town and watering-place of the S. coast, 13 m. S. of Wight, England. Its mild climate is recommended for consumptives, and there are general hospitals. Pop. 4,106.

Ventriloquism, the art of talking in such a manner that the voice appears to come from anywhere

but the mouth of the speaker. It is a form of illusion, aided by the immobility of the lips, which are kept almost closed, and by the gestures and facial expressions of the ventriloquist, by which the attention of his hearers is diverted towards a doll, dummy or other supposed "speaker."

Venus, the Roman goddess of love and beauty (originally a goddess of growth and gardens), and at length identified with the Greek Aphrodite. She was regarded as the tutelary goddess of Rome, where she had two temples.

Venus, an interior planet of the solar system, its orbit being outside that of Mercury and within that of the earth. It is slightly smaller than the earth, having a diameter of 7,700 m., and has a mean distance of 67,300,000 m. from the sun, round which it revolves in 225 days, while its own time of rotation is uncertain; it is the brightest of the heavenly bodies, after the sun and moon, and appears as a morning or evening star, according as it rises before the sun or sets after it. Like the earth, Venus is surrounded by an atmosphere, and heavy clouds also envelop it, so that in the eyes of astronomers it is of all the remaining planets the most likely to support life.

Venus' Fly-Trap, a perennial plant (*Dionaea muscipula*), of the sundew (*Droseraceae*) family, native to N. and S. Carolina. Its leaves, arranged like a rosette, have spike-like processes along their edges; each leaf has also three sensitive bristles which, when touched by an insect, cause the lobes of the leaf to spring together, the insect being imprisoned by the interlocking spikes; it is then digested by an acid secretion.

Venus' Looking-Glass (*Specularia perfoliata*), an annual plant of the Campanula order, found in Europe. It bears bright purple flowers from May to July and has long been cultivated in Britain as a border plant. The name is probably an allusion to the shiny surface of the seeds.

Vera Cruz, city and seaport of Mexico on the Gulf of Mexico, 263 m. E. of Mexico City; regularly built and strongly fortified. It has a fine harbour, and a large export trade. Pop. 71,000.

Verbena, a genus of plants of the family Verbenaceae, most of the 100 species of which are native to tropical and sub-tropical America. The cultivated verbenas, also known as vervain, are favourite plants for ornamental flower-beds, most of them being hybrids. A rich soil is necessary for successful growing. One species, *Verbena officinalis*, is native to Britain, and like Euphrasia was formerly in repute as a cure for affections of the eye. The lemon-scented verbenas with fragrant leaves is not a true verbenas, being referred to the genus *Lippa* of the same order.



VERBENA OFFICINALIS

Vercingetorix, Celtic chieftain of the Arverni, and leader of a revolt against Roman rule in Gaul which was put down by Caesar in 52 B.C. He was led in triumph at Rome by his conqueror, and put to death in 45 B.C.

Verdi, Giuseppe, Italian composer, born at Roncole, Parma. He composed a symphony at the age of 15, and in 1835 was appointed conductor and organist at Busseto. His first opera, *Oberto*, appeared in 1836, but his talent was slow to obtain recognition, until the appearance of his *Lombardi* and *Macbeth* in 1842-1844 established his reputation. His best operas are *Macbeth*, 1847, *Il Trovatore*, 1851, *Il Freoscuro*, 1855, *La Traviata*, 1853, *Il*

1871, *Otello*, 1887, and *Falstaff*, 1893; he also composed a beautiful *Requiem*, 1874, and other sacred works. (1813-1901).

Verdict, the answer of a jury to the fact in any case, civil or criminal, committed to their examination. In England, in criminal cases, there are two possible verdicts—"guilty" or "not guilty," but in Scotland a verdict of "not proven" may be returned. A verdict may be set aside on the ground of its being against the weight of evidence and a new trial ordered. Verdicts must be unanimous in criminal cases; in civil actions, however, the verdict of a majority of the jury may, by consent of the parties, be accepted.

Verdigris, a basic acetate of copper, is found on copper or brass when left in contact with acids, the atmosphere, etc. The brilliant pigment Paris Green, used as an insecticide, is obtained by boiling verdigris with arsenious oxide and acetic acid.

Verdun, town of France, in the dept. of the R. Meuse, 35 m. W. of Metz, on the R. Meuse. It has a fine cathedral with beautiful 15th Century cloisters, but is chiefly notable as an important fortress between Paris and the German frontier, and as such was the objective of fierce German assaults in the World War, in which the town was razed. The battle of Verdun, the result of a German attempt to reach Paris at all costs, lasted from Feb. to June, 1916, and was memorable for the heroic defence of the French, under Generals Pétain and Nivelle, in the face of unprecedented enemy bombardments; the German attack was a costly failure, their casualties being 300,000. Pop. 15,000.

Vereeniging, town of the Transvaal, on the Vaal, 50 m. S. of Johannesburg. It is a colliery centre, and has important hardware and engineering industries. The peace treaty closing the Boer War was drawn up here in 1902. Pop. 13,800.

Vergil, Vergil Latin poet, born near Mantua, studied at Cremona and Milan, and at 18 was sent to Rome to study rhetoric and philosophy; lost a property he had during the civil war, but recommended himself to Pollio, the governor, who introduced him to Augustus, and he went to settle in Rome. Here, in 37 B.C., he published his *Eclogues*, a collection of 10 pastorals, and gained the patronage of Mæcenas, under whose favour he was able to retire to a villa at Naples, where after seven years he, in 30 B.C., produced the *Georgics*, in four books, on the art of husbandry, after which he devoted himself to his great work the *Æneid*, or the story of Æneas of Troy, an epic in 12 books, connecting the hero with the foundation of Rome, and especially with the Julian family, completing it in 19 B.C. On his deathbed he expressed a wish that it should be burned, and left instructions to that effect in his will. Varius and Tucca, his executors, however, published it at the request of Augustus. (70-19 B.C.).

Verlaine, Paul, French poet, born at Parme, France, in Paris he joined the *Parnassians*, producing numerous lyrics of much beauty and originality, the first collection being *Poèmes saturniens*, 1866, followed by *Poèmes antiques*, 1869, and *La Bonne Chanson*, 1878. In 1871 he met the poet J. A. Rimbaud, with whom he visited England. The attempted murder of his companion brought Verlaine two years' imprisonment, and after his release he wrote some remarkable religious poetry. (1844-1896).

Vernier, Jan, Dutch painter, born at his life; he was a pupil of Carel Fabritius, in 1653, and in 1662 (and again in

1670) was one of the heads of the Guild of St. Luke. His pictures are few, but of the finest quality, and are chiefly genre subjects in courtyards and interiors, but include the celebrated "View of Delft", among his few religious paintings is the masterly "Christ and the Disciples at Emmaus," discovered in 1937. (1632-1675).

Vermicelli, a preparation of wheaten tubes or worm-like threads, the same in substance as macaroni (q.v.), but the latter is made in larger tubes. It is much used in Italy in soups and also in the same way as macaroni.

Vermilion, a red pigment obtained by grinding cinnabar (q.v.).

Vermin, a term used for any kind of more specifically for certain offensive of mischievous animals, namely, the smaller mammals and certain birds which damage crops, etc., e.g., foxes, polecats, weasels, otters, kites, hawks, rats, mice and voles; and noxious and destructive insects or the like, such as flies, fleas, grubs, lice, etc.

Vermont, state of the U.S.A., situated N. of Massachusetts; it covers 9,564 sq. m., including large tracts of pastoral and arable land. The state obtains its name from the forested Green Mts., which intersect it longitudinally and rise to 4,400 ft. in Mt. Mansfield. Hay, oats, maize, potatoes and apples are the chief crops, and the production of maple syrup and sugar is important; cattle-raising, dairying and forestry are active industries, and there are large marble and granite quarries; the state was an original member of the Union. Montpelier is the capital, but Burlington, Rutland and Barre are the largest cities. Pop. 359,600.

Vermouth, an alcoholic beverage, consisting of white wine strengthened with spirit and flavoured with wormwood or other aromatic substances.

Verne, Jules, French novelist, born at Nantes. At first he wrote operettas and comedies for the stage, but eventually found an unexplored avenue in a celebrated series of semi-scientific novels, chief among which are *Round the World in Eighty Days*, *Five Weeks in a Balloon*, *Twenty Thousand Leagues under the Sea*, *A Voyage to the Centre of the Earth*, *A Trip to the Moon*, etc. (1828-1905).

Vernet, Claude Joseph, French painter, born at Avignon; he worked at first in Rome, becoming famous as a marine painter, but in 1753 was summoned to Paris by the king to paint the seaports of France, this series being his finest works. (1714-1789). His son, Charles Horace Vernet, born at Bordeaux, excelled as a battle-painter, especially devoting himself to the portrayal of Napoleon's victories; he was a successful lithographer. (1758-1835). Horace Vernet, son of Charles Horace, was born at Paris, also became a great military painter; in 1828 he became director of the French school at Rome, and later decorated a salon at Versailles. (1789-1863).

Vernier, Pierre, French geometer, born at Ornans, Franche-Comté, son of a mathematician; employed on commissions by the court of Spain, he later became commandant of the castle of Ornans and director of the mint. He published in 1631 a treatise on the quadrant, in which he gave works of art. Pop. 153,600.

Verona, town of Italy, on the Adige, 63 m. W. of Venice. It is chiefly remarkable for its Romanesque architecture, among examples of which are the basilica of St. Zeno, the splendid cathedral, dating from 1187 and exquisitely ornamented, and several churches. There is a 16th Cen-

tury castle, with a museum and picture-gallery; the fine Roman remains include a great amphitheatre, a theatre, inscriptions and sculptures. The town is rich in Renaissance works of art. Pop. 155,800.

Veronal, a hypnotic or sleep-producing substance chemically known as diethylmalonyl urea. It is a colourless crystalline solid with a slightly bitter taste, and is only slightly soluble in cold water. Although its toxicity is relatively low, an overdose may cause poisoning and death.

Veronese, Paolo, or Paolo Cagliari, Italian painter of the Venetian school, born at Verona. After working in his native town and at Mantua, where he painted his "Temptation of St. Anthony" for the cathedral, he settled in Venice in 1555, where he soon earned distinction, rivalling Titian and Tintoretto. His subjects were mostly scriptural, the most celebrated being the "Marriage Feast at Cana," now in the Louvre. (1528-1588).

Veronica, a genus of shrubs and herbs of the order Scrophulariaceae, with tubular flowers of various colours. About 17 species are indigenous to Great Britain, including *V. chamaedrys*, the Germander Speedwell, one of the most charming of our native wild flowers, with blue and white blossoms, their popular name being Speedwell (*q.v.*). Many species are native to New Zealand, where they are shrubby growths or small trees. The garden varieties of Veronica, which are usually known as Veronica and not Speedwell, are shrubs.



GERMANDER SPEEDWELL

Veronica, St., according to legend, a woman who met Christ on His way to crucifixion, and offered Him her veil to wipe the sweat from His face, upon which the fabric was found to bear the imprint of His features.

Verrocchio, Andrea del, Italian artist, born at Florence. He practised as a painter, sculptor and goldsmith, producing in the last-named capacity many beautiful church furnishings, silver statues, ecclesiastical ornaments, etc. His most celebrated painting is the "Baptism of Christ" at Florence, but he excelled chiefly as a sculptor, among several beautiful works being his bronze "David," the Medici tomb in San Lorenzo, and a terra cotta Madonna, all in Florence. His masterpiece, however, is the great bronze statue of the General, Colleoni, at Venice, perhaps the finest equestrian monument in the world. (1435-1488).

Versailles, town of France, capital of the dept. of Seine-et-Oise, 11 m. by rail SW. of Paris, of which it is virtually a suburb. The seat of the court from Louis XIV.'s time until the revolution, it is renowned for its magnificent palace, set in splendid grounds with elaborate fountains and containing masterpieces of furniture, furnishings and works of art. Here also are the minor palaces known as the Grand and the Petit Trianon. The town was occupied by the Prussians during the siege of Paris, and in the Hall of Mirrors in the palace the Prussian king was proclaimed German emperor. In 1919 the Peace Conference after the World War was held here, the Treaty of Versailles being signed in the Hall of Mirrors. Pop. 66,900.

Versailles, Treaty of, the treaty of peace that officially ended the World War, signed in June, 1919; among its 15 main articles was that establishing the Covenant of the League of Nations (*q.v.*). It fixed the frontiers of Germany, Belgium,

Luxembourg, and France, and recognised Czechoslovakia, Poland and other new States. Germany was deprived of colonies, had her fighting forces reduced, accepted responsibility for war crimes, and a heavy load of reparations to be paid both in money and in kind. It was also stipulated that German territory to the W. of the Rhine should be occupied by the Allies for 15 years. A number of provisions, such as that prescribing the trial and punishment of "war-criminals," chief of whom was the German ex-Kaiser, were found impracticable and were tacitly dropped.

Verse. See Poetry; Prose.

Vertebrates, one of the main subkingdoms, divisions of the animal kingdom, comprising those animals which have a brain and spinal cord, the former enclosed in a cranium and the latter within the vertebral column, which consists of a series of bony segments, articulated so that the animal may freely bend its body. In different animals, these segments, or vertebrae, vary considerably in number and in the manner in which they are joined, and in one class the bony spine is replaced by a notochord or gristly, unjointed rod. Vertebrates include creatures as dissimilar in appearance as the chimpanzee, crocodile, ostrich and frog; the following classes: Cyclostomata, including lampreys and hog-fishes, with a notochord; Pisces, or fishes; Amphibia—frogs, salamanders, etc.; Reptilia, including lizards, snakes, turtles, crocodiles, etc.; Aves, or birds; and Mammalia, or mammals, including man.

Vertigo, a sensation of whirling or a tendency to lose equilibrium or consciousness. It is a common symptom of an irregular supply of blood to the brain, and of nervous and general debility, but may also arise from digestive disturbances.

Verulam, Lord, See Bacon, Francis, Lord Albans.

Very Light, a kind of firework fired from a pistol and used, especially in warfare, for momentary illumination, or as a signal or sign of distress.

Vespasian, or Titus Flavius Vespasianus,

Roman emperor from 70 to 79, born in the Sabine territory, of humble parentage; he commanded a legion in 43 and campaigned in Britain, Judea and elsewhere. He was consul in 51, and in 63 governor of Africa; in 70, on the deposition of Vitellius, he was raised to the throne by the army. Of frugal tastes, he restored the finances, reorganized the army and the provincial administration, and gave Rome peace for nine years. (A.D. 9-79).



VESPASIAN

Vespers, in the Roman Catholic liturgy, the time of evening worship recited usually between the afternoon hours of 4 and 8. It is the last but one of the eight "hours" comprising the daily office.

Vespucci, Amerigo, a Florentine navigator, first of Spain and afterwards of Portugal, four times visited the New World, just discovered by Columbus, which the first cartographers called America, after his name; these visits were made between 1492 and 1499, while Columbus's discovery, as is known, was in 1492. (1451-1512).

Vesta, the Roman goddess of the hearth, identified with the Greek Hestia. As the guardian of domestic life, she had a shrine in every household. Her temple in Rome stood in the Forum; there a sacred

fire, kindled by the rays of the sun, was kept constantly burning, guarded by virgins called Vestals (at first four, but later six in number) whose persons were held sacred as well as their office, since extinction of the fire presaged disaster to the city. The Vestals were treated with the greatest honour and respect, being given the chief seats at public games, etc. They were discharged after 30 years, being then free to marry; but neglect of their duty was severely punished, while the penalty for unchastity was burial alive.

Vestal Virgins. See *Vesta*.

Vestments, ceremonial articles of dress worn by priests or clergymen or their assistants in celebrating divine service. In the Roman Catholic church, a priest when celebrating mass wears over his cassock the amice, alb, girdle, maniple, stole and chasuble; those of higher rank wear additional vestments, such as the gloves, ring and pectoral cross for a bishop. To most of these garments mystical meanings are attached, and the colours, etc., of the vestments vary with different festivals. In the Anglican Church much confusion still reigns in the use of vestments, and, according to individual taste or opinion, celebrants wear various combinations of garments, from the simple surplice and stole to the full vestments of the Catholic Church.

Vestry, the room attached to a church in which the vestments of the clergy are stored and put on. In consequence of the use of this room for parish business, the name is extended to a meeting of parishioners for the conduct of parish business. Before the Local Government Act of 1899 the parish vestries were responsible for much of the local municipal government of England and Wales.

Vesuvius, volcanic mountain of Italy, the bay of Naples, 7 m. ESE. of Naples, about 3,600 ft. in height. It has two summits, the active cone and Monte Somma, the wall of an ancient crater. It erupted disastrously in A.D. 79, when the two cities of Herculaneum and Pompeii were overwhelmed; other serious eruptions were those of 1634 and 1906. There is an observatory on the mountain-side, and the crater can be reached by rope-railway.

Vetch, or Tares (*Vicia sativa*), an annual plant of the bean family (Leguminosae) with trailing or climbing stems and reddish-purple flowers, extensively cultivated for fodder and growing well on poor soil. There are two varieties, differing slightly in appearance, Spring Vetch and Winter Vetch, the latter being less bulky but more hardy. Wood Vetch (*V. sylvatica*), Tufted Vetch (*Vicia cracca*) and Bitter Vetch (*Vicia arvensis*) are common British wild plants. The Vetch is not the "tares" spoken of in the New Testament, which is probably the darnel grass (*Lolium temulentum*).

Veterinary Surgeon, one skilled in the profession of treating the diseases of horses, cattle, sheep and other domesticated animals. Statutory recognition of veterinary practitioners was first accorded by the Veterinary Surgeons Act, 1881, but even before that date, qualified veterinary surgeons had been distinguished from others by membership of the Royal College of Veterinary Surgeons, incorporated in 1844. This body examines students and awards diplomas. The degree of Member (M.R.C.V.S.) is awarded to students who pass four examinations covering five successive years; the fellowship (F.R.C.V.S.) is given on passing a special examination after 5 years' practice. The Royal Veterinary College is in Camden Town, together with colleges in Edinburgh, Glasgow, Liverpool and Dublin; it is affiliated to the Royal College of Veterinary Surgeons.

Veto, the act of a competent person or legislation or other legal action by the exercise of his or their prohibitory power. In England, the royal prerogative of assenting to or dissenting from Bills sent up for the royal assent is now reduced to a shadowy veto which, however, has not been exercised since the reign of Queen Anne. In British crown colonies the governor has a power of veto or, as it is called in some colonies such as Ceylon, power of "certification"; the governors-general of Canada, Australia, New Zealand and South Africa have, however, no power of veto.

Viaticum, name given to the Eucharist administered by a priest to a person on the point of death.

Viborg, former name of the town of Finland, land now known as *Vilho* (f.c.).

Vicar (Latin *vicarius*, a deputy), originally a deputy appointed by a prebendary or canon of a cathedral to act as his substitute in conducting divine service. Generally, but not invariably, vicars were endowed under laws of Richard II. and Henry IV. with "lesser tithes," the rectors having the "great tithes," but this position was superseded by the Tithe Commutation Acts, 1836, etc.

Vicar-General, the chancellor of a bishop. The vicars-general of the archbishops of Canterbury and York also exercise some provincial functions, and, generally, act for them in confirming bishops of the province. The vicar-general of Canterbury usually institutes incumbents and prorogues Convocation. Under the Act of Supremacy of 1535 Thomas Cromwell was appointed "King's Vicar-general, Viceregent and principal Commissary."

Vice, an appliance used by a carpenter or engineer's bench, for firmly holding the material that is being worked upon. It usually has a fixed and a movable jaw, the latter being capable of adjustment by means of a screw.

Vice-Chancellor, a judge of the Courts, subordinate to the Lord Chancellor; the title disappeared in 1873. The acting head of an English university is known as the vice-chancellor.

Vicenza, town of Italy, capital of the province of Vicenza, 43 m. W. of Venice. It has numerous fine buildings, including a basilica, a theatre and several palaces. There is a 13th Century Gothic cathedral. Pop. 69,400.

Viceroy, a ruler acting with royal authority in the place of a sovereign in a colony or province. In the British Empire the Governor-General of India is the only administrator still known as a Viceroy. The office of Lord Lieutenant of Ireland, who was also known as Viceroy, was abolished on the establishment of the Irish Free State in 1922.

Vichy, town and watering-place of the foot of the volcanic mountains of Auvergne, 75 m. WNW. of Lyons. Its alkaline springs are much resorted to by invalids, and the water is bottled for export under the familiar name of "Vichy Waters." Pop. 17,500.

Vickers Ltd., a British holding company with interests in a large group of metal, electrical, shipbuilding, carriage-building and armament manufacturing companies in England and abroad; including Vickers-Armstrongs, Ltd., Cammell Laird & Co., Ltd., the Metropolitan Carriage and Wagon Co., and the Armstrong-Whitworth securities group.



VICE

Vicksburg, city of the U.S.A., in the state of Mississippi, situated on a bluff above the Mississippi R. Fortified by the Confederates in the Civil War, it was after a memorable siege surrendered to General Grant, July 4, 1863. The battlefield is preserved as a national memorial. Engineering, saw-milling, and the manufacture of boxes, furniture, baskets, etc., are carried on. Pop. 23,000.

Victor Emmanuel II., King of Sardinia, and afterwards of united Italy, born in Turin, eldest son of Charles Albert of Savoy-Cavignano; became King in 1849 on the abdication of his father; distinguished himself in the war against Austria, adding Austrian Lombardy and Tuscany to his dominions, and, by the help of Garibaldi, Naples and Sicily, till in 1861 he was proclaimed King of Italy, and in 1871 entered Rome as his capital city. (1820-1878).

Victor Emmanuel III., King of Italy. Succeeding to the throne in 1900 on the death of his father, King Umberto, he governed as a constitutional monarch, and after 1922 passively supported the Fascist régime. It was largely due to him that Italy came into the World War on the side of the Allies. Another important event of his reign was the settlement of the Roman question by the signing in 1929 of the Lateran Treaty between Church and State. He married in 1896 Elena, daughter of Nicholas of Montenegro. In 1936, on the conclusion of the Abyssinian campaign, he was proclaimed Emperor of Ethiopia. (1869-).

Victoria, state of the Commonwealth of South Wales, Australia, lying S. of New South Wales and covering an area of 87,884 sq. m., thus being the smallest state on the mainland. The state is intersected E. and W. by the Dividing Range which forms a watershed between the Murray R. and the sea, and is largely covered with dense forests, especially in the region known as Gippaland; the N.W. is characterised by the scrub called mallee. The soil is on the whole fertile, but agriculture partly depends upon irrigation, which is well developed; wheat and other cereals, vegetables, vines and fruit are grown in abundance, while among the mineral wealth are coal (both black and brown), gold, silver, antimony, tin and gypsum. Cattle and sheep are reared in large numbers, and there is a large dairy industry and a heavy export of wool. The larger towns include the capital, Melbourne, Geelong, Ballarat and Bendigo. The region was settled as a convict station in 1785, but there was no real development until about 1834. Melbourne was incorporated in 1842, and in 1851 Victoria, previously a part of New South Wales, became a separate state; about this time the discovery of gold led to rapid development. Pop. 1,520,360.

Victoria, city of Canada, the capital of the B.C., British Columbia, situated at the S.E. end of Vancouver Island. It contains the provincial parliament buildings, an Anglican cathedral, and an observatory. Fish-canning and the manufacture of soap, machinery, biscuits, boats and clothing are carried on. Pop. 61,200.

Victoria, chief city of the British island of Hong Kong, China, extending for 5 m. at the base of a range of hills near the harbour. Cotton, sugar and vermilion are manufactured, and there is a naval dockyard. Pop. (including The Peak) 352,000.

Victoria, city and seaport of Brazil, the capital of the state of Espírito Santo. It stands on an island at the head of the bay of Espírito Santo, 340 m. N.E. of Rio de Janeiro, and has an important seaport. Pop. 22,000.

Victoria, Queen of Great Britain and Ireland, born May 24, 1819, at Kensington Palace, the only child of the Duke of Kent, fourth son of George III., who died in 1820, leaving her an infant eight months old; educated with special regard to her prospective destiny as queen, she was proclaimed on the death of William IV., on June 20, 1837, and crowned the following June. In 1840 she married Prince Albert of Saxe-Coburg-Gotha, who died in 1861. Her reign was long and prosperous.



QUEEN
VICTORIA

It witnessed the triumph of British imperialism and the rapid expansion of the empire by conquest and exploration, outstanding military events being the Indian Mutiny, the Crimean War, the Sikh, Afghan and Burmese Wars, the Boxer Rebellion in China, the Zulu and Boer Wars in South Africa, and the campaigns in Egypt and the Sudan, in which General Gordon perished. It also saw the fulfilment of the industrial revolution and striking, basic changes and advances in science, literature, politics, communications, religion and social life. Never, perhaps, has any sovereign had such a succession of eminent ministers—Melbourne, Peel, Palmerston, Disraeli, Gladstone, Salisbury. In 1876 the Queen was proclaimed Empress of India; in 1887 she celebrated the jubilee of her accession, and her diamond jubilee 10 years later. She was the mother of four sons and five daughters: William II., emperor of Germany, was one of her grandchildren, and Nicholas II., Czar of Russia, was married to another. After the death of the Prince Consort, Queen Victoria lived mainly in retirement. She died at Osborne, Isle of Wight, on January 22, 1901.

Victoria and Albert, Royal Order for ladies founded in 1862 and enlarged in subsequent years, the abbreviation being V.A. No conferments have been made since the death of Queen Victoria.

Victoria and Albert Museum, a national museum in South Kensington, London, the foundation stone of which was laid by Queen Victoria in 1899. It is a museum of art, decoration and design, and its magnificent collections embrace architecture and sculpture, ceramics, engravings, etc., metal work, paintings, textiles, woodwork. There is also a large library.

Victoria Cross, a naval and military decoration in the shape of a Maltese cross, instituted by Queen Victoria in 1856 for conspicuous bravery in the presence of an enemy. The ribbon is red (before 1918 it was blue in the case of naval awards).

Victoria Falls, great waterfall of Africa, on the Zambezi R. Rhodesia. Central Africa, on the Zambesi R. With a width of over a mile and a depth of from 250 to 400 ft., the water is forced, below the falls, into a channel only 100 ft. wide. The river is crossed by a railway bridge at the Falls.

Victorian Order, Royal, an order instituted by Queen Victoria in 1898, "as a reward for personal services to the Queen and her successors." The motto is *Victoria* and the ribbon blue, with red and white edges. The grades are member (M.V.O.); commander (C.V.O.); dame commander (D.C.V.O.); knight commander (K.C.V.O.); knight of dame grand cross (G.C.V.O.).

Victoria Nyanza, or Lake Victoria, a lake in East Central Africa, on the equator, 236 m. long,

and 180 m. broad, at an elevation of 3,760 ft. above the sea-level; discovered by Captain Speke in 1858, and circumnavigated by Stanley in 1875; is regarded as the head-source of the Nile, whose waters pass out by Ripon Falls.

Victory, Nelson's flagship at the battle of Trafalgar, on which he died. It is now preserved in Portsmouth harbour.

Victory Medal, awarded by the Allied and Associated Powers after the World War to all ... and men who entered a theatre of war

Vilayet, (Arab. *vilâ*, a governor), a province of Turkey, under a *vâli* representing the government and assisted by an elective Council.

Villa, *Francisco Pancho*, Mexican bandit, his real name was Domingo Arango, and his early days were spent as a cattle thief. In 1910 he assisted a revolution, and in 1914 led his own army in support of Carranza, but soon turned against the government he had helped to place in power, and till 1920 carried on a guerrilla war against it. In 1923 he was shot dead in an ambush. (1868-1923).

Villars, *Claude Louis, Duc de*, Marshal of France, born at Moulins; one of the most illustrious of Louis XIV.'s generals, and distinguished in diplomacy as well as war; served in Germany under Turenne, and in the war of the Spanish Succession; suppressed the Camisards in the Cévennes, but was defeated by Marlborough at Malplaquet. (1653-1734).

Villers-Cotterets, town of France, of Aisne, 14 m. SW. of Soissons, the birth-place of Dumas the elder. It was taken by the Germans in 1914 and later suffered bombardment. Pop. 5,000.

Villon, *Franswa*, French poet, born in Paris; his real name Corbueil or De Montcorbier; a student at the university, but of irregular life; had again and again to flee from Paris; was once condemned to death, but set free after a four years' imprisonment into which the sentence was commuted; is the author of two poems, entitled the *Petit Testament* and the *Grand Testament*, with some minor pieces. Much of his work has been translated into English by Swinburne, Rossetti, etc. (1431-1485).

Vilna, or *Wilno*, town of Poland, capital of Wilno province, an old place, with three cathedrals, a palace and a university. It has a large trade in timber and grain. Anciently the capital of Lithuania, it became Russian at the partition of Poland. It changed hands several times during the World War, being left in those of Lithuania. An independent Polish force, however, took it in 1920; it was declared a republic, and later was absorbed into Poland, though Lithuania disputes the ownership, and still looks upon it as her own national capital. Pop. 208,000.

Vimy Ridge, a ridge of rising ground in the dept. of Pas-de-Calais, France, near Arras. Captured by the Germans early in the World War, it was attacked twice by French troops in 1915, and was eventually captured by Canadian forces in April, 1917.

Vincennes, an eastern suburb of Paris, in the famous Bois de Vincennes, which contains a large artillery park and training ground for troops. Its ancient castle was formerly famous as a French state prison.

Vincent de Paul, *St.*, Roman Catholic priest, born in Gascony; renowned for his charity. He founded the congregation of the Sisters of Charity, and that of the Friends of the Mission, also known as Lazarists or Vincenzians, engaged in mission work and teaching, and instituted the Foundling Hospital in Paris; he was canonized by Pope Clement XII. in 1727. (1576-1660).

Vindhya Mountains, a range of hills, 500 m. in length, forming the N. scarp of the plateau of the Deccan in India, the highest peak of which does not exceed 5,000 ft.

Vindictive, a British cruiser which was used in the attack on the mole at Zeebrugge (g.s.) on April 23, 1918, and which on May 19

family whose wool is used for the manufacture of a dress fabric called by the same name. The virelia is found mainly in the high Andean regions of Chile.

Vienna, the capital of Austria, on a southern branch of the Danube. It contains a number of magnificent churches, including St. Stephen's cathedral and the Augustinian church where the hearts of the deceased Hapsburgs are buried; a 14th Century university, the former imperial palace, and the Prater, reputed to be the finest public park in Europe. Its industries are various, including textiles, machinery, scientific instruments, jewellery, chemicals, and foodstuffs. The Congress of Vienna met here in 1814-15 to settle European problems after the Napoleonic wars. Pop. 1,862,000.

Vienne, an ancient town of France, on the Rhône, 19 m. S. of Lyons; was the chief town of the Allobroges in Caesar's time, and possesses relics of its connection with Rome; it manufactures silk and woollen fabrics, paper and iron goods, and has a trade in grain and wine. Pop. 25,000.

Vigny, *Alfred, Comte de*, French poet of Loches; entered the army, but left after a few years for a life of literary ease; produced a small volume of exquisitely finished poems between 1821 and 1829, and only one other, *Poèmes Philosophiques*, which was not published till after his death; wrote also romances and dramas, and translated into French Shakespeare's *Othello* and *Merchant of Venice*. (1797-1863).

Vigo, a seaport in Galicia, NW. Spain, on a bay of the same name. It has important fisheries, and carries on a considerable export trade, besides being in favour as a holiday resort. Pop. 53,000.

Vilpuri, town and tourist resort of Finland, capital of the government of Viborg, on a bay of the Gulf of Finland. It has a large Gothic castle. It was formerly known as Viborg. Pop. 73,000.

Vikings (men of the oaks, or ocreks), name given to the Scandinavian searovers and pirates who from the 8th to the 10th Centuries ravaged the shores chiefly of Western Europe, founding Normandy in NW. France, and



VIKING SHIP

as much of the British Isles, Iceland, all and Russia and being the first to reach North America.

the same year was sunk in Ostend harbour to block the channel.

Vine (*Vitis*), a genus of climbing plants with long slender branches, of the natural order Vitaceae, including some 40 species, the most important of which is the grape vine (*Vitis vinifera*), believed to have originated in the Caspian region and now cultivated in the temperate zones of both hemispheres for the sake of its fruit, the grape (g.v.). The vine was said to have been introduced by Osiris. The great vine-growing regions are situated in the Rhineland, France, Italy, Portugal, and Spain; it is also produced in South Africa, Australia, and California. It is grown in hothouses in Britain. The most formidable pest of the vine is the small insect *Phylloxera vastatrix*, which breeds and lives on the roots and destroys the plant. Two American species of vine, the *Vitis californica* (Summer Grape) and *V. labrusca* (Fox Grape) have not attacked by the *Phylloxera*, and have been introduced to Europe. The chief commercial uses of the fruit are as fresh fruit (the grape), as dried fruit (currants, raisins, sultanas), and for the manufacture of wine.

Vinegar, a sour liquid used as a condiment or preservative, obtained by the acetic fermentation of dilute alcoholic liquids. The chief sources are indicated by the compound names: malt-, wine-, sugar-, and wood-vinegar.

Vinegar Hill, a hill (385 ft.) near Ford, Elre, where General Lake defeated and destroyed a body of the Irish on June 21, 1798.

Vinegar Plant, one of the forms of the common mould (*Penicillium glaucum*), being the mycelium of a fungus of the nature of dry rot.

Vintage, the produce of the vine for one season; used with reference to the age or year of a particular wine. Generally connoting one of outstanding quality; now, specifically, a wine made from the grape-crop of a certain district and in a good year and kept separate on account of its quality.

Viol, a medieval musical stringed instrument played with a bow, from which the violin and cello were developed. The tenor and bass viols were known as the *viola da braccio* and *viola da gamba* respectively. The 3-stringed violin was a development of the tenor violin, a stringed and

Viola, somewhat complicated musical instrument, generally about one-seventh larger in size than the violin.

Violet (*Violeta*), a genus of perennial fragrant herbs of the family Violaceae, comprising 250 species of cosmopolitan distribution, several being native to Britain, including the Sweet Violet (*Violeta odorata*), the Dog Violet (*V. canina*), and the Heartsease or Fanny (*V. tricolor*). Many varieties have been developed in cultivation and for market violets, those especially prized being the Parma and Double violets.

Violin, the most important of the stringed musical instruments, consisting of a chest or body of two thin arched surfaces, called the back and belly, generally made respectively of maple or sycamore and some soft wood such as pine. At the top end is the neck of solid wood, to which is fixed the ebony finger-board, over which pass the four strings, which are fastened at one end to the lower part of the body by a projecting tail-piece, also of ebony, and kept in tune by pegs at the end of the neck. Sound holes are cut in the belly in the shape of an "f" each side of the bridge, which raises the strings above the belly. The sound is U.E.

produced by drawing a bow of horsehair coated with rosin across the strings, which are tuned in fifths.

The instrument has a wide range of sounds and is capable of limited harmony by means of double stops and bowing in "arpeggio." Famous instruments were the Italian, especially the Cremona violins of Andrea Amati, who made instruments between 1580 and 1540, and Antonio Stradivari (g.v.) (1644-1730). Among the world's greatest players past and present are Paganini, Joachim, Ernst, Sarasate, Ysaie, Kubelik, and Kreisler.

Violoncello, a large bass viola or developed from the 16th-Century *viola da gamba*. It is played with the instrument resting vertically on a wooden peg on the floor between the player's knees, and has a sonorous tone.

Viper, name applied to several venomous serpents of the family Viperidae,

one of which (*Vipera berus*) the adder is found in Great Britain, being the only British venomous snake. It is brownish-yellow with zigzag markings and black triangular spots. The bite is generally not fatal. Other vipers are the Daboia, or Russell's Viper, of India and Ceylon; the Horned Viper (*Cerastes cornutus*) of Arabia and the neighbouring countries; and the Puff Adder (*Bilis arietans*) of Africa.



ADDER

Viper's Bugloss, a plant with a bristly stem, of the genus *Echium* and order Boraginaceae. The *Echium vulgare* or common species is a British plant. The name is due to the old belief that the plant was an antidote to snake bites.

Virchow, Rudolf, German pathologist, Pomerania; professor of pathology at Berlin and Würzburg. He was responsible for many discoveries regarding tuberculosis, inflammation, and other morbid conditions, and was one of the founders of modern sanitary science. (1821-1902).

Virgil. See Vergil.

Virginal, a musical instrument played with a keyboard similar to the clavichord. It was introduced into England in the 16th Century, and had a compass of four octaves.



VIRGINAL

Virginia, one of the United States of America, between Maryland and N. Carolina, so named by its founder Sir Walter Raleigh in honour of Queen Elizabeth; is divided from W. Virginia by the Appalachians. It is well watered; the soil, which is fertile, yields the finest cotton and tobacco, and minerals, particularly coal and iron, are abundant. The capital is Richmond; other towns are Norfolk, Roanoke and Portsmouth. Area, 42,630 sq. m. Pop. 2,421,900.

Virginia, West, formed originally one state with Virginia, but separated in 1861 to join the Federal cause; is a great mining region, and is rich in coal, iron, and timber. Its largest cities are Huntington and Wheeling. The capital is Charleston. Area, 24,380 sq. m. Pop. 1,614,000.

Virginia Creeper (*Vitis quinque-folia muralis*), a tendriling climber of the vine family native to N. America. It is used in England for covering outside walls. The leaves are digitate and showy, and turn red and orange in autumn before falling.

Virgin Islands, a group of small Indies, divided between Britain and the United States. The British group is governed as part of the Leeward Is. (q.v.); the American group, purchased from Denmark in 1916, includes over 100 islands, the three principal being St. Croix, St. Thomas and St. John. Area, 130 sq. m. Pop. 23,000.

Virginium, a chemical element reported in 1930, by Dr. F. Allison of Alabama, to exist in pitchblende, lepidolite and certain other minerals; it was named in honour of the State of Virginia. Symbol Vi; atomic number, 87; atomic weight about 224.

Virgo, the sixth sign of the zodiac, which the sun enters on August 22.

Viscacha, a South American burrowing rodent, akin to the chinchilla, about 2 ft. in length, with a stout, stumpy body.

Viscosity, the property by which liquids or gases resist change in the arrangement of their molecules. Internal friction or viscosity exists whenever two portions of any fluid or gas move with different velocities. It is this viscosity which renders the fall of a mist-drop through the air so slow, causes the waves of the sea to subside, and causes the formation of whirlpools. The viscosity of a fluid is measured by the tangential force per unit area required to maintain a relative velocity of unity between two parallel planes in the fluid at unit distance apart.

Viscount, rank of the English peerage baron; the title was first bestowed in 1440. The title of viscount is generally given as a courtesy title to the eldest son of an earl.

Vishnu, the Preserver, the second god of the Hindu triad, Brahma (q.v.) being the first and Shiva (q.v.) the third. He is said to have revealed himself in a succession of incarnations or avatars, Rama (q.v.) being the seventh and Krishna (q.v.) the eighth. He is extensively worshipped, and his worshippers, the Vaishnavas, are divided into a great number of sects. He is generally represented in art as a four-armed figure riding upon the Garuda, a man-headed bird.

Visigoths, or **Western Goths**, a branch of the Goths that settled in the S. of France and in Spain, and for a time conquered Italy.

Vision. Light enters the eye through the cornea, the front transparent portion of the human eyeball, behind which lies the opaque blue or brown iris. The light can pass through the pupil, a hole at the centre of the iris. In a strong light the pupil contracts, but becomes larger when dimly illuminated, thus allowing more of the light falling on the eye to enter it. Behind the iris is a lens, and the light which passes through this falls upon sensitive nerve endings in the retina at the back of the eyeball. When the eye is focused on an object an inverted image, similar to that formed on a photographic plate by a camera, is produced on the retina, and messages are passed from the nerves in the retina to the optic nerve, and thence to the brain. When an object is placed at a given distance from a lens (e.g., a magnifying glass) a sharp image of the object can be formed on a screen placed at an appropriate distance on the other side of the lens, but the image is not sharp unless the distance between the lens and the screen is correctly

chosen. This distance depends upon the distance of the object, so if objects at one distance give sharp images, those at other distances do not. Similarly, if the eye is focused on objects at one distance, objects at other distances do not give sharp images on the retina, and appear blurred and indistinct. Focusing is brought about by altering the thickness of the eye lens. The ability of the eye to do this is called its power of accommodation. This decreases progressively with age, and in a person 70 years of age has almost disappeared.

Visitation of the Virgin

Mary, a festival celebrated on July 2, instituted in the 14th Century by Pope Urban to commemorate the Virgin's visit to Elizabeth, mother of John the Baptist.

Vistula, a central river of Europe, which rises in the Carpathians and after a course of 600 m. through Poland falls into the Baltic at the Frisches Haff near Danzig. It is navigable as far as Cracow, and carries down great quantities of timber, grain, and other produce to the Baltic ports.

Vitamins, discovered by Sir Frederick Gowland Hopkins during the early years of the present century, are complex organic compounds, small quantities of which are necessary to the healthy functioning of the organism. Several are now known, distinguished as vitamins A, B, C, and so on. In cases of malnutrition one or more of them may be absent, or present in insufficient amount, and such diseases as pellagra, scurvy, beri-beri and rickets may supervene in consequence.

Vitamin A, contained in butter, milk, eggs, and richly in the liver oil of the cod and halibut, is necessary for growth, while vitamin D, which occurs like A in fish liver oil, prevents rickets. The original vitamin B has proved to be a mixture of several vitamins (B₁, B₂, B₃, etc.), all of which are soluble in water. B₁, found in the outer layers of cereals, prevents beri-beri; where the principal diet consists of polished rice or white bread, the lack of B₁ often causes this disease. B₂ also occurs in green vegetables, tomatoes, yeast, etc. B₃, occurring in eggs, milk and yeast, is necessary for healthy growth and also prevents pellagra; C, found in limes, oranges, lemons, and green vegetables, prevents scurvy; and K, found in cereals and green vegetables, is necessary to fertility.

Vitoria, the capital of Alava, a Basque province in the N. of Spain, famous as the scene of one of Wellington's victories in June, 1813; has a fine old 12th Century cathedral and extensive manufactures. Pop. 43,000.

Vitreosil, the name given to articles fused silica. Its great advantage over glass or china ware is that it has a remarkably low coefficient of expansion, i.e., it expands or contracts but little when heated or cooled. This means that it can be quickly heated or cooled without cracking; a vitreosil basin, for example, will withstand being heated to a red heat and then suddenly cooled under the cold water tap. The chief use of vitreosil is in chemical apparatus and other scientific instruments. It is very resistant to most acids, but is attacked by caustic alkalis.

Vitriols, an old name for sulphates or the metals they contain. Zinc sulphate, isomorphous with Epsom salt, is known as white vitriol. A solution of white vitriol is used as an eye lotion, and the sulphate is used in making lithopone. Green vitriol is ferrous sulphate obtained by dissolving iron in dilute sulphuric acid, or by the slow oxidation of magnetite. Blue vitriol is copper sulphate. There are also lead, nickel and iron vitriols.

Vittorio Veneto, town in the province, vince of Venetia, Italy, captured in 1917 by the Austrians, and retaken in October, 1918, by the Allies, the battle during which its recapture took place marking the final rout of the Austro-Hungarian forces, which led to the collapse of their resistance.

Vitus (or Guy), St., a Christian saint and martyr of the 4th Century, who is chiefly remembered by the nervous disorder called St. Vitus's dance, named after the practice of dancing in front of his tomb; festival, June 15.

Vivisection, the name given by its tation on living animals in the course of scientific research. Vivisection may only be practised under licence from the Home Office; licences are granted to individuals to conduct experiments at certain places which are liable to governmental inspection. No licence permits every kind of experiment, or the use of every kind of animal, and if the experimenter wishes to do more than operate under a general anæsthetic he must obtain the requisite certificates. A Royal Commission, appointed in 1912, issued a report favourable to vivisection.

Vizier, the chief officer of state in the old Turkish empire. The name was given to the chief minister of the Arabian Caliphs, and adopted by the Ottoman Turks in the 14th Century.

Vladivostok, chief city and seaport of Siberia, the E. terminus of the Trans-Siberian Railway. It is a naval station with dock-yards, a garrison town, and the seat of a university. Pop. 190,000.

Vodka, a Russian and Polish spirituous liquor made from rye or potatoes. "Raw" vodka has an alcoholic content of about 90 per cent., but is diluted for sale to an alcoholic strength of 60 or 40 per cent.

Vogler, Georg Joseph, Abbt, German musical composer, born at Würzburg; distinguished once both as a musical performer and teacher. He is remembered by the poem *Abt Vogler* in Browning's *Dramatis Personæ*. (1749-1814).

Voice, the faculty of uttering audible sounds, or the sounds produced by the organs of respiration. In most animals the chief organ is the larynx (q.v.); birds have a special organ, called the syrinx, which is the source of their song. The study of voice production is aided by the laryngoscope (q.v.). The pitch of a voice depends on the size of the larynx and the tenseness and vibrations of the vocal cords, and usually a low or deep voice is produced by a large larynx with long cords. The range of a voice does not often exceed 2½ octaves. Ventriloquial effects result from indrawing the air instead of in the usual manner, by expiration. Aphonia, or the loss of voice, is sometimes due to disease of the larynx or vocal cords, and sometimes to nervous disorders. See also Aphasia; Stammering.

Volcano, a passage or pipe which affords a deep-seated mineral matter in a state of fusion the means of transmission through the earth's crust, and of egress at its surface; a passive or extinct volcano is one in which this communication is obstructed either by a plug of solidified lava or by accumulations of fragmentary matter. Eruptions may take place without warning, as did that of Vesuvius in 1853, or be heralded by preliminary rumbling and earthquake shocks, and also sometimes by an unnatural rising and sinking of the sea. The products of eruption are steam and gases, fragmentary materials and lava; the gases include carbonic acid, hydrochloric acid, sulphur dioxide, sulphuretted hydrogen, sulphuric

acid, nitrogen and ammonia. The fine ashes, lapilli, pumice, bombs, and scoriæ or cinders ejected are all formed from the lava and have the same composition as the lava from which they are derived. Volcanoes are found in all regions of the globe and seem to follow certain lines, an arrangement which is believed to be owing to the fact that they occur on lines of fissures in the earth's crust. See also Earthquakes.

Vole, the common name of various species of rodents belonging to the *Microtus* genus of the Muridæ family. The two important British species are Water-Vole or Rat (*Microtus amphibius*) and the Field Vole or Field-Mouse (*Microtus agrestis*), the one a good swimmer, burrowing in river banks and somewhat like the brown rat in colouring though smaller, the other living in meadows and nesting in grass.



BANK VOLE

Volga, a river of European Russia, the Valdai Hills, and after a course of 2,300 m. falls by a delta with 200 mouths into the Caspian Sea. It is navigable almost throughout, providing Russia with 7,200 m. of water-carriage, and has extensive fisheries, especially of salmon and sturgeon. The waters are mostly frozen in winter.

Volstead Act. See Prohibition.

Volsungs, a race figuring in Norse and German legend, of whom the chief figure was Sigurd or Siegfried, the hero of the *Nibelungenlied*. The Icelandic epic of the race, the *Volsungasaga*, was translated into English by William Morris.

Volt, the unit of electrical pressure or electromotive force. It is the pressure which causes a current of one ampere (q.v.) to flow through a resistance of one ohm (q.v.).

Volta, Alessandro, Italian physicist, born in Pavia; made electrical discoveries which laid the foundation of what is called after him voltaic electricity. (1745-1827).

Voltaic Cell, named after Alessandro Volta (1745-1827), its inventor, a device for converting chemical energy into electrical energy. A simple type consists of a plate of zinc and a plate of copper dipping into a vessel containing dilute sulphuric acid. When the plates are connected by a wire, the zinc dissolves in the acid and a current flows in the wire; the energy of the current is derived from the chemical energy of the zinc and acid. Another and better type is the Leclanché cell (q.v.), familiar in the "wet" variety as the battery commonly used for electric bells, and in the "dry" variety as the battery in electric torches, etc.

Voltaire, François Marie Armand de, French writer and philo-

sopher, born at Paris, son of François Arnaud, a lawyer. After writing lampoons, for which he was imprisoned for a year in the Bastille, he produced several plays, later visiting England, where his *Henriade* was issued. Returning to France in 1739, he lived at Paris and Cirey until 1749, when he visited Frederick the Great at Potsdam; most of his later life was spent at Ferney in Switzerland. His works are remarkable in their strong antipathy to priestcraft, and



VOLTAIRE

superstition, and include *Candide*, *Zadig*, and *The Age of Louis XIV.* (1694-1778).

Voltmeter, an instrument for measuring difference of voltage or electrical potential. Several types are in use, most of them depending on the movement of a piece of soft iron affected by the passage of a current.

Volumes, Gaseous, law of, discovered in 1809, by J. L. Gay-Lussac (1778-1850) states that when gases react together, they do so in volumes which are in a simple numerical ratio to one another, and to the volume of the product if that also is gaseous, the measurement of all the volumes being carried out under identical conditions of temperature and pressure. In 1811 the Italian scientist A. Avogadro (1776-1856) suggested that equal volumes of all gases at the same temperature and pressure must contain equal numbers of molecules.

Volunteers, in England troops raised for home defence on a voluntary basis, first organized on a considerable scale during the Napoleonic era and revived in the middle of the 19th Century. On the formation of the Territorial Force in 1908 they became merged in that body.

Vomiting, expulsion of the contents of the stomach through the mouth; "retching" is the effort to vomit without such expulsion. It is a common symptom of dyspepsia, and frequently occurs in cases of ulcer and cancer of the stomach. It is also a concomitant of many diseases of the brain. Strong impressions of a disagreeable kind made upon the nerves of sense may produce vomiting, e.g., an offensive odour, or some interference with the balancing sense, as in sea-sickness.

Voodoo, name given to a system of magic and superstitious rites prevalent among certain negro races. It has been carried from W. Africa to America, and is said to have revived in recent times in Haiti and other parts of the West Indies.

Vorarlberg, a province of Western Austria, mountainous and mainly pastoral; there is some textile industry in the towns. Capital, Bregenz (pop. 7,750); largest town, Dornbirn (pop. 13,800). Area, 1,005 sq. m. Pop. 140,000.

Voronoff, *Serge*, Russian physician, working in Paris; introduced a method of human rejuvenation by grafting the thyroid gland of the monkey into persons suffering from thyroid deficiency; wrote a number of treatises on medical and physiological subjects. (1866-).

Vortigern, a British prince of the 5th Century who, on the withdrawal of the Romans, invited the Saxons to aid him against the incursions of the Picts, with the result that the former eventually became masters of S. Britain.

Vosges, a range of mountains in the N.E. of France; they separate the basin of the Moselle from that of the Rhine, and reach a height of 4,780 ft.

Vosges, a dept. of E. France, to the W. of the Vosges Mts., watered by the Meuse, Moselle, and other rivers. Grain and potatoes are grown, and cotton and lace manufactured. Capital, Epinal. Area 2,300 sq. m. Pop. 377,000.

Voting, a method of discovering, by ballot, show of hands, or other means, the numbers of individuals for or against a proposal or particular course of action; particularly as a means of electing candidates to parliament, municipal council, or other offices. In politics, voting may also be on a specific question, the usual machinery being the referendum (q.v.), or the plebiscite. Voting by ballot, to ensure secrecy, was first employed in England in 1870, the Ballot Act,

giving statutory recognition to the practice, being passed in 1872. Before a poll commences, the ballot box is shown empty to anybody present desirous of inspecting it, and is then locked and sealed (see *Election*). Open voting by "ayes" and "noes" is customary in Parliament, but if demanded a division may be taken, the members then going into the division lobbies for a formal count by the whips. A vote of confidence is a parliamentary division on the question whether the House is satisfied with the Ministry's conduct of affairs, while a vote of credit is a parliamentary vote of money without specifying the particular purposes for which the money is to be used.

Vow, a solemn promise or engagement, particularly one made to God and confirmed by an oath. Vows still enter largely into the religious system of the Roman Catholic Church, the members of religious orders being bound by vows of poverty, chastity, and obedience, with sometimes additional special vows.

Vryheid, town of Natal, 50 m. N.E. of Dundee, situated in a district rich in coal and iron ore, and other minerals. Cattle and sheep are reared, and there are mineral springs. Pop. (white) 2,000.

Vulcan, the Roman god of fire and an artificer in metals, identified with the Greek Hephaestus (q.v.); had a temple to his honour in early Rome; was fabled to have had a forge under Mt. Etna, where he manufactured thunderbolts for Jupiter, the Cyclops being his workmen.

Vulcanite, a form of hardened rubber, produced by vulcanization, or heating raw rubber with sulphur, under pressure. It is used as an electrical insulator, and for the manufacture of chemical apparatus.

Vulgate, a version of the Bible in Latin executed by St. Jerome (q.v.) which was in two centuries after its completion universally adopted in the Western Christian Church as authoritative for both faith and practice. From the circumstance of its general reception it became known as the Vulgate (i.e., the commonly accepted Bible of the Church), and is the version accepted as authentic to-day by the Roman Catholic Church, under sanction of the Council of Trent.

Vulture (Vulturidae), one of the families into which birds are classified,

this comprising a number of carrion-feeding birds of prey, cowardly, lazy birds that rarely attack their prey while alive, and are credited with great powers of sight and flight in search of their dead or dying food. They are confined to the tropical and sub-tropical parts of the Old World, the species including the Griffin Vulture (*Gyps fulvus*), and the Black Vulture (*Vultur monachus*). In America there is a corresponding family of birds, the Cathartidae, birds of great size and strong flight, including Condors (q.v.) and Turkey Vultures. Nearly all vultures have the head and neck bare, except for a stubbly down and a ruff round the lower neck. The beak is straight for some distance from the base and then bends sharply downward. The Bearded Vultures, or "Bone-breakers," of S. Europe, Asia and Africa are placed in the Falconidae family.



KING VULTURE

Vyrnwy, artificial lake of Montgomeryshire, Shire, Wales, a reservoir supplying Liverpool with water. It was formed by building a dam across the R. Vyrnwy, a tributary of the Severn. Area, 2 sq. m.

W

Wace, Anglo-Norman poet, born in Guernsey; author of two metrical chronicles, *Geste des Bretons*, commonly known as the *Brut*, and *Roman de Rou*, the former an Arthurian romance, the latter recording the fortunes of the Dukes of Normandy from 1106. (1120-1183).

Wade, George, English general; commanded in Scotland during the rebellion of 1715, has the credit of the construction in 1726-1740 of the military roads into the Highlands, to frustrate any further attempts at rebellion in the north; created field-marshal 1743. (1673-1748).

Wadebridge, seaport and market town of Cornwall, England, 7 m. NW. of Bodmin. Granite and china clay are produced. Pop. 2,500.

Wady, or Wadi, an Arabic name for the flooded in rainy weather and at other seasons is dry.

Wake, a name formerly applied to the dedication festival of a church, and later to any local festival or holiday; it is used especially in the N. of England for the mass annual holidays customary in the textile and other trades. The watching of a dead body through the night by friends and relatives was called a lyke-wake.

Wages, in economics, the price paid for labour, whether manual, administrative or executive, especially for those kinds of labour which are expended under the capitalist system in production for private profit. Until fairly recent years the fixing of wage rates was left to free competition, but the organisation of workers in trade unions and other causes have now in many cases brought about the fixing of minimum wage rates guaranteed by State action. The so-called Wage Fund Theory of Mill and Adam Smith held that wages were fixed in the long run by the proportion borne by the number of wage-earners to the amount of wealth set aside for the purchase of labour. The "Iron Law of Wages" is the theory that, since a rise in wages leads to an increase in the number of wage-earners, it is necessarily followed by a fall, so that wage-rates cannot permanently improve under the existing system of production. The relation between "nominal wages," the amount earned in actual money, and "real wages," or the amount of necessities of life that can be obtained for those nominal wages, depends upon the cost of living at any given time, so that an increase in nominal is not necessarily also an increase in real wages.

Wagga Wagga, town of New South Wales, Australia, on the Murrumbidgee. Gold-mining and sheep-farming are the chief industries. Pop. 12,300.

Wagner, Wilhelm Richard, German musical composer, born at Leipzig. In 1833 he became chorus-master at Würzburg, and in 1835 conductor of the orchestra of the theatre at Magdeburg, and held the same post afterwards at Riga and Königsberg. His principal works were *Renzi* (1840), *The Flying Dutchman* (1843), *Tannhäuser* (1845), *Lohengrin* (1850), *Tristan and Isolde* (1859), *The Mastersingers of Nürnberg* (1867), and the *Ring of the Nibelungen* (1876), the composition of which occupied 35 years; this last was performed at Bayreuth in a theatre erected for the purpose in presence of the German Emperor and the principal musical artists of the world. *Parsifal* (1882) was his

last work, the libretto, as in all his other operas, being from his own pen. He married (second wife) Cosima, a daughter of Liszt, in 1870, she surviving him till 1880; by his first wife he had a son, *Siegfried* (1869-1930), a distinguished composer and conductor, who for many years conducted his father's operas at the annual festival at Bayreuth. (1813-1883).

Wagram, a village 10 m. N.E. of Vienna, where Napoleon gained a great victory over the Austrians under the Archduke Charles, on July 5 and 6, 1809.

Wagtail, a genus (*Motacilla*) of birds of the Motacillidae family which

also includes the Pipts. They are found only in the Old World, and are distinguished by their long tails, which are almost constantly in motion, and by their quick graceful running gait. They are terrestrial birds, haunting rivers, meadows and damp ground. British species include the Pied Wagtail (*Motacilla alba*) and the Grey Wagtail (*Motacilla cinerea*), both of which are residents. A number of other species occur as summer migrants or occasional visitors.



WAGTAIL

Wahabis, a Mohammedan sect which arose about 1760 in Central Arabia, whose aims were puritanic and the restoration of Islamism to its primitive simplicity in creed, worship, and conduct. They take their name from Mohammed Abdul Wahab, their founder. Reviving in the present century under Ibn Sa'ud (q.v.), Wahhabism became the standard about which he united many of the Arabian tribes in his state of Saudi Arabia.

Waikato, the largest river in New Zealand, in the North Island, the outlet of the waters of Lake Taupo, the largest lake; has a course of 200 m.

Wailing Wall, The, a wall in Jerusalem, 52 yds. long and 59 ft. high, on the site of, and believed to have once formed a part of, Solomon's Temple. It is one of the most sacred of spots to the Jews, who for centuries have gathered here to bewail the decline from greatness of their nation, especially on the fast of the ninth of Ab, in early August, when the destruction of the Temple is commemorated. The wall abuts on a Moslem mosque, and there have in consequence, been frequent riots, notably in 1929, between Jews and Arabs since the city was freed from Turkish rule.

Wakefield, a county borough of Yorkshire, shire, England, 9 m. S. of Leeds. It is the seat of a modern bishopric, and has large woollen and other manufactures. Pop. 59,700.

Walcheren, an island in the province of Zeeland, Netherlands, in the delta formed by the Maas and Scheldt; was the destination of an unfortunate expedition under Lord Chatham, Pitt's brother, sent in 1809 to the help of the Austrians against Napoleon in Antwerp, in which 7,000 of the army composing it died of marsh fever, from which 10,000 were sent home sick, and the rest recalled.

Waldeck, a former state of the German Reich, mainly devoted to cattle-raising, absorbed into Prussia in 1848. Its area was about 450 sq. m., and its pop. 65,000.

Waldenses, or "Poor Men of Lyons," a Christian community founded in 1170 in the S. of France, claiming to revive the practices and beliefs of the primitive church, by Peter Waldo, a rich citizen of Lyons. They were driven by persecution from country to country until they settled in Piedmont under the name of the Vaudois.

Wales, smallest and westernmost of the three divisions of Great Britain; is 135 m. in length and from 37 to 95 m. in breadth, and bounded on the N., W. and S. by the sea; it is divided into 12 counties. It is a mountainous country, intersected by beautiful valleys, which are traversed by a number of streams, including the Severn, Usk, Conway, and Clwyd. The N. is more mountainous than the S., Snowdon, the highest point in Great Britain, rising to 3,560 ft. The most fertile tracts are the Vales of Clwyd and Glamorgan. North Wales is notable for both the variety and quality of its scenery; its mild and bracing climate has dotted the coast with seaside resorts. Agriculturally, Wales consists of a great core of moorland or rough hill pasture and a surrounding fringe of land of greater agricultural fertility; almost the only tenants of these hill-pastures are the Welsh mountain sheep. The Vale of Glamorgan is an area of mixed farming. The minerals include coal, iron, copper and some gold. The coalfield of the SW. has given rise to a vast iron industry through the fact of its possessing great beds of ironstone, though these are now worked only to a limited extent. Cardiff is one of the largest coal ports of the world, and Swansea one of the largest oil ports. There are also large slate quarries. There are some small woollen factories in many towns and villages; flannel is the principal fabric. The Welsh University has four colleges, at Cardiff, Aberystwyth, Bangor and Swansea. The Church of England was disestablished in 1930, and the majority of the people are Nonconformists; many of the native inhabitants are pure Celts, being descended from the early Britons; the Welsh language, still spoken in various parts of the country, is a Celtic tongue. From the period of the Saxon invasion and until its final conquest by Edward I. the history of Wales is merely that of a succession of petty wars between rival chieftains. Cadwallon, the most notable of them, was defeated and slain by Oswald of Northumbria in 635; Llewellyn, the last of the Welsh princes, was defeated and slain by the Earl of Mortimer in 1284, and since that time the principality has been incorporated with England. For most administrative purposes the county of Monmouth is included in Wales. Area (excluding Monmouth), 7,374 sq. m. Pop. 2,172,000.

Wales, Prince of, title generally conferred on the eldest son of the English Monarch; first conferred in 1301 on the second son of Edward I. after the subjugation of Wales 17 years before. The title merges in the Crown at the accession of the holder, and is bestowed by creation. On the accession of James I. to the English throne it was preceded by that of Prince of Great Britain and Ireland, which was never used after Prince Henry's death. There is at present (1938) no holder of the title.

Walker, Frederick, British artist, born in London. He turned from architecture to pictorial art, designing the woodcuts for Thackeray's *Philip*. His best-known works are "The Harbour of Refuge" and "Vagrants," both in the Tate Gallery, London. (1840-1875).

Walking, in races, must be fair heel- and toe action, and the foot must come to the ground heel first with the leg straight. Walking races are generally held on oval tracks; but the London to Brighton

race is an instance of a familiar annual walking event on the road, a distance computed at 51 m. 1,607 yds.

Wallaby, name given to the smaller species of Kangaroo belonging to the genera *Macropus* and *Petrogale*. Among the many species are the Yellow-footed Wallaby (*Petrogale xanthopus*), Black-tailed Wallaby (*Macropus ulabalatus*) and Brush-tailed Wallaby (*Petrogale penicillata*). All of them are



vegetable-feeders, confined to Australia. **Wallace**, Alfred Russel, English biologist, born at Usk, Monmouthshire; was devoted to the study of natural history, in the interest of which he spent years (1848-1852) in the valley of the Amazon and 8 years after (1854-1862) in the E. Indian archipelago, returning from the latter expedition with thousands of specimens of natural objects, particularly insects and birds, and during his absence working out a theory in the main coincident with that of natural selection advanced by Charles Darwin (q.v.). (1823-1913).

Wallace, Lew (Lewis), American soldier and writer; served in the Civil War in the Federal forces; governor of New Mexico, 1878-1881; U.S. Minister at Constantinople, 1881-1885; author of *Ben Hur*, among other books. (1827-1905).

Wallace, (Richard) Edgar (Horatio), English novelist; born at Greenwich; left school at the age of 10, becoming successively newsboy, factory-hand, Grimsby trawler's boy, milk-boy; and soldier in 1896, in South Africa. After going through the Boer War as war-correspondent he edited the *Rand Daily Mail*. Later a reporter in London, he published his first book, *The Four Just Men*, in 1906, and thereafter produced a vast number of full-length novels and short stories of "thriller" type, as well as some plays. Died at Beverly Hills, California. (1875-1932).

Wallace, Sir Richard, English art collector; having acquired the valuable collection of his half-brother, the 4th Marquess of Hertford, in the formation of which he had been active, he bequeathed it to the nation; known as the Wallace Collection, it is now exhibited at Hertford House, Manchester Square, London; was created a baronet for his services during the siege of Paris. (1818-1890).

Wallace, Sir William, Scottish patriot and national hero; born in Renfrewshire; was early seized with a desire to free his country from foreign oppressors, and became chief of a band of outlaws combined to defy the authority of Edward I., who had declared himself Lord of Scotland, till at length the sense of the oppression became widespread, and he was appointed to lead a general revolt, while many of the nobles held aloof or succumbed to the usurper. He drove the English from one stronghold after another, finishing with the battle of Stirling (1297), and was installed thereafter guardian of the kingdom. Edward, however, at Falkirk (1298) crushed Wallace and his followers with an overwhelming force, one of the nobles proving traitor and handing Wallace over to the enemy, who carried him off to London and had him hanged, beheaded, and quartered. (c. 1272-1306).

Wallachia, former principality of E. Europe which combined with Moldavia to form Rumania. The Danube bounds it on the W., S. and E., and the Transylvanian Alps border it on the N. The principal towns are Bucarest, Brasila, and

Cratova. It corresponds roughly to the division now known as Muntenia. Area, 30,250 sq. m. Pop. 4,411,000.

Wallasey, county borough of Cheshire, England, on the Wirral Peninsula, at the mouth of the Mersey, 3 m. N.W. of Birkenhead. It is connected by ferry with Liverpool, and is mainly residential. Pop. 98,000.

Wallenstein, Albrecht Wenzel von, army in the Thirty Years' War, born in Bohemia, of a Protestant family, but on the death of his parents was brought up in the Catholic faith; entering the army, he rose in Imperial favour, and became a prince of the Empire, but the jealousy of the nobles procured his disgrace, till the success of Gustavus Adolphus in the Thirty Years' War and the death of Tilly led to his recall, when he was placed at the head of the Imperial army as commander-in-chief; drove the Saxons out of Bohemia, and marched against the Swedes, but was defeated, and fell again into disfavour; was deprived of his command, charged with treason, and afterwards murdered in the castle of Eggra. (1583-1634).

Waller, Edmund, English poet, born at Great Court, Colleshill, Bucks; he was in great favour at Court; was a member of the Long Parliament; leant to the Royalist side, though he wrote a panegyric on Cromwell, which is considered his best poem; in addition to a number of odes he wrote several lyrics, including the well-known *Go, Lovely Rose*, reviving the heroic couplet form of verse. (1605-1687).

Wallflower (*Cheiranthus cheiri*), a fragrant perennial plant, of the order Cruciferae; it was worn by troubadours and minstrels in the Middle Ages as an emblem of constancy. The yellow colour of the wild flower has been developed into many beautiful oranges, yellows, and browns in the cultivated garden varieties. It is remarkable for its delightful odour.



WALLFLOWER

Wall Game, a species of football peculiar to Eton College, where it is played every St. Andrew's Day.

Wallingford, borough and market town of Berkshire, England, on the Thames, 15 m. N.W. of Reading. Pop. 3,100.

Wall of China, The Great, a wall length in NW. China, work on which was begun in 215 B.C. It is described as being 25 ft. wide at the base, 15 ft. at the top, with an average height of 20 ft. Intended for defence against incursions from Mongol nomad tribes, it still acts as a serious obstacle to military forces operating from beyond it. It, even in the case of the Japanese invasion in 1937-38.

Walloons, name given to the descendants of the ancient Belgae, a race of a mixed Celtic and Romanic stock now forming the French-speaking section of the population of Belgium, where they inhabit mainly the provinces of Luxembourg, Hainaut, Namur, Liège and Brabant.

Wallpaper, paper, coloured and often tapestry, made for covering the walls of rooms. Both hand-printed and machine-printed papers are made, in a wide range of patterns and qualities. They are measured by the "piece," of 20 ft. by 13 ft.

Walsend, borough of Northumberland, England, on the Tyne, at the E. end of Hadrian's Wall. Coal-mining.

shipbuilding, metal-working and the manufacture of chemicals are engaged in. Pop. 43,800.

Wall Street, a narrow thoroughfare in the older part of New York, situated between the East R. and Broadway. It contains most of the chief banks, insurance offices, shipping offices, etc., and the stock exchange, metal exchange and other such institutions, and is the hub of the American financial world.

Walmer, seaside resort of Kent, England, 3 m. S. of Deal, once one of the Cinque Ports. Its castle is the residence of the warden of the Cinque Ports. It has now been incorporated with the borough of Deal. Pop. c. 5,000.

Walney, island and holiday resort of Lancashire, England, off the Furness peninsula, forming part of the borough of Barrow-in-Furness, with which it is connected by steam-ferry, bridge, and causeway.

Walnut (*Juglans regia*), a large catkin-bearing tree of the order Juglandaceae, probably introduced to Britain by the Romans from Asia Minor. It yields the fruits also so called, which are pickled before the shell has formed. The wood is used for furniture and for gun-stocks; an oil expressed from the nuts is used by painters as a dryer.

Walpole, Horace, fourth Earl of Orford, English author, third son of Sir Robert Walpole; born in London, educated at Eton and Cambridge; travelled on the Continent with Gray, the poet, but quarrelled with him, and came home alone; entered Parliament in 1741, and continued a member till 1768, but took little part in the debates; succeeded to the earldom in 1791; his tastes were literary; wrote *Anecdotes of Painting in England*, and inaugurated a new era in novel-writing with his *Castle of Otranto* (1764), also wrote a tragedy *The Mysterious Mother*, but lives mainly by his *Letters*. (1717-1797).

Walpole, Sir Hugh Seymour, English novelist; born at Auckland, N.Z. He came to England at the age of five. His first novel, *The Wooden Horse*, was issued in 1909. Other books, *Maratnick at Forty* (1910), *The Duchess of Wrex* (1914), *Jerome* (1918), two sequels, 1923, 1927, *Rogue Herries* (1930); studies of Conrad and Trollope. Knighted, 1937. (1884-).

Walpole, Sir Robert, first Earl of Orford, English Whig statesman, born at Houghton, Norfolk; entered Parliament in 1701, and became member for King's Lynn in 1702; was favoured by the Whig leaders, and promoted to office in the Cabinet; was accused of corruption by the opposite party when in power, and committed to the Tower; on his release after acquittal was re-elected for King's Lynn; in 1715 became First Lord of the Treasury, and in 1721 Prime Minister, which he continued to be for 21 years, but not without opposition on account of his pacific policy; on being driven against his will into an unsuccessful war with Spain, he retired into private life. He stood high in repute for his financial policy; it was he who established the first Sinking Fund, and succeeded as a financier in restoring confidence after the bursting of the South Sea Bubble (q.v.). To his policy in defeating the plans of the Jacobites the Hanoverian dynasty in great part owe their permanent occupancy of the British throne; he governed his parliaments largely by an elaborate and extensive system of bribery on behalf of the government. (1676-1745).

Walpurgis Night, the eve of the witches were reputed to hold high, and offer sacrifices to the devil their especially on a hilltop in Germany called the Brocken (q.v.).

Walrus (*Trichechus rosmarus*), a large marine mammal of the sub-order Pinnipedia, allied to the eared seal, the hind feet being capable

of being turned forwards beneath the body and used for locomotion on land. It differs in having no external ears and in its massive, clumsy build and in the number and formation of the teeth. The front part of the skull is much swollen, and the muzzle is divided into two lobes by a vertical groove below the nostrils, furnished each side with stout translucent bristles growing from the upper lip. Confined to the northern Arctic regions, it has been mercilessly hunted and its numbers are now much restricted.



WALRUS

Walsall, county borough of Staffordshire, England, 8 m. NW. of Birmingham. Saddlery, leather and hardware are made, and there are iron-foundries. Pop. 103,000.

Walsingham, town of Norfolk, England, 5 m. SE. of Wells, whose former Augustinian priory contained a statue of Our Lady, once a famous pilgrim shrine. Pilgrimages thither have in recent years been revived. Pop. 1,100.

Waltham, city of Massachusetts, U.S.A., on the Charles R., 10 m. W. of Boston. Watches are manufactured. Pop. 39,200.

Waltham Holy Cross, market town of Essex, England, on the Lea, also known as Waltham Abbey, with a fine Norman abbey church and powder mills. The cross from which the town takes its name is in the adjoining district of Cheshunt, Herts., and was erected by Edward I. to the memory of Queen Eleanor. Pop. 7,000.

Walthamstow, borough of Essex, England, 8 m. NE. of London, of which it is a residential suburb. Pop. 133,600.

Walton, Isaac, English author, born at Stafford; a linen-draper by profession, until his retirement in 1644. His principal work was the *Complete Angler*, or the *Contemplative Man's Recreation*, which was extended by his friend Charles Cotton, and is a classic to this day. He wrote in addition *Lives of Hooker*, *Dr. Donne*, *Bishop Sanderson*, *Sir Henry Wotton*, and *George Herbert*, all written, like the *Angler*, in a unique, charming, simple style. (1593-1683).

Walton-on-Thames, residential town of Surrey, England, 5 m. SW. of Kingston, now part of the urban district of Walton and Weybridge. Pop. (of whole area), 28,150.

Walton-on-the-Naze, seaside town of Essex, England, 7 m. S. of Harwich, now part of the urban district of Frinton and Walton. The ancient town has been engulfed by the sea, and the present town is entirely modern. Pop. (with Frinton) 8,000.

Waltz, a dance in which couples to any in gyrations or revolving motions in three-four time. It is supposed to be of Bohemian origin, and was introduced into Britain early in the 19th Century. In its early years the dance was less dignified and quicker than now. The "Vienna" waltz is a quick dance in strict unbroken time. Among leading waltz-music composers are Richard Strauss, Johann Strauss, Weber, Tchaikowsky, and Gungl. As a musical form the waltz was developed by Gounod, Delibes, Suppé, Chopin, Liszt and Brahms.

Walvis Bay, seaport of SW. Africa, with a small hinterland, a detached portion of Cape Province, but now administered as part of the South-West Africa Protectorate, of which it is the natural harbour. Whale and other fisheries are carried on. Area, 375 sq. m. Pop. 2,000 (600 white).

Wampum, strings of shell-beads used both as money and for ornament, especially for belts, by N. American Indians. Wampum belts were exchanged between tribes as tokens and records of treaties, intertribal negotiations, and similar public events.

Wandsworth, metropolitan borough of SW. London, including Putney, Clapham, Tooting and Streatham. It is mainly residential. Pop. 343,000.

Wanganui, seaport of N. Island, New Zealand, on the Wanganui R., 4 m. from its mouth at New Plymouth. It is the centre of a pastoral district. Pop. 26,000.

Wanstead and Woodford, borough of Essex, England, on the edge of Epping Forest, a residential district of NE. London. Pop. 53,000.

Wantage, market town of Berkshire, England, 10 m. SW. of Abingdon. It is chiefly noted as the birthplace of King Alfred. Pop. 3,800.

Wapiti (*Cervus canadensis*), the N. American representative of the red-deer group, often misnamed elk. Its coat is dark brown on head and neck, creamy-grey on flanks and under-parts blackish. It sometimes weighs as much as 700 lb., and runs to 16 hands in height.



WAPITI

Wapping, district of E. London, England, in the borough of Stepney, between the London Docks and the Pool. The Thames Tunnel connects it with Rotherhithe. It is one of the oldest of London suburbs, and is now almost entirely devoted to riverside warehouses.

War, The World, the international conflict between the so-called Central Powers, Germany, Austria, Turkey, and Bulgaria on the one side, and the Allies including France, Great Britain, Russia, Japan, Belgium, and Serbia, and later Italy, Rumania, Portugal, China, and a number of other Powers on the other, the latter group being in the later stages assisted by the United States; for the first time in history whole nations and not merely armies were at war, some 30,000,000 men being under arms, and poison gas, aeroplanes, and other scientific aids to fighting were introduced; the total cost in human life approached 10,000,000, while millions more were disabled. The war arose out of the assassination of the Archduke Francis Ferdinand, heir to the throne of Austria, by a Serb at Sarajevo on June 28, 1914; stringent demands for satisfaction were made by Austria, and although Serbia agreed to eight out of ten of them and was willing to refer the other two points to the Hague Conference, Austria, with assurances of German support, broke off relations with Serbia, and formally declared war on July 28. Russia at once mobilised in support of Serbia, and Germany retaliated by declaring war on Russia, whose ally, France, was next brought into the conflict. German troops on August 1 crossed the frontiers of Luxembourg and

Belgium, an action which brought forth an ultimatum from Britain, who was a signatory to the treaty guaranteeing Belgian neutrality. On August 4 Great Britain declared war on Germany, and fighting went on in Flanders, France, Italy, the Balkans, Mesopotamia, East Africa, China, and on the high seas, for four years. Hostilities ended with an armistice on November 11, 1918, on the collapse of the Central Powers and the fall of their governments; and a series of Peace Conferences held at Versailles and elsewhere in 1919 brought the war between the two groups of combatants to an end.

Warbeck, Perkin, an impostor who, affected to be Richard, Duke of York, second son of Edward IV., alleged to have been murdered in the Tower, and laid claim to the crown of England in preference to Henry VII. In an attempt to make good this claim he was taken prisoner, and hanged at Tyburn in 1499.

Warbler, small bird of the family Sylviidae; the name is applied specially to the Willow-warbler (*Phylloscopus trochilus*), Grasshopper-warbler (*Locustella naevia*), Reed-warbler (*Acrocephalus scirpaceus*) and Dartford-warbler (*Melospiza undatus*), the last a permanent resident in Britain, the others summer residents. They are greenish-brown birds, with generally a pleasant trilling song. The blackcap, whitethroat and chiff-chaff are related species.

Ward, in law, a person under 21 who, with his property, is under the care of a legal guardian. A minor under the protection of the Chancery Division of the High Court is called a ward in Chancery, or ward of Court.

Ward, Artemus, the pseudonym of C. F. Browne (q.v.).

Ward, Mrs. Humphry (Mary Augusta), English authoress, born at Hobart, Tasmania; a piece of Matthew Arnold; translated Amiel's *Journal*, a suggestive record, but is best known by her romance *Robert Elsmere*, published in 1888, a novel dealing with religious problems. This was followed by *David Grieve*, *Sir George Tressady*, *The Marriage of William Ashe*, dealing with political life, and other stories. (1851-1920).

Ward, Sir Joseph George, New Zealand statesman; born at Melbourne, Australia. He entered the New Zealand Parliament in 1887, becoming Postmaster-General, 1891; Colonial Treasurer, in charge of many departments, 1893; and Prime Minister, 1906-1912. In 1911 he received a baronetcy; he was Minister of Finance in the National Cabinet, 1915; served in the Imperial War Cabinet, and at the Peace Conference in 1919. Premier again, 1928-1930. (1857-1930).

Ward-Mote, or **Wardmoot**, in Anglo-Saxon times the court of a burgh which met periodically to transact judicial and administrative business. London's wardmoot was one of the city institutions expressly confirmed to it in the extended charter given by Henry I.

Ward-Room, the mess-room on a liner or battleship, reserved for the use of officers other than the commander, who has his own cabin. The junior officers of a warship below Lieutenant's rank use the gun-room.

War Graves Commission,

The Imperial, a body set up in 1917 to maintain the graves of British soldiers killed in the World War. It sees to the upkeep of cemeteries in all parts of the world where fighting took place, and held itself responsible for the erection of headstones and for the identification of the dead.

Warlock, Peter, name adopted by Philip Heseltine, English musical composer; best remembered for his songs, based on old English folk melodies, and for the *Capriol Suite*. (1894-1931).

War Office, the administrative headquarters of the British army, situated in Whitehall, London. The department in its origins is a development of the functions of the private secretary to the commander-in-chief. The Army Council, which is the ruling body, came into existence in 1904 after the abolition of the post of commander-in-chief. It consists of the Secretary of State for War (a Cabinet minister, who presides), the Parliamentary and Permanent Under-Secretaries, the Financial Secretary, the Chief of the Imperial General Staff, the Adjutant-General and Quartermaster-General to the Forces, the Master General of the Ordnance, Director-General of Munitions Production, and the Director-General of the Territorial Army.

Warrant, an instrument giving power to arrest an offender. It is issued by a justice on a written and sworn information and is addressed to the constables of his district. If the offender escapes into another county or borough the warrant may be backed, i.e., endorsed, by a justice of that county or borough. It must be served personally on the accused. A royal warrant is a document issued under the authority of a Secretary of State investing a person or body of persons with authority for a specific purpose. See also *Search Warrant*.

Warrant Officer, officer in the Army appointed, not by commission, but by warrant. In the Navy cadets and midshipmen hold rank by warrant. In the Army Class I and Class II warrant officers are intermediate between non-commissioned and commissioned officers, those of Class I including regimental sergeant-majors, master gunners, bandmasters and others; Class II, regimental quartermaster-sergeants, quartermaster-sergeants and others. The rules which govern the arrest of officers apply also to warrant officers, and they cannot be punished by their commanding officer; but otherwise the provisions of the Army Act apply to them as to non-commissioned officers.

Warranty, in law, a promise made as part of a contract, but not of such vital importance as to constitute a condition of the contract. It differs from the latter in that the party to the contract whose interests are hurt by its non-fulfilment is entitled, not to refuse to be bound by the contract, but only to sue for damages.

Warrington, borough in Lancashire on the Mersey, 30 m. E. of Liverpool; an old town, but with few relics of its antiquity; manufactures ironware, glass and soap. Pop. 79,200.

Warsaw (*Warszawa*), the capital of Poland, stands on the left bank of the Vistula, 700 m. SW. of Leningrad; is almost in the centre of Europe, and in a position with many natural advantages. It has a university, many technical and other specialised colleges, a cathedral, many churches and fine public buildings, a large trade, and manufactures of almost every kind. It superseded Cracow as the capital of Poland in 1609. Pop. 1,233,000.

Wars of the Roses, a civil war from 1453 to 1496, between the Houses of York and Lancaster, so called from the badge of the former being a white rose and that of the latter being a red. The first battle was that of St. Albans, 1455, and the last Bosworth, 1485. It terminated with the accession of Henry VII., who united in his person the rival claims.

Wart, a small hard conical excrescence on the skin, really a small tumour of hypertrophied cutaneous papillae, often bound together by scaly epithelium. They occur mostly in the young; those found in old people are permanent, and in the nature of epithelial decay.

Wartburg, an old, grim castle over-
hanging Eisenach (q.v.), once a palace of the landgraves of Thuringia, where Luther was confined by his friends when it was not safe for him outside, and where he worked at his translation of the Bible into German: an inkpot, which he threw at the devil's head when the latter interrupted his work, and the splash produced on the wall by the ink, are still shown.

Wart-Hog, a singularly ugly ungulate mammal of the pig family (genus *Phacochoerus*) found in Africa.

There are two species, *P. africanus*, mainly occurring in E. Africa, and *P. pallasi*, found in the S.E. of the continent, both running to a few inches over 2 ft. in height. The wart-hog has an enormous head and lengthy muzzle: the lower part of the face is flat, and below the small eyes extend great warty protuberances. Both jaws are equipped with huge tusks.



WART-HOG

Warwick, the county town of Warwickshire, shire, England, on the Avon, 21 m. S.E. of Birmingham. It dates from Saxon times, and possesses a great baronial castle, the residence of the Earls of Warwick, erected in 1394 on an eminence on the bank of the river overlooking the town. It is the seat of several industries, and has a considerable trade in agricultural produce. Pop. 13,500.

Warwick, Richard Neville, Earl of Salisbury, and known as "the king-maker" (q.v.): fought in the Wars of the Roses, and was mainly responsible for securing the accession of Edward IV.; he was slain at the battle of Barnet. (1428-1471).

Warwickshire, central county of England; is traversed by the Avon, a tributary of the Severn; the N. portion, which was at one time covered by the forest of Arden, is now, from its mineral wealth, one of the busiest industrial centres of England: it contains the birthplace of Shakespeare; Birmingham is the largest town, others being Coventry, Nuneaton, Rugby and Sutton Coldfield. Area, 975 sq. m. Pop. 1,533,000.

Wash, The, an estuary on the E. coast of England, between the counties of Norfolk and Lincoln, too shallow for navigation: large sections are dry at low tide. King John lost his crown jewels when in the course of crossing it.

Washington, urban district and coal-mining town of Durham, England, on the Wear, 6 m. W. of Sunderland. Pop. 17,700.

Washington, capital of the United States, in the federal district of Columbia, on the left bank of the Potomac, 35 m. S.W. of Baltimore; was founded in 1791, and made the seat of the Government in 1800. Its chief building is the Capitol, an imposing structure, where the Senate and Congress sit; near it, 1½ m. distant, is the White House, the residence of the President, standing in grounds beautifully laid out and adorned with fountains and shrubbery. Other notable buildings include Columbia University, various Government offices, including the Post Office and Ministry of Agriculture, and the Lincoln Memorial; the Supreme Court holds its sessions in the City. Pop. 487,000.

Washington, a NW. State of the U.S.A., N. of Oregon; is traversed by the Cascade Mountains, the highest 8,138 ft., and has a rugged surface of hill and valley, but is a great wheat-growing and grazing territory, covered on the W. by forests of pine and cedar; Olympia is the capital. The other chief towns are Seattle, Tacoma and Spokane. Area, 69,127 sq. m. Pop. 1,564,000.

Washington, George, one of the founders and first President of the United States, born in Bridges Creek, Westmoreland Co., Virginia, of a family from the N. of England, who emigrated in the middle of the 17th Century: commenced his public life in defending the colony against the encroachments of the French, and served as a captain in a campaign against them under General Braddock. In the contest between the colony and the mother-country he espoused the cause of the colony, and was in 1775 appointed commander-in-chief. His first important operation in that capacity was to drive the English out of Boston, but, their forces rallying, he was defeated at Brandywine and Germantown in 1777. Next year, in alliance with the French, he drove the British out of Philadelphia, and in 1781 compelled Cornwallis to capitulate in an attack he made on Yorktown, and on the evacuation of New York by the British the independence of America was achieved, upon which he resigned the command. In 1789 he was elected to the Presidency of the Republic, and in 1793 was re-elected, at the end of his second term retiring into private life after paying a dignified farewell. (1732-1799).

Washington Conference,

a conference between the U.S.A., Great Britain, Italy, France and Japan, held at Washington, U.S.A., in 1921, to discuss the limitation of armaments and the problems of the Pacific. It led to a treaty by which the powers concerned agreed to limit their construction of new naval tonnage for some years thereafter.

Wasp, hymenopterous winged insect, with yellow and black barred colouring, belonging to the family Vespidae. They are divided into social and solitary wasps, the former making papery nests of vegetable matter or sometimes clay. The workers are undeveloped females, the males being all drones, and the colony is formed by a queen wasp laying eggs in the cells. The solitary wasps, usually insect-eating, generally make nests of earth in which to store their food. Wasp's nests may be destroyed by fumigation with burning sulphur.



WASP

Wastwater, lake of Cumberland, Eng-
land, at the foot of Sca Fell. It is about 3 m. long by ½ m. broad, and very deep. Along one side the fescues rise almost perpendicularly from the water.

Watch, a small timepiece or clock, believed to have been invented at Nuremberg about the beginning of the 16th Century. The essential parts of a watch are the dial, the mainspring which supplies the driving force, the train of four wheels which carry the driving force through pinions to the hands on the dial, and the escapement, which controls all the movements. A good watch should also have a compensation-balance to prevent variations of temperature from affecting its regular movement. In England the principal centres of the watch-making industry are Clerkenwell for hand-made, and Coventry for factory-made watches; but the greatest centres of watchmaking are the United States and Switzerland.

Watches (nautical), the divisions of a ship's crew's working day. The day begins at noon, and is divided into the following seven watches: afternoon, noon to 4 p.m.; first dog, 4 p.m. to 6 p.m.; last (R.N.) or second (Mercantile Marine) dog, 6 p.m. to 8 p.m.; first, 8 p.m. to midnight; middle, midnight to 4 a.m.; morning, 4 a.m. to 8 a.m.; and forenoon, 8 a.m. to noon. This arrangement allows the crew to keep watches alternately, so that the watch free in the forenoon on one day has the afternoon free on the following day, and the men who have only 4 hours' sleep one night have 8 the next.

Water, or **Hydrogen Oxide**, is a colourless, less liquid of density 1 gm. per c.c., boiling at 100° C. under an atmospheric pressure of 760 mm. of mercury, and freezing to a colourless crystalline solid, ice, at 0° C. It is tasteless and odourless, and is essential to all forms of life. When pure it is almost a non-conductor of electricity, but since it is the best known solvent it is very difficult to obtain in a state of chemical purity; water containing even traces of salts, acids or bases conducts current well, and is split up by it into its constituents, hydrogen and oxygen. By weight, water consists of 88.89 per cent. oxygen and 11.11 per cent. hydrogen.

Water, Heavy. Ordinary hydrogen contains about one part in 6,000 of a heavier isotope (see **Isotopes**), called deuterium. This does not differ from hydrogen in the vast majority of its chemical reactions, but has an atomic weight of 2 instead of 1. Ordinary water contains traces of deuterium oxide, and it is to this substance that the name heavy water is given. It differs from ordinary water in its density, its boiling-point and its melting-point. While it is closely similar to water in its chemical properties, there seems to be some evidence that it differs in certain of its physiological actions; it has, for example, been stated to retard the germination of seeds and to kill tadpoles, but experiments have so far failed to prove any effect on the human body.

Water, Softening of. Hard water is water soap, but forms a curdy precipitate. The hardness is due to the presence of soluble calcium and/or magnesium compounds. The principal processes for softening hard water are the lime-soda process and the zeolite process. Bath salts, commonly used for softening water for toilet purposes, consist of uniformly graded washing-soda crystals appropriately tinted and perfumed. Drinking water should not be completely soft, since it is insipid to the taste and apt to dissolve lead from the pipes and so cause lead poisoning; moreover, drinking water is one of the sources of calcium salts for the human body.

Water-Buck (*Cobus ellipsiprymnus*), an antelope about 4 ft. in height, found in S. and E. Africa and around the Zambesi. Its hair is coarse, varying from dark grey to brown, with an oval white ring on the hind quarters. The horns run to about 30 in. in length. Heavy in build, it can climb stony ridges with remarkable speed and agility.

Waterbury, a city of Connecticut, U.S.A., 88 m. N.E. of New York, with manufactures of brassware, watches, clocks, and machinery and metal goods of many kinds. Pop. 100,000.

Water-Colour, an artists' colour ground up with water or linseed oil instead of oil. Such colours are sometimes prepared in the form of small hard cakes, and sometimes in a semi-fluid state in leaden tubes. Among substances which yield good water-colours are indigo (blue violet); gamboge (yellow); cobalt (deep blue); sepia (dark brown); oxide of zinc (Chinese white).

Water Cress (*Nasturtium officinale*), an aquatic plant with succulent leaves, common in brooks and rivulets and cultivated for food, generally in water, though it may be grown in the garden or in frames. Seed should be sown in April. Garden cress (*Lepidium Sativum*) is an unrelated cruciferous plant.

Waterford, county of Munster, Eire (Ireland), mountainous in surface, watered by the Suir and Blackwater, and chiefly devoted to cattle-raising and dairying. Area, 717 sq. m. Pop. 77,000. The county town of the same name, near the mouth of the Suir, has an export trade, carried on from Waterford Harbour, formed by the junction of the rivers Suir and Barrow. Pop. 28,000.

Water-Gas, a mixture of carbon monoxide and hydrogen made by passing steam over white-hot coke. It was first introduced as an industrial fuel by the American Lowe in 1876. Its calorific power is considerably less than that of coal-gas, so that when the habit of mixing it with coal-gas became common, an Act of Parliament ruled that the sale of "gas" should be on its heating capacity and not on its volume. Semi-water-gas or power gas is a mixture of carbon monoxide, hydrogen, and nitrogen, made by passing a mixture of air and steam over heated coke. Like water-gas and producer gas, it is widely used as an industrial fuel.

Water-Glass, a silicon compound or by fusing silica with sodium carbonate. It is used in storing eggs, as it excludes the air, and for preserving stone-work.

Water-Hemlock, or **Cow-Bane** (*Cicuta virosa*), a poisonous, umbelliferous weed found on roadsides and lakesides in Britain; it has white flowers and pinnate leaves.

Waterhouse, Alfred, English architect, born in Liverpool; practised 1853-1865 in Manchester, where he designed the Assize Courts, Town Hall, and Owens College. Afterwards in London, designed the Natural History Museum, City and Guilds Institute, Prudential Assurance offices, and St. Paul's School; at Cambridge, the Union and other buildings; at Oxford, the Union, and the south front and hall of Balliol. (1830-1905).

Water-Lily. See *Nymphaea*; *Nuphar*.

Waterloo, a village in Belgium, 11 m. S. of Brussels, which gives name to a battle in which the French under Napoleon were defeated by an army under Wellington on June 18, 1815.

Waterloo Bridge, a bridge across from the Strand between Blackfriars Bridge and Charing Cross. The original bridge of 9 arches, opened in 1817, was built by Rennie. In 1925 it was closed, being threatened with collapse, and after considerable controversy the building of a new bridge, to be opened in 1940, undertaken.

Waterloo Cup, popularly called the annual event in coursing; so named from its inception in 1836 by the proprietor of the Waterloo Hotel, Liverpool, in which city it is still run, who awarded the first Cup and himself won the first race.

Water-Mark, in paper-making, a design or figure stamped in the substance of a sheet of paper and serving as a trade mark. Among the commonest of such designs used by the earlier manufacturers were the crown, elephant fan, fool's cap, etc., and some of these have given their names to standard sizes of paper.

Water Melon (*Citrullus vulgaris*), the melon of Scripture, a plant with deeply lobed leaves, yellow flowers, and large round fruit with a spotted rind and black seeds. The flesh may be pink, white, or green. It is cultivated in southern France, China, Japan, and India, and especially in the southern states of the U.S.A. In Britain it needs the protection of a greenhouse or frame, and may be grown from cuttings placed under a bell-glass. Good varieties include Emerald Gem and Blenheim Orange. "Colocynth" or "Bitter Apple" (*O. colocynthus*) is closely related.

Water Ousel. See Dipper.

Water Polo, a ball game played in a swimming bath or open water, between 7 players a side—3 forwards, 1 half back, 2 backs and a goalkeeper; the distance between the goals varies from 19 to 30 yds., the width must not be more than 20 yds., and the goals should be 10 ft. across by 3 ft. in height. Only one hand may be used. Play lasts 14 minutes.

Water-Power. It was the discovery of electricity that made water-power so important a factor in the economic life of the world to-day, and but for that discovery, steam-power would have held its place. Prior to steam-power the cumbersome vertical water-wheel, which is still in use, was the chief mover for utilizing the potential and kinetic energy of water. There are several types of water-wheels: overshot wheels, in which the direct weight of the water is delivered to the wheel; undershot, which utilize the kinetic energy of the water; and high-velocity jet wheels. In modern hydro-electric or water-power stations, the water runs through pipes of large diameter from the highest levels into the power station, and impinges at high pressure on to the blades of a turbine (q.v.). Such turbines are cheaper and more compact for the same power than the water-wheel, besides being more efficient and enabling enormous water-power to be generated provided a sufficient weight of water is available.

Water Scorpion, a genus (*Nepa*) of hemipterous insects found in ponds and lakes, which seize their prey with their scorpion-like forelegs. Some varieties swim, others drag themselves along the bottom of ponds. They are remarkable for an appendage resembling a very long tail, which is really a divided tube or breathing apparatus. As the insect rises to the surface the tips of this tube may be seen just above the surface of the water.

Waterspout, a meteorological occurrence generally at sea, though sometimes on land in the vicinity of water. It is a cyclonic disturbance caused by the meeting of spiral-wise descending and ascending cones of vapour, the conjunction resulting in a moving pillar which may burst with great violence.

Water-Violet (*Hottonia palustris*), an aquatic plant of the order Primulaceae, also called Featherfoil. It has lilac flowers with a yellow eye, finely-divided leaves, and floats in the water. It is widely distributed in Europe and W. Asia, and is found in Britain.

Watford, borough and market town of Hertfordshire, England, 15 m. NW. of London. Paper-making, printing, brewing and silk-making are carried on. Pop. 64,000.

Watling Street, a Roman road extending from the Kent coast and terminating by two branches in the extreme N. of England after passing through London: the NE. branch to York, and the NW. to Chester. The main London-Crewe road follows much of its line.

Watson, Sir William, English poet, born in Yorkshire; the first poem which procured him recognition was *Wordsworth's Grave*, and his subsequent poems, in especial his *Lachryma Musarum*, a tribute to Tennyson, confirmed his reputation. Among his later productions the most important is a volume entitled *Odes and Other Poems*, published 1894; also wrote a volume of essays, *Excursions in Criticism*. (1858-1935).

Watt, the unit of power in general use for electrical purposes: 746 watts are equivalent to one horse-power; the Board of Trade unit of electrical supply is the kilowatt-hour, i.e., the energy necessary to run an engine of power 1,000 watts for one hour; the power of a circuit in watts is calculated by multiplying the amperes by the volts. In practice the kilowatt, of 1,000 watts, is generally used in electrical work.

Watt, James, British engineer, born at Glasgow, Greenock, son of a merchant; began life as a mathematical instrument maker, opened business in Glasgow under university patronage, and early began to experiment on the mechanical capabilities of steam. When, in 1763, he was engaged in repairing the model of a Newcomen's engine, he hit upon the idea of a separate condenser for the steam, and from that moment the power of steam in the civilization of the world was assured. The advantages of the invention were soon put to the proof and established, and by a partnership on the part of Watt with Matthew Boulton (q.v.) Watt had the satisfaction of seeing his idea fairly launched and of reaping the fruits. (1736-1819).



JAMES WATT

Watteau, Antoine, French painter and engraver, born at Valenciennes; his pictures were numerous and the subjects almost limited to pseudo-pastoral rural groups; the tone of the colouring is pleasing and the design graceful. Many examples of his work may be seen in the Wallace Collection. (1684-1721).

Wattle. See Acacia.

Watts, George Frederick, English painter, born in London; is distinguished as a painter at once of historical subjects, ideal subjects, and portraits; painted one of the frescoes in the Poets' Hall of the Houses of Parliament and the cartoon of "Caractacus led in Triumph through the Streets of Rome"; by his "Love and Death," "Hope," and "Orpheus and Eurydice" achieved a world-wide fame; he was twice offered a baronetcy, but on both occasions declined. (1817-1904).

Watts, Isaac, English Nonconformist, was for a time pastor of a church in Mark Lane, but after a succession of attacks of illness he resigned and went on a visit lasting 36 years to his friend Sir Thomas Abney, on whose death he resumed pastoral duties as often as his health permitted. He wrote a book on *Logic*, long a university text-book, and a great number of hymns, many of them of wide fame and still in use. (1874-1748).

Watts-Dunton, Theodore, English poet and critic, born at St. Ives, bosom friend of Swinburne, with whom he lived for many years. His influence was exercised chiefly through contributions to the periodicals of the day. Having been early brought into contact with gipsy life, he wrote a romance, *Aylwin*, later editing some of the works of George Borrow. Of his poems, *The Coming of Love* and *Christmas at the Mermaid* are best known. (1832-1914).

Wave Motion is the term used in physics—(a) to denote the regular and periodic motion of material particles, and (b) to describe the method by which radiation is transmitted through the ether. See **Ether**; **Wireless**; **Radiation**.

Waveney, river of E. Anglia, rising in Norfolk, and for most of its course of 50 m. forming the boundary between Norfolk and Suffolk. It joins the Yare near Yarmouth.

Wax, or **Fatty Wax**, is derived from animal or vegetable sources, and is solid at ordinary temperatures but melts to an oily liquid at below 100° C. Production depends on the nature and origin of the wax. If comparatively pure, melting and straining may be all that is required. The crude material of bees-wax is melted and the impurities allowed to settle, the melted wax being run off into moulds. Chinese insect wax is deposited by an insect on tree branches; carnauba wax occurs on the leaves of certain Brazilian trees. Waxes are also obtained from sperm oil and also wool-fat or lanolin (q.v.). Other waxes are used for making candles, polishes and sound records.

Wax Palm (*Copernicia cerifera*), a fan palm of Brazil, the hard wood of which is used for cabinet-making; also *Cerroylen undicola*, the wing-leaved palm of New Granada, the stem of which is covered with a white waxy substance used for church candles.

Wax Tree (*Ligustrum lucidum*), a small fine shrub of the olive family, indigenous to China, so called because an insect that feeds on the tree deposits a wax on it. *Ligustrum batua*, a native of Japan, is specially grown for the sake of this wax. The *Rhus succedanea*, or Japanese wax tree, is a cashew tree with shining winged leaves and fruit like a small grape, which yields a wax used for candles and night-lights.

Waxwing (*Ampelis* or *Bombicilla garrulus*), a hook-billed bird of the Ampelidæ (Chatterer) family found in the northern half of both hemispheres. It has silky plumage, and the inner quills of the wings are tipped with red horn-like appendages likened to sealing-wax. It is seen in the British Isles sometimes in autumn and winter.

Wayfaring Tree, a popular name for the *Viburnum lantana*, of the order Caprifoliaceæ; a small tree growing naturally in the Midlands and southern counties of England. The stems are covered with soft mealy down. The heart-shaped leaves are soft and velvety on the upper side; the flower clusters are like those of the elder.

Wayland the Smith, a figure of folklore, connected with the fabulous Wieland, hero of a Norse saga. A cave in the Vale of White Horse, Berkshire, still bears his name.

Wayleave, a right of way granted by a landowner for a specific purpose; the name is generally used of rights of way granted for working coal-mines, in consideration of a payment in the nature of a royalty.

Ways and Means, Committee of, the whole House of Commons, formed at the beginning of the Parliamentary Session, immediately after the close of the debate on the Address to the Crown. Its function is to authorize grants out of the Consolidated Fund and to vote the necessary taxes for the financial year. The Chairman has a salary of £2,500 a year, and acts as Deputy-Speaker in the absence of the Speaker.

Waziristan, an area of the NW. Frontier Province of India, on the Afghan border, inhabited by warlike tribes, especially the Mahsuds and

Waziris, who have shown considerable unrest under British rule. British expeditions have been repeatedly sent against them, especially in 1921 and 1937-8, without securing their complete pacification.

Weald, district of Kent, Surrey and Sussex, England, lying between the North and South Downs. It was once forest-clad and a centre of the iron industry. It is about 120 m. long and 30 m. wide.

Wealth, may be defined as anything which has an exchange value. Though wealth is always estimated in money, political economists use the term as embracing only such things as have utility and can be appropriated to exclusive possession. The science of political economy is mainly concerned with the means of promoting the increase of national wealth. It is difficult to measure the national wealth of any particular country, though a rough idea may be obtained through the income tax returns and also by valuing the total exports and imports. The total wealth of Great Britain has been estimated in recent years at about £20,000,000,000; that of France and Russia is not greatly below this figure, and that of the United States three or four times that of Great Britain.

Wear, river of county Durham, England; rising in the Pennines, it flows mainly E. for 65 m. through the Durham coalfield, past Durham and Chester-le-Street to the North Sea at Sunderland.

Weasel, a small carnivorous animal of the family Mustelidæ. The

common weasel (*Mustela nivalis*) is somewhat smaller than a polecat, but has a longer body. In winter, like stoats, they change their coats of brown for white. Generally found in hedgerows and woods and the swampy margins of rivers or lakes, it is often persecuted by farmers, in spite of its usefulness in destroying vermin and insects.



WEASEL

Weather. The weather at any particular place may be described as the combination of all the atmospheric phenomena existing at one time. It therefore includes the temperature (q.v.), barometric pressure, wind (q.v.), moisture, cloud (q.v.), and electricity of the atmosphere; and a change of weather implies a change in one or more of these elements. The Meteorological Office, now attached to the Air Ministry, collects meteorological observations from ocean and land areas all over the world and obtains daily telegraphic reports upon which gale warnings and forecasts are based; and it also maintains observatories for the study of weather and special stations in various parts of the country for the supply of information on weather to aircraft.

Weaver-Bird, a brilliantly-plumaged Australian bird allied to the finch, of the family Ploceidæ. There are various species, including the white-headed, sociable, masked, and yellow-crowned weaver-bird; the name is suggested by the remarkable "textile" nests they build. Externally they resemble the finch, but have 10 primary quills in the wings and a powerful conical bill.

Weaving, the process of making cloth, flexible fibres and, generally, involving the use of a frame or apparatus called a loom on which the cloth is woven. It is an art of great antiquity, probably one of the first of human inventions, and the products of the looms of Egypt, Phœnicia, and Persia acquired a great reputation. In all kinds of weaving, plain or figured, one system of threads, called

the weft or woof, is caused to pass at right angles over another system, called the warp or web; and the essential motions in weaving are, "shedding," "picking," and "beating-up." "Shedding" means that the warp threads are divided to form a passage or "shed," through which the shuttle carrying the weft is propelled; "picking-up" is the operation of passing the shuttle across the loom through the shed or opening between the warp threads; and "beating-up" means placing at the fell or edge of the cloth the pick of weft left in the shed as the shuttle passes across the loom.

Webb, Sir Aston, British architect. Born at London, he became an R.A. in 1903, and from 1919 to 1924 he was President of the Academy. He is best known as designer of the Victoria Memorial at Buckingham Palace, the Admiralty Arch, the Royal College of Science, South Kensington, Christ's Hospital and Dartmouth Naval College. (1849-1930).

Webb, Matthew, British swimmer who in 1875 was the first man to swim the English Channel, and who was drowned in 1883 while attempting to swim through Niagara rapids. (1848-1883). See **Channel Swimming**.

Webb, Sidney. See **Passfield**.

Weber, Karl Maria von, German musical composer, born near Lübeck, studied at Vienna under Abbé Vogler, and at Dresden became founder and director of the German opera. His first great production was *Der Freischütz*, which established his fame, and was succeeded by, among others, *Oberon*, his masterpiece, first produced in London, where he shortly after died, broken in health. He wrote a number of pieces for the piano. (1786-1836).

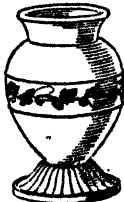
Webster, John, English dramatist; he collaborated with Dekker, Masson, and other playwrights, but some of his plays are exclusively his own work, the two best the *White Devil* and the *Duchess of Malfi*; by some he has been placed next to Shakespeare as a tragedian. (c. 1580-1625).

Webster, Noah, American lexicographer, born at Hartford, Connecticut, U.S.A.; in his early life he followed journalism as a career, and from about 1808 began to prepare his *Dictionary of the English Language*. He wrote several other works on philology, history, and international law, and was a co-founder of Amherst College. (1758-1843).

Weddell Sea, a large bay of Antarctica, between Coats Land and Graham Land; takes its name from John Weddell, who reached it in 1823. Shackleton visited it in 1915 in the *Endurance*, but the boat was crushed in the pack-ice and abandoned.

Wedgwood, Josiah,

English potter, born at Burslem, son of a potter; in 1759 started a pottery on artistic lines in his native place; devoted himself first to the study of the material of his art and then to its ornamentation, in which latter he enlisted Flaxman as a designer, and so a ware known by his name became famous for both its substantial and artistic excellence far and wide in England and beyond. (1730-1795).



WEDGWOOD VASE

Wednesbury, a town in Staffordshire, shire, 8 m. NW. of Birmingham; manufactures iron-ware. The name of the town has been stated to be derived from a temple to Woden on the site of the present church. Pop. 32,900.

Wednesday, fourth day of the week, named from the ancient Germanic god Woden.

Weed, a wild herb or, indeed, any plant sprouting where it is not wanted and either useless to man or injurious to crops, pastures, etc. Among the chief British weeds are thistles, docks, charlock, daudelon, meadow saffron, plantain and various species of ranunculus.

Week, a period of seven days, used from the earliest times as a convenient division of the month, probably originating as a rough approximation to the period between the quarters of the moon.

Weever-Fishes, a genus (*Trachinus*) of marine fishes

of the spiny-rayed family. They bury themselves in the sand, leaving visible only the poisonous spines on their backs, which can inflict a very painful wound. Two species, viz., the Greater Weever (*Trachinus draco*) and the Lesser Weever (*T. vipera*) are found on British shores.



GREATER WEEVER

Weevil, a name given to various beetles of the family Curculionidae, of which many species exist. They are mostly serious agricultural pests, among the most harmful being the Cotton-boll Weevil of Central America.

Weights and Measures, standard of magnitude, weight and value. Old-time weights and measures were based on natural measures, such as the cubit, while in the Middle Ages, in England, a grain of wheat was adopted as a standard. The Weights and Measures Act of 1878, superseding all previous laws, lays down the legal measures for Great Britain, basing them upon the Standard Yard and the Standard Pound, in the custody of the Standards Department of the Board of Trade. The above are the sole independent standards for weights and measures, the gallon, the capacity standard, being based upon the pound. The use of the Metric System (*q.v.*) is also legal in Britain.

Wei-Hai-Wei, a town in a deep bay, montory, China, 40 m. E. of Chefoo, and nearly opposite Port Arthur, which is situated on the northern side of the entrance to the Gulf of Pechili. It was leased to Great Britain in 1898, together with the islands in the bay and a belt of land along the coast. Its harbour is well sheltered, and accommodates a large number of vessels. It was restored to China by Great Britain in 1930. Pop. c. 150,000.

Weimar, city in Germany, capital of the state of Thuringia; in a valley on the left bank of the Ilm, 13 m. E. of Erfurt, and famous as for many years the residence of Goethe and the illustrious literary circle of which he was the centre. It has iron, leather, book publishing and other industries. The constitution of the 1919 German republic was drawn up here. Pop. 40,000.

Weir, Sir William Douglas Weir, first Viscount, British industrialist; became Scottish Director of Munitions in 1915-16; Controller of Aeronautical Supplies, 1917-18; Director-General of Aircraft Production, 1918; Secretary for Air, 1918-19. He was knighted in 1917, received a Baroncy in 1918, and a Viscounty in 1938. (1877-).

Weismann, August, German biologist, the-Main; studied medicine at Göttingen; devoted himself to the study of zoology, the first-fruit of which was a treatise on the *Development of Diptera*, and at length to the variability in organisms on which the theory of descent, with modifications, is based, the

fruit of which was a series of papers published in 1882 under the title *Studies on the Theory of Descent*. His name is chiefly associated with a theory of heredity by continuous transmission of the germ-plasm, a substance of a uniform chemical and molecular composition. (1834-1914).

Welding, joining pieces of metal by soft soldering, brazing, riveting or other methods. Forge welding is done by manual or mechanical hammering or by pressure applied by mechanically operated rolls. The process of electrical resistance is used in welding seams of light gauge steel plate or in the butt welding of mild steel. Gas, blowpipe and oxy-acetylene welding are fusion processes. The modern process of thermit welding involves securing the necessary temperature by a chemical reaction between aluminium and iron oxide. See *Solder*.

Well, a shaft dug or bored in the ground to obtain water, and walled or lined with bricks to prevent the caving in of the sides. See *Artesian Wells*.

Welland, city of Ontario, Canada, on the Welland Canal, which connects lakes Erie and Ontario, and on the Welland R. It is the shipping port of the products of the district, and has numerous manufacturing establishments. Pop. 10,700.

Welland, an English river, rising in Northamptonshire, and flowing through Lincolnshire to the Wash. Length 70 m.

Wellesley, Richard Colley, Marquis of, Irish statesman and administrator, born at Dublin, eldest brother of the Duke of Wellington, his senior by nine years, entered the British Parliament in 1784, was a supporter of Pitt, and in 1797 became Governor-General of India in succession to Cornwallis, and was raised to the English peerage as Baron Wellesley. He proved himself a great administrator, and by clearing out the French and crushing the power of Tippee Sahib, as well as increasing the revenue of the East India Company, laid the foundation of the British power in India, for which he was raised to the marquessate. He afterwards became Foreign Secretary of State and Viceroy of Ireland. (1760-1842).

See *Straits Settlements*.

Wellingborough, town in Northamptonshire, chiefly engaged in the manufacture of boots and shoes. Pop. 26,200.

Wellington, since 1865 the capital of New Zealand, is built round the land-locked harbour of Port Nicholson in North I.; was founded 1840; contains Governor's House, Houses of Parliament, and Government offices; pop. 152,000. The provincial district of the same name, including the southern part of North I., has an area of 10,870 sq. m., and a pop. of 316,000.

Wellington, Arthur Wellesley, first Duke of, born probably

at Dublin, third son of the Earl of Mornington, an Irish peer, educated first at Chelsea, then at Eton, and then at a military school at Angers, in France; entered the army in 1787; sat for a time in the Irish Parliament; went in 1794 to the Netherlands, and served in a campaign there which had disastrous issues; was about to leave the army when he was sent to India, where he distinguished himself



DUKE OF WELLINGTON

in the storming of Seringapatam, and in the command of the war against the Marhattas, which he brought to a successful issue in 1803, returning home in 1805; next year he entered the Imperial Parliament, and in 1807 was appointed Chief Secretary for Ireland. In 1808 he left for Portugal, where he was successful against the French in several engagements, and in 1809 was appointed commander-in-chief of the Peninsular army. In this capacity his generalship became conspicuous in a succession of victories, in which he drove the French first out of Portugal and then out of Spain, defeating them finally at Toulouse on April 12, 1814, and so ending the Peninsular War. Upon his return home he was created a duke, and voted a grant of £400,000. On the return of Napoleon from Elba he was appointed general of the allies against him in the Netherlands, and on June 18, 1815, defeated him in the battle of Waterloo, being rewarded with the estate of Strathfieldsaye, in Hampshire. In 1827 he was appointed commander-in-chief of the army, and in 1828 Prime Minister. As a statesman he was opposed to Parliamentary reform, but he voted for the emancipation of the Catholics and the abolition of the Corn Laws. He died in Walmer Castle on September 1, 1852, and was buried beside Nelson in the crypt of St. Paul's Cathedral. (1769-1852).

Wells, a small episcopal city in Somersetshire, England, 20 m. SW. of Bath, its bishopric being joined with that of the latter city; it derives its name from hot springs near it, and is possessed of a beautiful cruciform cathedral in the early English style, remarkable for the statues which adorn its west front. Pop. 5,300.

Wells, Herbert George, British novelist.

Born at Bromley, of poor parents, he left school at 13 and worked first in the drapery trade and later as a pupil-teacher; he later obtained a scholarship to the Royal College of Science, South Kensington, where he studied under Huxley and took his B.Sc. with honours. Teaching and journalism then brought him a small income, and in 1895 he published *The Time Machine*, his first novel; *The Invisible Man* and *The War of the Worlds* soon followed, but the public was slow to recognise his merit. His first books were mainly scientific romances like *The War in the Air*; but in 1900 he turned to ordinary romantic novels with *Love and Mr. Lewisham*, followed by *Kipps*, *Tono Bungay*, and *Mr. Polly*. In 1916 *Mr. Brilliance Sees It Through* appeared, and marked the start of a third phase of Wells's writing: it preceded *God, the Invisible King*, and a number of other sociological and prophetic tracts in novel form, including *The World of William Clissold*. A fourth stage of his work included an *Outline of History*, *The Work, Wealth and Happiness of Mankind*, and other treatises on popular science, interspersed with further novels. His autobiography appeared in 1934. (1866-).



H. G. WELLS

Welsbach, Karl Auer, Baron von, inventor, born at Vienna. In 1855 he made the first incandescent gas mantle; inventing in 1900 the osmium incandescent electric lamp. He was also the discoverer of the elements praseodymium and neodymium. Received a barony 1901 (1858-1929).

Welsh Calvinistic Methodists, the largest Nonconformist body in Wales, of native growth, originating in the middle of the 18th Century in connection with a great religious awakening;

has an ecclesiastical constitution on Presbyterian lines, and is in alliance with the Presbyterian Church of England; there are some 400,000 communicants, adherents and scholars.

Welshpool, county town of Montgomeryshire, N. Wales, on the left bank of the Severn, 19 m. W. of Shrewsbury, the manufacture of flannels and woollen goods being the chief industry. Pop. 5,600.

Welsh Terrier, a small dog of the usually black and tan in colouring, closely akin to the wire-haired fox terrier.

Welwyn, village in Hertfordshire, England, 22 m. N. of London, to the south of which was founded in 1920 Welwyn Garden City, a partly residential and partly industrial settlement, in which an attempt was made to combine the amenities of a town with the beauties of rural surroundings; its rapidly growing pop. is 13,000.

Wembley, borough of Middlesex, England, mainly a residential suburb of London; in 1924 a mammoth British Empire Exhibition was held here; a sports stadium, built in that year, and capable of holding 100,000 spectators, is the venue of the Association Football Cup Final. Pop. 108,000.

Wen, a cyst in the form of a tumour which may occur on any part of the body, but is commonest on the scalp; it grows very slowly, forming by the accumulation of sebaceous matter in a hair follicle or sac.

Wenceslas, hero of a famous carol poor. He is usually assumed to be Wenzel or Wenceslas, king of Bohemia in the 10th Century, who was converted to Christianity and founded several churches in Prague and other parts of the country. While on his way to Mass on Sept. 28, 935, he was murdered by his brother. Buried at St Vitus's cathedral, Prague, he was later canonized.

Wends, a Slav people who, about the possession of vacant lands on the southern shores of the Baltic, and extended their incursions as far as Hamburg and the ocean, and to the S. over the Elbe. Their remnants now dwell between the Elbe and the Oder, and are completely Germanized, though traces of their Slav language remain.

Wener, Lake, the largest lake in Sweden, in the SW., 150 ft. above the sea-level and 100 m. long by 50 m. at its greatest breadth; contains several islands, and abounds in fish.

Wenlock, town in Shropshire, England, on the R. Severn, 14 m. from Shrewsbury; it has an old church and timbered guildhall dating back to the 16th Century; is an agricultural centre, and there are coal fields in the district. It includes the towns of Broseley and Ironbridge, and formerly claimed the distinction of being (in area) the largest borough in England. Pop. 14,000.

Wensleydale, district of the N. Riding of Yorkshire, England, in the upper valley of the R. Ure, producing a well-known local cheese. Jervaulx abbey is in the neighbourhood.

Wentworth. See *Stratford*.

Weregeld, or *Wer-Gild*, among the old races a fine, the price of homicide, of varying amount, paid in part to the relatives or community of the person killed and in part to the king or chief.

Werewolf, a person transformed into a wolf, or a being with a literally wolfish appetite, under the presumed influence of a charm, or some demonic possession. The origin of belief in this power

(known as lycanthropy) is very old, being associated with the legends of ghouls and vampires. It was once prevalent throughout Europe, and still persists among the peasants of south-eastern Europe.

Weser, a river of Germany formed by the Fulda and the Werra. It has a N.E. course to the North Sea. Length about 450 m.

Wesermünde, a seaport of Prussia, at the mouth of the Weser. It has woollen mills and is a fishing port. Pop. 77,500.

Wesley, *Charles*, English hymn-writer, born at Epworth, brother of John Wesley (q.v.), with whom he was associated in the establishment of Methodism. His hymns are highly devotional, and are to be found in all the hymnologies of the Church. (1707-1788).

Wesley, *John*, English religious leader, and the founder of Methodism, born at Epworth, Lincolnshire. While at

Lincoln College, Oxford, he and his brother Charles, with others, distinguished for their religious earnestness, were nicknamed Methodists; in 1735 travelled to the U.S.A. with some Moravians, whose piety impressed him, and on his return to England was persuaded to a kindred faith; thenceforth preached the immediate connexion of the soul with, and its direct dependence upon, God's grace in Christ alone. This gospel he preached in disregard of all ecclesiastical authority, riding about from place to place on horseback, and finding people wherever he went, especially in Cornwall, ready listeners. He never separated from the Church of England, in spite of his activities. His works included a Journal, Sermons, and many hymns. (1703-1791). See *Methodists*.



JOHN WESLEY

Wesleyan Methodists, the religious body founded on the death of John Wesley (q.v.) to disseminate his doctrines. It made rapid progress, and in 1817 formed a missionary branch. It suffered from many schisms in its earlier years, but in the 20th Century a number of these were healed, the more important branches of the parent body reuniting in 1929 as the Methodist Church (see *Methodists*).

Wessex, a territory in the SW. of England, roughly coterminous with the present counties of Hants, Berks, Wilts, Dorset and Somerset, conquered and occupied by Saxons under Cerdic, who landed at Southampton in 494, known as the West Saxons, and who gradually extended their dominion over territory beyond it till, under Egbert, they became supreme over the other kingdoms of the Heptarchy.

West Bridgford, urban district of Nottinghamshire, England, on the Trent, 1½ m. SE. of Nottingham, of which it is a suburb. It contains the Nottinghamshire County Cricket ground. Pop. 19,200.

West Bromwich, a manufacturing town of the "Black Country," in Staffordshire, England, 5 m. NW. of Birmingham; has important industries connected with the manufacture of iron ware, as well as brick and machinery works. Pop. 82,000.

Westbury, town of Wiltshire, England, 25 m. from Salisbury. The figure of a horse cut here in Bratton Hill is said to mark the scene of an encounter in 890 between King Alfred and the Danes. The main industries are glove, cloth, woollen and brick and tile manufacturing. Pop. 4,000.

Western Australia, the largest Australian States, but (except for Tasmania) the least populous, formerly called the Swan River Settlement, 1,500 m. long and 1,000 m. broad, embracing nearly one-third of the Australian continent. Much of it, particularly in the centre, is desert, and the best soil is in the W. and N.E. The discovery of gold about 1892 caused a great influx of population. In 1890 it received a constitution and became self-governing; it entered the Commonwealth on its formation. Perth, on the Swan R., is the capital, with Fremantle as port; other towns are Subiaco, Kalgoorlie, and Boulder. The principal exports are wheat, wool, gold, timber, hides, and fruit. Area, 975,900 sq. m.; Pop. 458,453. In 1934 a movement for secession from the Australian Commonwealth was confirmed by a referendum of the people, and a petition was presented to the British Parliament praying for its confirmation, but was rejected on the ground that the matter was one for decision by the Federal Government.

West Ham, county borough in Essex, England, immediately adjoining the county of London on the E. and the Thames on the S. The southern part, adjoining the river, is largely occupied by docks and warehouses; industries of all kinds are carried on. Pop. 265,800.

West Indies, an archipelago of islands extending in a curve between N. and S. America from Florida on the one side to the delta of the Orinoco on the other, constituting the summits of a sunken range of mountains which run in a line parallel to the ranges of N. America. They are divided into the Greater Antilles (including Cuba, Haiti, Jamaica, and Puerto Rico), the Lesser Antilles (including the Leeward and the Windward Isles), and the Bahamas. They all lie, except the last, within the torrid zone; they yield all manner of tropical produce, and export sugar, coffee, tobacco, cotton, spices, etc. Cuba and Haiti (qq.v.) are independent, Puerto Rico and the Virgin Is. are United States possessions, and the remainder are English, French or Dutch. The name Indies was applied to them because when Columbus first discovered them he believed that he was close upon India, which he had calculated he would find by sailing west. For further details see separate articles.

Westinghouse, **George**, American inventor, born at Central Bridge, N.Y. After serving in the Civil War, and as an assistant engineer in the Navy, 1864-75, he invented the air-brake in 1869, and later was responsible for many devices for railway signalling and use of alternating electric currents. (1846-1914).

Westland, a provincial district of New Zealand, South I., New Zealand? Mining, farming and lumbering are carried on, and butter and cheese are manufactured. The chief town is Greymouth. Area, 4,880 sq. m. Pop. 18,700.

Westmeath, an inland county in Leinster, Eire (Ireland); is mostly level and gently undulating; the soil in many parts is good, though little cultivated; the only cereal crop raised is oats, but the herbage it yields supplies food for fattening cattle, which is a chief industry. County town, Mullingar. Area, 681 sq. m. Pop. 54,700.

Westminster, city forming one boroughs of the county of London, England, on the N. bank of the Thames, and comprising a great part of the West End of London. Since the removal of the English capital from Winchester under the Normans, it has been the seat of the legislative authority of England. It contains Whitehall, the Houses of Parliament, most of the Government offices,

Buckingham Palace, many of the most important shops of the metropolis, the high-class residential district of Mayfair, and St. James's, the Green and most of Hyde Parks. Pop. 124,000.

Westminster, **Dukes of**, surnamed Grosvenor, of an old Cheshire family. In 1677 Sir Thomas, third bt., married Mary, daughter and heiress of Alexander Davie(s), alderman of London, who had acquired the Manor of Ebury, covering a great part of the area of Westminster. Sir Richard, seventh bt., was made Earl Grosvenor, 1761, and his successor, Robert, created Marquess of Westminster in 1831. Hugh Lupus, third marquess, who until his succession in 1869 had been for over twenty years Liberal M.P. for Chester, was made Duke, 1874 (1825-1899). His son, Hugh Richard Arthur, is the present Duke. (1879-).

Westminster, **Statute of** (1931), the charter of legislative independence of the self-governing British Dominions. It provides that the Colonial Laws Validity Act, 1865, shall not apply to any law passed by a Dominion Parliament; that no Dominion Law shall be void on the ground of repugnance to the law of England; that a Dominion Parliament may make laws having extra-territorial operation; that the United Kingdom Parliament may not legislate for a Dominion except where that Dominion has requested and consented to such enactment. The chief sections of the Statute apply to Australia and New Zealand only if and when their parliaments adopt them, which so far they have not done.

Westminster Abbey, officially the collegiate church of St. Peter, Westminster, is

but a part of what was once a great monastic establishment, with farmyards, vineyards and tilled fields around the precinct walls. The church, excluding the seven western bays of the nave, and Henry VII.'s chapel to the E., was built by Henry III. in the 25 years from 1245 to 1270. The chapter house, the portion of the cloister leading to it, and those of its bays which are attached to the S. aisle of the early part of the church, are all parts of Henry III.'s work. The W. bays, the rest of the cloister, and the Abbot's house (now the deanery) were built in the 14th and 15th Centuries. The exterior has been so completely recased as to be in effect a series of modern works. The abbey has been the scene of all coronations since the time of Harold, and is the burial place of most kings of England and of numerous statesmen, poets and others; its most remarkable modern monument is the Tomb of the Unknown Soldier, killed in the Great War, buried in the nave on November 11th, 1920.

Westminster Assembly, a convocation of divines assembled under authority of Parliament, at which delegates from England and Scotland adopted the Solemn League and Covenant (q.v.), fixed the establishment of the Presbyterian form of church government in the three kingdoms, drew up the *Confession of Faith*, the *Directory of Public Worship*, and the Larger and Shorter Catechisms. It held its first meeting on July 1, 1643, and did not break up till February 22, 1649.

Westminster Cathedral, the principal Roman Catholic place of worship in England, near Victoria Station, London, was



WESTMINSTER ABBEY (FAÇADE)

built (1893-1903) from the designs of J. F. Bentley, in early Byzantine style. The marble and mosaic decoration of the interior, although it has now reached an advanced stage, will not be completed for many years. An outstanding feature of the exterior is the domed brick campanile, 283 ft. in height.

Westminster Hall, a structure attached to the Houses of Parliament at Westminster, built by William I., and roofed and remodelled by Richard I.; was the scene of the trials of Wallace, Sir Thomas More, Strafford, Charles I., Warren Hastings, and others, and till 1883 the seat of the High Court of Justice. Its roof, composed of 13 great timber beams, is one of the largest in the world to be unsupported.

Westminster School, or **St. Peter's College**, London, one of the leading English public schools, was formerly a grammar school attached to the collegiate church of St. Peter, Westminster, and was refounded by Queen Elizabeth in 1561. The silk hats and tail-coats of its taller and elder scholars are a familiar London sight. Famous pupils include Dryden, Gibbon, and Warren Hastings.

Westmorland (i.e., westmorland), a northern county of England, 32 m. from N. to S. and 40 m. from E. to W.; is in the Lake District, and mountainous; most of the land is under pasture or forest, though crops are grown in the valleys. The county town is Kendal; Assize town, Appleby. Area, 789 sq. m. Pop. 65,400.

Weston-super-Mare, a borough and holiday resort in Somersetshire, England, on the Bristol Channel, looking across it towards Wales. Pop. 32,300.

Westphalia, former duchy of Germany, now a province of Prussia; it was made with other territories in 1807 into a kingdom by Napoleon for his brother Jerome, and designed to be the centre of the Confederation of the Rhine; was assigned to Prussia in 1815, according to the Treaty of Vienna. The chief towns are Münster and Dortmund. The district is very rich in coal and iron. Area, 7,800 sq. m. Pop. 5,040,000.

Westphalia, Treaty of, the treaty signed at Osnabrück and Münster in 1648, closing the Thirty Years' War.

West Point, an old fortress, the seat of the United States Military Academy, on the right bank of the Hudson R., 12 m. N. of New York. It was established in 1802.

Westport, (1) a seaport of Eire (Ireland), in Co. Mayo, 11 m. S.W. of Castlebar. Pop. 3,400. (2) a seaport of the W. coast of the South Island of New Zealand, 40 m. from Greymouth. Pop. 4,040.

West Riding, the most populous of divisions of Yorkshire; Wakefield is the county town. Within the West Riding most of the industries of Yorkshire are carried on at Leeds, Bradford, Sheffield, Huddersfield, Halifax, and other large towns. Area, 2,784 sq. m. Pop. 3,359,000.

West Virginia. See *Virginia*.

Westward Ho! a watering place of Devonshire, England, of great natural beauty. It is named after the title of Charles Kingsley's novel, scenes in which occur in the vicinity. Pop. 800.

Wetter, Lake, one of the largest lakes in Sweden, 70 m. long, 13 m. broad, and 270 ft. above the sea-level. Its clear blue waters are fed by hidden springs; it rises and falls periodically, and is sometimes subject to sudden agitations during a calm.

Wetterhorn (i.e., peak of tempests), Bernese Oberland, with three peaks each a little over 12,000 ft. in height.

Wexford, a maritime county in Leinster, Eire (Ireland); is an agricultural county, and exports large quantities of dairy produce; its capital of the same name is a seaport at the mouth of the R. Slaney. Area, 914 sq. m. Pop. 94,000.

Wey, a river of England, rising near Alton, Hampshire, and flowing N.E. to Weybridge, near which town it joins the Thames. Length 38 m.

Weybridge, town in Surrey, England, near the junction of the Wey and the Thames; part of the urban district of Walton and Weybridge; near here was Ham House, built by James II. for Catherine Sedley, and also in the neighbourhood are the Brooklands motor-racing track and the London Necropolis, containing the Brookwood Crematorium.

Weygand, **Maxime**, French general, born in Brussels. Serving from 1888 in the cavalry, he became Chief of Staff to Marshal Foch in 1914, retaining that position until 1923. In 1920 he repulsed the Russian forces from Warsaw; in 1923-24 he was High Commissioner in Syria. In 1930 he became Chief of the French General Staff until 1935. (1867-).

Weymouth, borough and holiday resort in Dorsetshire, England, 8 m. S. of Dorchester; has a fine beach and an esplanade over a mile in length. It came into repute from the frequent visits of George III. Pop. (with Melcombe Regis) 31,700.

Whale, any large mammal of the order Cetacea, which is said to be descended from some primitive stock of the carnivora. All species are alike in general appearance, and run from 20 ft. to 60 ft. in length, or even as much as 100 ft. The tail is provided with a horizontal fin, and is known as the "fluke"; the flipper is evolved from the normal mammalian fore-foot, the eyes are minute, and valvular nostrils are situated on the summit of the head. The whale feeds on all kinds of aquatic animals, the food being swallowed without mastication, even when it takes the form of cuttlefish and seals. Whales rise to the surface every few minutes to breathe, but can remain submerged for an hour. Their first act on reaching the surface is to expel the warm air with a whistling sound, called "blowing," and in the cool atmosphere this is condensed into a column of mist several feet high (spouting). Whales are divided into the sub-orders *Mystacoceti*, or whalebone or baleen whales, and *Odonoceti*, or toothed whales. The first sub-order includes Right Finback or Rorqual, and Humpback; the second, Sperm, Narwhal, White, Bottle-nose, and Killer or Grampus. The whaling industry is mainly in British and Norwegian hands; the threatened extinction of the whale by unregulated slaughter led in 1937 to an International Convention establishing a close season for whales. See also articles on various species.

Whale Island, small island to the E. of Portsmouth, England, where the school of naval gunnery is situated.

Wharfe, a river of the W. Riding of Yorkshire, England, rising S. of Hawes and following a S.E. course to the (Ouse), which it joins near Cawood.

Wheat (*Triticum vulgare*), an annual corn-grass cultivated from prehistoric times in Europe and Egypt, while, in China, records go back to 2700 B.C. It is now grown throughout the temperate regions of the world and in the Andes of S. America, where it is grown at an altitude of

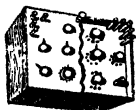
9,000 ft. It is the most important bread-food of the world, while large quantities of wheat flour are made into starch, and used for dressing woollen fabrics. The plant is represented by numerous varieties; those in which the ripened grain detaches itself naturally from the husk are referred to one species (*T. vulgare*); those in which the ripe grain is closely contained in the husk are distinguished as spealts (*T. spelta*).

The wheat grain is oval, and hairy at the apical end, but smooth at the base; the greater part is made up of a mass of endosperm, and this, together with the germ, is covered by the pericarp (fruit coat) and seed coat testa, which jointly form a hard brittle shell, separated in milling from the inner parts as bran. The germ consists of tissue densely stored with oily protoplasm, but with no starch; the endosperm contains much starch closely packed. The constitution of the grain varies: "soft" wheat may contain only 10 to 12 per cent. of starch, while in some Russian wheats it may be 17 per cent. The constituents of wheat are broadly water, 13.37; nitrogenous substances, 12.04; fats, 1.91; digestible carbohydrates, 69.07; cellulose and lignin, 1.90; and ash, 1.71.

Wheat Commission, a body set up under the Wheat Act, 1932, to secure to British growers of millable wheat a standard price and a market. The Commission collects from millers and importers of flour "quota payments" in respect of flour milled in or imported into the United Kingdom, and these sums are paid into the Wheat Fund. From the fund the Commission makes "deficiency payments" (the difference between the ascertained average price and the standard price, less administrative expenses) to registered growers in respect of home-grown millable wheat sold by them in accordance with the provisions of the Act.

Wheatear (*Oenanthe oenanthe*), a small passeriform bird, with brownish-grey plumage and black wing tips, found in hilly and open country, in Britain as a summer visitant. It nests in holes in the ground or in walls.

Wheatstone, Sir Charles, British physicist and electrician, born near Gloucester; was appointed professor of Experimental Philosophy in King's College, London, and distinguished himself by his inventions in connexion with telegraphy; the stereoscope was of his invention. (1802-1875).



WHEATSTONE
BRIDGE

Wheeling, second city of West Virginia, U.S.A., on the Ohio R., 67 m. SW. of Pittsburgh; is a country rich in bituminous coal; has extensive manufactures; is a great railway centre, and carries on an extensive trade. Pop. 61,700.

Whelk, a carnivorous spiral-shelled seasnail, the shell being brownish-white or grey, of which there are numerous species. The common whelk (*Buccinum undatum*), found on European coasts, is used as bait and food.

Whigs, name given at the end of the 17th Century to the Covenanters of Scotland, and afterwards extended to the English political party which supported the Hanoverian succession and held "low" views regarding the Church of England. After the

term applied to Liberals and Radicals by their opponents.

Whin. See *Gorse*.

Whinchat (*Saxicola rubetra*), a small British bird of the Thrush family, a summer visitor to these islands; it has dark brown and buff plumage with a white stripe over the eye, and frequents heaths and commons.

Whippet, a cross-bred hound type, used for racing and rabbit coursing. It has the markings of a fox-terrier and is a hybrid from the latter and the greyhound. The average weight is about 20 lb. Whippet-racing is a popular sport in many parts of the N. and Midlands of England, especially in mining districts.



WHIPPET

Whip-Poor-Will (*Antrostomus vociferus*), an American bird of the night-jar family, also known as the Virginian night-jar. Its name was suggested by its peculiar nocturnal cry.

Whips, officers of the parliamentary party appointed to see that there is a full attendance at important debates. The term "whip" is also applied to the notes they send to members, a "three-line whip" being the most urgent. The whips of the Government party are generally junior ministers, holding office as "Junior Lords of the Treasury."

Whipsnade Zoological Park,

a country annexe of the London Zoological Gardens, situated 3 m. from Dunstable and 34 m. from London, and opened in May, 1931, to provide a place where wild animals might be exhibited and observed so far as possible in a close imitation of their natural surroundings.

Whisky (*Whiskey*), distilled alcoholic liquor made from various grains, chiefly in Ireland, Scotland and N. America. The name was originally applied to the spirit obtained from malt in Ireland and Scotland. Scotch and Irish whisky are often distilled from malted barley, and when made in the old-time pot-stills from malt dried over open fires, retain a smoky flavour. In America whisky is distilled from Indian corn or rye. New whisky is colourless and raw-tasting, but becomes mellowed and matured by storing in casks, deriving its colour from the wood of the cask. The alcoholic content varies between 40 and 50 per cent. or over.

Whispering Gallery, a room, or artificial, so shaped that a whisper or other faint sound, produced at a particular point, can be heard at some distant point with remarkable loudness. The effect is usually fortuitous, but can easily be deliberately designed. They are either *focusing*, that is, the sound is brought to a focus after a single reflection; or *conducting*, where the sound is brought from one point to the other by a series of reflections at short intervals. Good examples of each respectively are the Statue Hall or old Chamber of the House of Representatives in the Capitol, Washington, and the dome of St. Paul's Cathedral, London.

Whist, a card game originally introduced in the reign of Henry VIII., and known then by the name of "triumph," whence the term "trump"; later called "ruff" and "honours," and eventually "whiek," softened into "whist"; made fashionable about 1730 by Edmund Hoyle, who published a treatise on the game; Henry Jones ("Cavendish") developed the game further in the middle of the last century; it has largely lost its popularity in favour of Bridge (q.v.), though "Whist drives," at which a number of players compete for small prizes, are still favoured.

Whistler, James Abbott M'Neill, born at Lowell, Massachusetts; studied military engineering at West Point, and art at Paris, and settled at length as an artist in London; executed some famous portraits, in especial one of his mother (in the Luxembourg Gallery), and a remarkable one of Thomas Carlyle, now at Glasgow. Paintings of his exhibited in the Grosvenor Gallery, London, provoked a criticism from Ruskin, which was accounted libellous, and as plaintiff he got a farthing damages, without costs. Many of his etchings are to be seen in the British Museum. (1834-1903).

Whitby, a seaport and holiday resort in the N. tiding of Yorkshire, England, 54½ m. N.E. of York, is situated at the mouth of the Esk, and looks N. over the North Sea; it has ruins of a Benedictine abbey. Ornaments were formerly made from the "Whitby jet" found in the locality, and there is a fishing industry. The town was shelled by German cruisers in Dec., 1914. Pop. 11,700.

White, Sir George Stuart, English general, entered the army in 1853; won the Victoria Cross twice over; served in the Indian Mutiny, in the Afghan Campaign (1879-1880), in the Nile Expedition (1885), in the Burmese War (1885-1887), and was made Commander-in-Chief in India in 1893. Quartermaster-General in 1898, and distinguished himself by his defence of Ladysmith in the South African War. (1835-1912).

White, Gilbert, English naturalist, born in the village of Selborne, Hants; educated at Oriel College, Oxford, in which he obtained a Fellowship, which he retained all his life; became curator of Selborne, and passed an uneventful life studying the habits of the animals and birds around him, the results of his observations and notes being published in *The Natural History and Antiquities of Selborne* (1789), perhaps the most famous "nature book" in the English language. (1720-1793).

White, Henry Kirke, English minor poet, born at Nottingham; published a volume of poems in 1803, which procured him the patronage of Southey; through overzeal in study undermined his constitution and died of consumption, Southey editing his *Fernans*. (1785-1806).

Whitebait, name given to the young and related fishes, which are caught in great numbers in the Thames estuary and other waters, and used as a bait and for food.

Whitechapel, a district of the metropolitan borough of Stepney, immediately E. of the City of London; it is largely inhabited by Jews of German, Polish and Russian origin, occupied in the tailoring, dressmaking and allied trades.

Whitefield, George, founder of Calvinistic Methodism, born at Gloucester; was an associate of Wesley (q.v.) at Oxford, and afterwards as preacher of Methodism both in this country and America, commanding crowded audiences wherever he went, and creating, in Scotland particularly, a deep religious awakening; in 1741 he separated from Wesley on a doctrinal issue. (1714-1770).

Whitehall, thoroughfare in Westminster, London, where are situated the Cenotaph (q.v.), the principal government offices, the Horse Guards, and the banqueting-hall of the old Whitehall Palace, from which Charles I. passed to be executed, and which is now a museum.

Whitehaven, a seaport of Cumberland, England, 38 m. SW. of Carlisle, with coal and hematite iron mines in the neighbourhood; has blast-

furnaces, ironworks, and manufactures of various kinds, with a considerable coasting traffic. Pop. 23,200.

Whitehead, **Alfred North**, British philosopher, born in the Isle of Thanet; from 1914 was professor of applied mechanics at the Imperial College of Science, and from 1924 Professor of Philosophy at Harvard. Among his works are *Principia Mathematica* (with Bertrand Russell), 1910-13; *Science and the Modern World*, 1925; and *Adventures of Ideas*, 1933. (1861-).

Whitehead, Robert, British engineer, born at Bolton-le-Moors, Lancashire; applied himself to machine invention, and in 1866 produced the torpedo known by his name and adopted by the Admiralty in 1871. (1823-1905).

White Horse, a figure of a horse on a hill-side, formed by removing the turf, and showing the white chalk beneath; the most famous is one on Bratton Hill, near Westbury, Wilts, alleged to commemorate a victory of King Alfred over the Danes. A similar "horse" is to be seen at Uffington, Berks, near Wantage, where the annual ceremony of "Scouring the White Horse" was formerly held, and others are found in both Wiltshire and Berkshire. Formerly thought to be Saxon work, some at least of them are now recognized as anterior to the Anglo-Saxon conquest of England.

White House, the official residence of the President of the United States, a building of free-stone painted white; it is situated in Washington, D.C.



WHITE HOUSE

White Lead,

a compound of lead carbonate and hydrated oxide of lead, used as a pigment. See **Lead**.

White Nile, one of the two streams forming the Nile, which flows out of the Albert Nyanza, and unites with the Blue Nile from Abyssinia near Khartoum.

White Russia, a constituent republic of the U.S.S.R., N. of the Ukraine and E. of Poland. It is crossed by the rivers Dnieper, Pripiet and Dvina. The chief town is Minsk. Area, 49,000 sq. m. Pop. 5,439,500.

White Sea, a large inlet of the Arctic Ocean, in the N. of Russia, which is entered by a long channel and branches inward into three bays. It is of little service for navigation, being blocked with ice all the year except in June, July, and August, and even when open encumbered with floating ice, and often enveloped in mists at the same time. Its chief port is Archangel.

Whitethroat (*Sylvia communis*), a small widely-distributed bird of the Warbler family which frequents hedges and bushy localities; its plumage is brown with rufous wings, a pink tinge below, and pure white throat. It utters a loud chattering song as it ascends. *Sylvia curruca*, the lesser whitethroat, is a smaller bird with a lower note.

Whitgift, John, British divine, born at Great Grimsby; was educated at Cambridge, and became Master of Trinity College; escaped persecution under Queen Mary, and on the accession of Elizabeth was ordained a priest; after a succession of preferments, both as a theologian and an ecclesiastic, became bishop of Worcester in 1577 and archbishop of Canterbury in 1583; attended Queen Elizabeth on her deathbed, and crowned James I.; was specially zealous against the Puritans. (1530-1604).

Whiting,

an edible sea-fish, of the family *Gadidae*, differing from the cod in having no barbels. The British species is *Gadus merlangus*. The average weight is about 2 lb.

WHITING

Whitley, John Henry, British politician. Born at Halifax, he was educated at Clifton and London University, and became Liberal M.P. for the town of his birth in 1900; from 1921 to 1928 he was Speaker of the House of Commons, and is also known as the originator of Whitley Councils for the settlement of industrial disputes. (1866-1935).

Whitley Bay, seaside resort in Whitley and Monkseaton urban district, Northumberland, England. It is 24 m. N.E. of North Shields. Pop. (Whitley and Monkseaton) 27,000.

Whitley Councils, bodies set up in Great Britain for the attempted settlement of labour disputes as a result of the report of a committee presided over by J. H. Whitley (q.v.) in 1917. Such councils, consisting of equal numbers of employers and employees, were set up in several industries after the World War, but the movement for their establishment failed to make the progress expected of it.

Whitlow, a suppurating inflammatory sore, usually in a finger or the thumb, in the terminal joint. It is generally caused by the septic infection of an abrasion or small wound.

Whitman, Walt, American poet and man of letters, born in Long Island, U.S.A., of parents of mingled English and Dutch blood; he served as a nurse in the American Civil War. His verse, written in a rugged semi-prose, is collected as *Leaves of Grass*; he also wrote *Democratic Vistas* (1870), and *Autobiography* (1892). (1819-1892).

Whitstable, coastal town and holiday resort in Kent, England, 6 m. N. of Canterbury; is chiefly famous for its oysters. Pop. 15,500.

Whitsunday, the seventh Sunday after Easter, a festival day of the Church kept in commemoration of the descent of the Holy Ghost.

Whittier, John Greenleaf, the American, can "Quaker Poet," born at Haverhill, Massachusetts, the son of a poor farmer; worked, like Burns, in the fields, and acquired a loving sympathy with Nature, natural people, and natural scenes. Turning to journalism, he became a keen abolitionist and the poet-laureate of abolition. Of his poems *Maud Muller* and *Skipper Iveson's Ride* are well known. (1807-1892).

Whittington, Sir Richard, Lord Mayor of London, born at Pauntley, Gloucestershire; came to London, prospered in business, was elected Lord Mayor three over, and knighted. He is the hero of the nursery tale, *Dick Whittington and his Cat*. (1358-1423).

Whooping, or **Whooping Cough**, infectious disease of the mucous membrane lining the air passages, marked by frequently recurring fits of convulsive coughing, followed by a characteristic loud whoop or indrawing of the breath and often also with vomiting. It mostly attacks children, female more often than male; in infants it is dangerous, but one attack generally gives immunity from a recurrence; it may, however, occur in old age. The cause is believed to be due to a bacillus in the sputum. The catarrhal stage may last a fortnight, the coughing stage from four to six weeks. Bronchitis, pneumonia, and asthma are frequent complications.

Whortleberry,

otherwise bilberry, called in America the huckleberry, the bluish-black fruit of the shrub *Vaccinium Myrtillus*, used for making jelly. The red whortleberry (*Vaccinium Vitis-Idaea*) closely resembles the cranberry, and its berries are sometimes sold as such.

Whymper, Edward, English

wood-engraver and mountain-climber, born at Lambeth. He began climbing in Dauphiné in 1862, and made his first ascent of the Matterhorn, attended with loss of four lives, 1865. In 1867 and 1872 he visited Greenland, and in 1888 climbed Chimborazo, Cotopaxi, and other peaks in the Andes, visiting the Canadian Rockies in 1901 and later. He wrote several books on mountaineering, including *Scrambles Amongst the Alps*. (1840-1911).

Wichita, second city of Kansas, U.S.A., on the Arkansas R. It has engineering shops and numerous manufactures. There are oil wells in the vicinity. Pop. 111,100.

Wichita Falls, city of Texas, U.S.A., R. It has manufactures of glass, pottery, various food products, and oil refineries. Natural gas is also produced in the neighbourhood. Pop. 43,700.

Wick, county town of Caithness, Scotland, on Wick R., 161 m. N.E. of Inverness, the chief seat of the Scottish herring fishery. Wick proper, with its suburbs Louisburgh and Bonhaven, is on the N. of the river, and Pultneytown on the S.; has a few manufactures, with distilleries and breveries. Pop. 7,500.

Wicklow, a county of Leinster, Eire (Ireland), S. of co. Dublin, with a largely mountainous surface and many holiday resorts on the coast; it is famous for the beauty of its scenery. There is some mineral wealth. The highest peak is Lugnaquilla (3,040 ft.). The county town is Wicklow. Area, 782 sq. m. Pop. 58,500.

Widcombe-in-the-Moor, village of Devonshire, England, between Dartmoor and the R. Dart, 12 m. N.W. of Newton Abbot. It is the site of a famous country fair, commemorated in a well-known folk-song.

Widgeon (*Wigeon*), a genus (*Marca*) of wild ducks of the family Anatidae, breeding in swampy and marshy districts.

The chief species is the Common Widgeon (*Marca penelope*), with long pointed wings, short pointed tail and white patch on the lesser wing coverts.

Widnes, town in Lancashire, England, on the Mersey; with chemical and copper-smelting industries. Pop. 42,000.

Wiener-Neustadt, a town of 14 m. S. of Vienna. It manufactures leather, machinery, and pottery. Pop. 36,800.

Wiesbaden, town in Hesse-Nassau, Germany, 5 m. N.W. of Mainz, a watering-place abounding in hot springs, and one of the best-frequented spas in Europe. In 1925 it became the headquarters of the British Army of Occupation on their withdrawal from Cologne, being evacuated in December, 1929. It has a number of fine buildings, including the Kurhaus, and a palace. Pop. 160,000.



WHORTLEBERRY



WIDGEON

Wig, an artificial covering for the head interwoven by a kind of network, and made to imitate the natural hair, or in abundant flowing curls; worn either to conceal baldness or for ornament, theatrical costume, or by judges and barristers as part of their official robes. A full-bottomed wig is one which reaches down to the shoulders and is worn by judges on ceremonial occasions. Wigs did not go out of general use, except by professional classes, until the latter half of the 18th Century.

Wigan, a town in Lancashire, England, 18 m. NW. of Manchester, in the centre of a large coalfield; cotton and iron goods are manufactured. Pop. 84,000.

Wight, *isle of*, an island in the S. of England, and a separate administrative county, divided from Hampshire by the channel of the Solent. It is quadrangular in shape, is 23 m. in utmost length, and about 14 m. in utmost breadth; is traversed by a range of chalk downs from E. to W. The soil is fertile, especially in the E.; the scenery is rich and varied, and the climate charming. Newport is the county town, others being Hyde, Cowes, and Sandown-Shanklin. Near Cowes is Osborne House, once the summer residence of Queen Victoria. The island contains many popular holiday resorts. Area, 147 sq. m. Pop. 88,400.

Wigtownshire, the most southerly county in Scotland, in the SW. of which the largest town is Stranraer, and the county town Wigtown; it is an agricultural county, and largely pastoral. Area, 487 sq. m. Pop. 29,300.

Wigwam, a hut or cabin of the North American Indians; consisting usually of a rough conical framework of stakes or poles covered over with bark, matting or tanned hides.



Wilberforce,

Samuel, English prelate, born at Clapham, third son of the succeeding; entered Oriel College, Oxford, at 18, where he distinguished himself by his powers of debate; took holy orders and rose to eminence in the Church; was made Bishop of Oxford in 1846, and of Winchester in 1869; was a High Churchman of the pure Anglican type; equally opposed to Roman Catholicism and Nonconformity; shone in society by his wit and powers of conversation; was killed by a fall from his horse; he was popularly known by the sobriquet of "Soapy Sam." (1805-1873).

Wilberforce, **William**, British philanthropist, born in Hull; attended St. John's College, Cambridge, at 17; represented his native town in Parliament as soon as he was of age. He was early and deeply impressed with the inhumanity of the slave-trade, and to achieve its abolition became the ruling passion of his life. He introduced a Bill for its suppression in 1789, but it was not till 1801 that he carried the Commons with him, and he had to wait six years longer before the House of Lords supported his measure and the Emancipation Act was passed. He retired into private life in 1825, and died three days after the vote of 20 millions to purchase the freedom of the West Indian slaves. He was an eminently religious man of the Evangelical school; author of a *Practical View of Christianity*. (1759-1833).

Wilcox, **Ella Wheeler**, American poetess. She wrote sentimental verse, and for some years had a wide vogue; *Laugh, and the world laughs with you*, is perhaps her best-known poem. (1865-1919).

Wild Cherry, or **Gean** (*Prunus avium*), a tree of the order Rosaceae, reaching a height of 70 ft.; its bark is dull red, peeling in thin strata and striated with transverse lines; the base of the trunk is ridged with furrows. The leaves are pale green, long and oval; the flowers open and white; the fruit dark-red, heart-shaped, and sweet, with a scanty sticky juice. The wood is used in cabinet and instrument making and for tobacco pipes.

Wilde, **Oscar Fingail O'Flahertie Wills**, Irish writer, born at Dublin; won the Newdigate Prize at Oxford, and embarked on a brilliant literary career, but in 1895 was convicted of homosexual practices, and imprisoned for two years. He died in Paris in poverty three years after his release. As a dramatist his work was distinguished chiefly for brilliant epigrams, his plays including *The Importance of Being Earnest* and *Lady Windermere's Fan*; his poems include *The Ballad of Reading Gaol*, and he also wrote a novel, *The Picture of Dorian Gray*. (1856-1900).

Wilder, **Thornton Niven**, American novelist and playwright, born at Madison, Wisconsin; his best-known works are *The Bridge of San Luis Rey* (1928), *The Angel that Troubled the Waters* (1928) and *The Woman of Andros* (1930). (1897-).

Wilderness, a district in Virginia, U.S.A., the scene of a two-days' terrible but indecisive conflict in the American Civil War on May 5 and 6, 1864.

Wilfrid, **St.**, English divine; after a visit to Rome at the age of twenty he returned to England to defend Roman customs at the Synod of Whitby (664) against the Celtic bishops. In 668 he became Archbishop of York, but was deposed, and went to Sussex, in whose conversion to Christianity he played a great part. In 705 became bishop of Hexham. (c. 635-709).

Wilhelmina I., Queen of the Netherlands, daughter of William III., on whose decease in November, 1890, she ascended the throne; her mother, a sister of the Duchess of Albany, acted as regent during her minority, and she became of age on August 11, 1898, when she was installed as sovereign amid the enthusiasm of her people; in 1901 she married Prince Henry of the Netherlands, and gave birth to a daughter, Princess Juliana, in 1909. (1880-).

Wilhelmshaven, German naval station, on Jahde Bay, in the North Sea. 43 m. NW. of Bremen. Pop. c. 30,000.

Wilkes, **John**, English politician, born at Clerkenwell; was elected M.P. for Aylesbury in 1761; started



JOHN WILKES

a periodical called the *North Briton*, in which he published an offensive libel, which led to his arrest on an illegal general warrant and imprisonment in the Tower, from which he was released amid general rejoicing among the people. He was afterwards prosecuted for an obscene production and outlawed for non-appearance; he sought an asylum in France, and on his return was elected for Middlesex, but was again committed to prison. This treatment made him the object of popular favour; he was elected Lord Mayor of London, re-elected for Middlesex, and at length allowed to take his seat in the House. The cause of civil liberty owes much to the agitation excited by his case. (1727-1797).

Wilkins, Sir George Hubert, Australian explorer. Born at Mt. Bryau, South Australia, he became a photographer with the Turkish army in the Balkan War of 1912, and in the World War served in the Australian Air Force, after being second-in-command of Stefansson's Canadian Arctic expedition of 1913. He took part in the British Imperial Antarctic expedition of 1920, and Shackleton's last expedition of 1921, and in 1926 led the Detroit Arctic expedition. (1888-).

Will, a legal document providing for the disposal of property after death; only persons of full age (21) can make a will. Every will must be signed at the end by the testator or some other person in his presence and by his direction; and his signature must be either made or acknowledged by him in the presence of at least two witnesses present at the same time, who must attest the will in his presence. Any alteration in a will after execution must be executed in the same way as the will, but it is sufficient if the testator and the witnesses sign their names in the margin or close to the alteration. Alterations insufficiently executed may, however, be validated by a codicil, and a codicil must also be executed like the original will. A will is always revocable. If the testator wishes to change the disposition of his estate, it is better to make a new will, revoking the old one, or to add a codicil to the first. It is usual to appoint two executors, but any number up to four may be appointed. A will operates on property acquired after it has been made; hence it is advisable always to leave to some person or persons "the residue of my estate and effects." A person must be of sound mind if his will is to be valid; but delusions that leave his general understanding unimpaired and not connected with his testamentary dispositions will not invalidate the will. If an executor has not been appointed or will not or cannot act, the residuary legatee nearest of kin to the deceased, or a legatee, is entitled to take out letters of administration. The executor or administrator must take the will to the Probate Registry at Somerset House or to a local District Probate Registry and prove the will. Copies of wills are kept at Somerset House, where there is also a depository for the safe custody of the wills of living persons. By an Act of 1838, following the practice in several of the Dominions, the widow or widower and certain other dependent relatives of a testator who has not made adequate provision for them by will may apply to the Courts for additional provision to be allotted to them from the estate.

Willenhall, town of Staffordshire, England. 14 m. S.W. of Lichfield. Its chief industries are brass and iron-founding and the manufacture of locks, bolts, iron boxes, oil stoves, etc., and brickmaking. Pop. 27,700.

Willesden, borough of Middlesex, England, 5 m. N.W. of London. It has large railway shops and several industries, but is chiefly a "dormitory suburb" of London. Pop. 100,000.

Willett, William, English architect, originator of the idea of "daylight saving" (q.v.), which was adopted a year after his death. (1857-1915).

William I., The Conqueror, King of England, born at Falaise, Normandy, illegitimate son of Duke Robert III. of Normandy, on whose death he succeeded him; as the cousin of Edward the Confessor, he was nominated by him his successor to the English throne, Harold meanwhile assuming the royal title. He invaded England, defeated Harold at Senlac in 1066, and was crowned king, establishing his power finally over the whole country by 1071. He rewarded his followers with grants of land

and lordships over them, subject to the Crown. The Domesday Book (q.v.) was compiled by his order, and the kingdom brought into closer relation with the Church or Rome, his adviser in church matters being Lanfranc, archbishop of Canterbury (q.v.). He died by a fall from his horse when suppressing rebellion in Normandy, and was buried at Caen. His invasion of England is known as the Norman Conquest. (1027-1087).

William II., King of England, surnamed Rufus, born in Normandy, third son of William I.; succeeded his father in 1087; had to face rebellion, headed by Bishop Odo, in favour of his elder brother Robert, Duke of Normandy, which he suppressed with popular aid; he proved a stern and exacting ruler. His energy was great, but was spasmodic; he added Normandy to his dominion by compact with Robert, who went on Crusade, compelled Malcolm of Scotland to do homage for his kingdom, conducted several campaigns against the Welsh, and had a long-continued quarrel with Archbishop Anselm, in defence of the royal prerogative against the claims of the Church. He was accidentally shot while hunting in the New Forest, and buried in Winchester Cathedral. In his reign Westminster Hall was built. (1060-1100).

William III., King of England, born at The Hague, son of

William II., Prince of Orange, by Mary, the daughter of Charles I.; during a contest on the part of the United Provinces with Louis XIV. was, in 1672, elected Stadtholder, and by his valour and wisdom brought the war to an end in 1678; married his cousin Mary, daughter of James II.; being invited to England, landed with a large army at Torbay, and on the flight of James to France



WILLIAM III.

he and Mary were proclaimed King and Queen of Great Britain and Ireland in 1689. The Scots and the Irish offered resistance in the interest of the exiled monarch, but the former were defeated at Killcrankie in 1689, and the latter at the battle of the Boyne in 1690. He was an able man and ruler, but his reign was troubled by an interminable feud with France, and by intrigues on behalf of James both at home and abroad. He died by a fall from his horse at Kensington just as a great war with France was impending. He was through life the adversary of Louis, and before his death he had prepared the materials of that coalition which, under Marlborough and Prince Eugene, brought Louis to the brink of ruin. (1650-1702).

William IV. King of England, known as the "sailor king," born at Windsor, the third son of George III.; entered the navy in 1779; saw service under Rodney and Nelson, but practically retired in 1789, though he was afterwards promoted to be Admiral of the Fleet, and Lord High Admiral, and continued to take great interest in naval affairs. After living, as Duke of Clarence, from 1792 to 1816 with Mrs. Jordan, the actress, by whom he had 10 children, he married in 1818 Adelaide, eldest daughter of the Duke of Saxe-Meiningen. On the death of the Duke of York in 1827 he became heir-presumptive, and on the death of George IV. in 1830 succeeded to the throne. His reign was distinguished by the passing of the first Reform Bill in 1832, the abolition of slavery in the colonies in 1833, the reform of the poor laws in 1834, and the Municipal Reform Act in 1835. He died at Windsor, and was succeeded by his niece, Victoria. (1765-1837).

William I., German Emperor, born in Berlin, second son of Frederick-William III. of Prussia, and brother of Frederick-William IV., his predecessor on the Prussian throne; took part in the war of liberation that preceded the fall of Napoleon. In 1858 he was appointed regent owing to his brother's incapacity, and on February 2, 1861, he succeeded to the throne. A threat of insurrection after his accession was quashed by the successful war with Denmark, which issued in the recovery of the duchies of Schleswig-Holstein. This provoked a war with Austria, which lasted only seven weeks, and ended with the consent of the latter to the projected unification of the other states, and the establishment of a confederation under the headship of the Prussian king, a unification which was consolidated at the close of the Franco-Prussian War, when, on January 18, 1871, the Prussian king was proclaimed emperor of Germany in the palace of Versailles. (1797-1888).

William II., German Emperor, born in Berlin, son of Frederick III., whom he succeeded as emperor in 1888, and grandson of the preceding, and through his mother of Queen Victoria. One of the first acts of his reign was to dismiss Bismarck, and take upon himself full responsibility for the home and foreign policy of the State. Germany remained at peace during the first 26 years of his reign, in spite of his frequent interference in the affairs of other nations, and his asseveration of her claims to a "place in the sun." His responsibility for Germany's part in the World War is a matter on which the future alone can pronounce. In November, 1918, after Germany's collapse, he abdicated and fled to the Netherlands, where he afterwards resided, mainly at Doorn. The threat which had been made by the Allies to call him personally to account for the war was by general consent dropped. (1859-).



KAISER
WILLIAM II.

William, ex-Crown-Prince of Germany, son of the Emperor William II. (q.v.). He took an important army post on the western front in the World War, was prominent though not successful at the siege of Verdun, and in November, 1918, renounced his right of succession to the throne and fled to the Netherlands. Later he returned to Germany, but made no serious bid for the throne. (1882-).

William the Lion, king of Scotland, grandson of David I., and brother of Malcolm IV., whom he succeeded in 1165, and whose surname is supposed to have been derived from his substitution of the lion for the dragon on the arms of Scotland; was taken captive when invading England at Alnwick Castle in 1174; sent prisoner to Falaise, in Normandy, but liberated on acknowledgment of vassalage to the English king, a claim which Richard I. surrendered on payment by the Scots of 10,000 marks to aid him in the Crusade; was the first king of Scotland to form an alliance with France; died at Stirling after a reign of 49 years. (1143-1214).

William the Silent, Prince of Orange, a cousin of the house of Nassau, the first Stadtholder of the Netherlands; he became leader of the anti-Spanish party, and brought about the Union of Utrecht in 1579, comprising the seven provinces which became the nucleus of the United Netherlands. He was assassinated by Balthazar Gerard at Delft. (1533-1684).

Willington, Freeman Freeman-Thomas, first Marquess of, British administrator; entered the House of Commons as a Liberal in 1900; in 1913 became Governor of Bombay and in 1919 of Madras; went to Canada as Governor-General in 1926, and in 1930 was appointed Viceroy of India, an office he held until 1936. (1866-).

Willington, township of Co. Durham, England, in the urban district of Crook and Willington, 4 m. N. of Bishop Auckland. Coalmining is carried on. Pop. (with Crook) 29,500.

Willoughby, Sir Hugh, British Arctic voyager, born in Derbyshire; was sent out in 1553 with three vessels by a company of London merchants on a voyage of discovery, but the vessels were separated by a storm in the North Seas, and not one of them returned. Only Richard Chancellor, the captain of one of them, found his way to Moscow, and opened up a trade with Russia and England. The ships, with the dead bodies of their crews, and the journal of their commander, were found by some fishermen the year after on the coast of Lapland. (c. 1500-1554).

Willow, the common name of a number of trees of the *Salix* genus of the family Salicaceae, applied to all not called osiers or sallows. British species include the Weeping Willow (*Salix babylonica*), a waterside tree with beautiful pendent twigs. It is believed to have flourished around ancient Babylon 3,000 years ago. It was introduced into England, at Hampton Court, about 1690.



WILLOW
(*Salix Pentanora*)

Willow Pattern, a design used in ware, copied from the blue china of Nanking, introduced into England by Thomas Turner, of Caughley, about 1780 or later. It is always blue on a white or bluish-white ground.

Wilmington, largest city and port of Delaware, U.S.A., 25 m. SW. of Philadelphia, with extensive manufactures; as Fort Christina it was an important settlement during the Swedish domination of the district. Manufactures include steamships, machinery and paper. Pop. 106,600. A village of Sussex, England, 9 m. SE. of Lewes, bears the same name; a prehistoric figure of a man holding a staff in each hand, known as the Long Man of Wilmington, is cut in the chalk cliffs above the village.

Wilson, Sir Henry Hughes, British general. Entering the army in 1884, he saw service in Burma and the Boer War, and in 1914 became assistant chief-of-staff to French. He was in Russia in 1916, and the following year became military representative on the Versailles War Council. Early in 1918 he became Chief of the Imperial General Staff; knighted in 1915, he was made a field-marshal in 1919. A keen opponent of Sinn Féin in Ireland, he was shot dead outside his London home by Irish rebels and was buried in St. Paul's. (1864-1922).

Wilson, John, Scottish man of letters, better known as "Christopher North," born at Paisley; studied at Glasgow and Oxford; a man of powerful physique and distinguished as an athlete as well as a poet; took up his abode in the Lake district, and enjoyed the society of Wordsworth, Coleridge, and Southey; wrote two poems, the *Isle of Palms* and the *City of the Plague*; was called to the Scottish bar, but never practised; became editor of *Blackwood's Magazine*, and from 1820 to 1851 was professor of Moral

Philosophy in Edinburgh University. His *Noctes Ambrosianae* are characteristic of his abundant humour and judicious criticism. (1785-1854).

Wilson, Woodrow, American statesman and 28th President of the U.S.A., born at Staunton, Virginia; a professor of jurisprudence and allied subjects at several universities, he entered politics as a Democrat, becoming in 1912 governor of New Jersey, and the following year was elected President of the United States. Early in the World War he brought pressure to bear on Germany to make her abandon attacks on non-combatants and, these failing, he was largely responsible for his country's entry into the war in 1917. He came to Europe for the Peace Conference, where his most notable work was the inclusion in the Treaty of Versailles of the League of Nations Covenant; but he was acting without the authority of his legislature, and on his return American participation in the League was rejected. He retired from office in 1921. (1856-1924).

Wilton, market town in Wiltshire, England, 3 m. NW. of Salisbury; was the ancient capital of Wessex, and gave name to the county; its church, erected by Lord Herbert of Lea in 1844, is a rich Lombardic structure, with a campanile 108 ft. high. Pop. 2,400.

Wiltshire, or **Wilts**, an inland county Gloucestershire on the N. and Dorset on the S., 54 m. from N. to S. and 37 m. from E. to W.; is largely an agricultural and pastoral county; is flat, rising into hills in the N., and is broken by downs and rich valleys in the S., except on Salisbury Plain; sheep-breeding and dairy-farming are the chief industries, and it is famous for cheese and bacon. It is remarkable for its many prehistoric antiquities, including Stonehenge, Avebury, Silbury Hill, etc. The chief towns are Devizes, Swindon, Salisbury and Trowbridge. The County Offices are at Trowbridge. Area, 1,315 sq. m. Pop. 303,000.

Wimbledon, borough of Surrey, England, 7 m. SW. of London, famous as the headquarters of English lawn tennis; it is mainly residential, and has an extensive and beautiful common. Pop. 58,000.

Wimereux, a town of dept. Pas-de-Calais, France, 2 m. NW. of Boulogne. It was for a time the British headquarters during the World War.

Wimshurst Machine, an electrical apparatus for producing large charges of static electricity by friction; named after James Wimshurst, inventor. (1832-1903).

Winchelsea, a town and Cinque port in Sussex, England; the old town, dating from Saxon times, was inundated and destroyed by the sea in 1250 and again in 1287; the new town was begun soon after; contains a 14th Century church, ruins of a Greyfriars monastery, and other antiquities. Pop. 700.

Winchester, an ancient city of Hampshire, England, and the county town, 60 m. SW. of London, on the right bank of the Itchen; is a cathedral city, with a noted large public school; was at one time the capital of England; the cathedral dates from the 11th Century, but it has subsequently undergone considerable extensions and alterations; other important buildings are the Hospital of St. Cross, founded 1132, the remains of the castle, and Winchester College (q.v.). Pop. 23,500.

Winchester College, founded in 1394 by William of Wykeham, bishop of Winchester, as "the College of the Blessed Virgin Mary

of Winchester." Wykeham created a double foundation consisting of two colleges, one at Winchester and the other, New College, at Oxford, and the two are still closely associated.

Wind, a current of air produced by difference of temperature, the warm rarified air near the surface ascending and colder air coming in to supply its place. Winds are among the most influential factors in determining climate. Being warm or cold, wet or dry, according to their region of origin, and according to the nature of the surface, sea or land, over which they have passed, it is evident the prevailing winds determine to a large extent both temperature and rainfall. The SW. winds from the Atlantic bring warmth and moisture to Britain. The vapours condensed on the mountains which run along the western sides of the British Isles and Scandinavia fall to the earth in heavy rain. During the condensation a large quantity of latent heat is set free to raise the temperature of the air. Generally speaking, where the prevailing winds are westerly, as in the northern hemisphere, and where currents of warm water are flowing in the same direction from the equator, the cold of winter is greatly mitigated, as is shown by the isotherms bending towards the pole. On the E. coasts of Asia and America, however, the prevailing winds are northerly and cold, so that there is a great difference between summer and winter temperature. Thus it happens that the W. coasts of the great continents enjoy an insular climate, while the E. coasts and inland districts endure the more trying continental climate.

Windermere, a lake on the borders of Westmorland and Lancashire, the largest in England, 10½ m. long from N. to S., and 1 m. broad; is 240 ft. deep and 134 ft. above sea-level. Rydal Mount, Wordsworth's home, is on its banks. It has lately become a trial course for speed-boats.

Windhoek, the administrative capital of South-West Africa. It is situated 5,000 ft. above sea-level, 235 m. from Swakopmund. There are hot springs in the neighbourhood. Pop. 20,300 (6,000 white).

Windlass, a drum for hoisting weights or loads by winding. The simplest kind consists of a horizontal barrel for the hoisting rope, supported in vertical standards and turned by a crank with a handle. The older windlass used on ships for raising the anchor consisted of a large horizontal roller rotated by handspikes, and differed from the capstan chiefly in the plane of its axis. Modern ships use a steam winch on the forecastle head.

Windmill, a machine for supplying motive power, generally operated by the wind acting on oblique vanes or sails which radiate from a horizontal shaft or air-screw. A modern windmill is a lofty steel-lattice structure with six, instead of the old-fashioned four, radial adjustable vanes, and its revolving wheel carrying the vanes is kept perpendicular to the main direction of the wind by a long tail-piece with a fixed vane, the direction of the tail-piece being at right angles to the plane of the rotating vanes.

Window, an opening in a wall or side of a building, etc., to admit light or air, now usually fitted with sheets of glass, mica or other transparent substance. Experience shows that the greatest quantity of light is obtained for a chamber or room when lighted by a horizontal aperture in the ceiling, as, e.g., in the case of the Pantheon at Rome. *Mullioned* windows are those with vertical divisions between their lights. A *dormer* window is one set in the inclined roof of a house, as exemplified particularly in Jacobean houses. Large circular traceries

windows are a feature of French Gothic architecture; in the earlier period, the tracery is found in wheel form with geometrical patterns at the extremity; in the later, the wheel contains a rich and closely woven flamboyant tracery of great beauty.

Window Tax, a tax levied on houses, graduated according to the number of windows over six which they contained, first imposed under William III. in 1697; bricked-up windows can still sometimes be seen in older houses as relics of the tax.

Windsor,

a town in Berkshire, England, on the right bank of the Thames, opposite Eton, and about 22 m. W. of London, with a castle which from early Plantagenet times has been the principal residence of the kings of England. Pop. 20,300.



WINDSOR CASTLE

Windsor, a town of Ontario, Canada, on the Detroit river, in a fruit-growing district; with a motor-car manufacturing industry. Pop. 63,000.

Windsor, Duke of, the title taken by King Edward VIII. (q.v.) of Great Britain after his abdication in 1936.

Windsor, Royal House of. This name was assumed by proclamation of King George V. July 17, 1917. Comprising all descendants, in the male line, of Queen Victoria, who are subjects of these realms, other than married female descendants, it includes at present, besides King George VI.; Edward, Duke of Windsor; the King's daughters Elizabeth (b. 1926) and Margaret Rose (b. 1930); Henry, Duke of Gloucester; George, Duke of Kent, his son Edward (b. 1935), and his daughter Alexandra (b. 1936); Arthur, Duke of Connaught, and his grandson Alastair Arthur, Earl of Macduff (b. 1914). Queen Mary, and others that have married male Windsors, also bear the name.

Windsor Castle, the principal residence of the English royal family, on the banks of the R. Thames at Windsor, Berks. It dates from 1070, when William I. erected a fortress by the riverside, laid out extensive parks around it, and held his court there. It has been repeatedly altered, enlarged and embellished by subsequent monarchs. Edward III. rebuilt the royal palace on a sumptuous scale, enlarged the castle with additional towers, and erected a keep and, near it, a high tower named the Winchester Tower (after William of Wykeham, bishop of Winchester). He also erected the collegiate church of St. George, which underwent a great deal of restoration work in 1930. The famous terraces were added in the reign of Elizabeth. Various parts of the old building were removed by George IV., who built an additional storey and splendid gateway entrances.

Windward Islands, a group of the belonging to Britain, extending from Martinique to Trinidad. They include Grenada, St. Vincent, St. Lucia and the Grenadines. There is a governor in common, but for other purposes the islands are independently administered. The total area is 522 sq. m. Pop. 181,000.

Windward Passage, a channel leading into the Caribbean Sea, between the islands of Cuba and Haiti.

Wine, the fermented juice of the grapes (q.v.). The chief wines in modern use are Spanish and Portuguese (port, sherry and Madeira), French (Bordeaux, Champagne, Sauternes, Burgundy), German (Rocks, Moselle),

Hungarian (Tokay), Italian (Chianti, Marsala) and Australian, South African and American imitations of these vintages are now being produced in large quantities. Wines are usually differentiated by colour, flavour, hardness or softness to the taste, and their quality of being either still or sparkling, and these differences depend on soil and sunshine and the process of manufacture. The stronger contain up to 25 per cent. of alcohol, being often fortified with brandy or other spirit, and the lighter from about 7 or 8 per cent.

Wingfield Sculls, an annual sculling race rowed on the Thames from Putney to Mortlake in July; it is in effect the amateur sculling championship.

Winkelried, Arnold von, Swiss national hero, who on the field of Sempach, 1386, is said to have rushed on the lances of the opposing Austrians, and so opened a way for his compatriots to dash through and win the day. His actual existence is a subject of controversy.

Winnington-Ingram, Rt. Rev. Arthur Foley, English ecclesiastic; serving first as a chaplain to the Bishop of Lichfield, he became rector of Bethnal Green in 1895, a canon of St. Paul's in 1897, and Bishop of London in 1901; from his early days he was actively associated with the High Church party. (1858-).

Winnipeg, formerly Fort Garry, a trading post of the Hudson Bay Co., now the capital of Manitoba, Canada, at the junction of the Assiniboine with the Red R., over 1,400 m. NW. of Montreal, on the Canadian Pacific Railway. It is the site of the Manitoba university, and is one of the greatest grain trading centres of the world, manufacturing also lumber, clothing, and other goods. Pop. 215,800.

Winnipeg, Lake, a lake in Manitoba, 40 m. N. of the city, 280 m. long, 27 m. broad, and covering an area of over 8,000 sq. m. The Saskatchewan R. and Red R. of the N. flow into it, and the Nelson flows out.

Winnowing, separating grain from chaff by means of wind or a current of air. A winnowing basket was a broad shallow basket with a handle at each end, used in primitive ages for throwing grain into a wind and catching it again when the chaff had blown away. The separating process is nowadays performed by machinery.

Winstanley, Henry, English engineer; builder, in 1696, of the first lighthouse on the Eddystone rock at Plymouth, a timber erection which perished in a storm, with its builder, in 1703.

Winter, the coldest season of the year, beginning when the sun reaches its lowest position in the sky at noon, extending in Great Britain from the end of December to the end of March. It is marked by the absence of leafage from deciduous vegetation, and in the case of many animals by a state of hibernation.

Winter Aconite

(*Frankia hymalis*), a low herb with a stout creeping root stock and pale yellow flowers, found in western Europe from Belgium southward.

Winter Cherry

(*Physalis Alkekengi*), a solanaceous plant cultivated in gardens. Its highly coloured inflated calyx is its one attraction, for the cohering sepals so enclose the other organs of the flower as to hide them completely from sight.



WINTER ACONITE

Wintergreen (*Pyrola rotundifolia*), a plant of the order Ericaceae, a small hardy perennial evergreen herb, favoured for partially shady borders or rockeries. *Gaultheria procumbens*, or American Wintergreen, is an aromatic plant with red berries. Oil of wintergreen, distilled from the leaves, is used in medicine for rheumatism and for flavouring; and also in perfumery.

Winter's Bark, the bark of *Drimys winteri*, a S. American evergreen tree of the order Magnoliaceae, somewhat like cinnamon. The bark is used as a tonic and as a remedy for scurvy.

Winterthur, town of Switzerland, in N.E. of Zurich. It has mineral springs and manufactures engines, textiles and wine. Roman remains have been found near. Pop. 54,000.

Wireless Reception. When waves fall on the aerial of a receiving set a high frequency alternating current is produced in the aerial, similar to, but much weaker than, the current in the aerial at the transmitting station (see **Wireless Transmission**). Frequency is of the order of 1,000,000 cycles per second, and the intensity of this current fluctuates with a frequency equal to that of the sound transmitted—a frequency between 50 and 10,000 cycles per second. In the receiving set the current from the aerial is amplified, or increased in intensity, and rectified—that is, a current is produced which flows always in the same direction in its circuit, but fluctuates in intensity correspondingly with the current from the aerial. A moving-coil loud speaker contains a coil of wire suspended between the poles of a permanent magnet. The coil is attached to the apex of a cone made of cloth or paper, and if a current is passed through the coil the coil moves, displacing the cone outwards (say). If the current is reversed the coil moves inwards. The movements of the cone cause the compression of the air near it, and a number of such compressions rapidly following each other result in the production of a train of waves perceived by the ear as sound. The current set up in the aerial of the receiving set is too feeble to operate a loud speaker, and must therefore be amplified by means of one or more thermionic valves (see **Valves, Radio**). The action of a valve as an amplifier depends upon the fact that, if a weak alternating current flows in a circuit which includes the filament and the grid, it alters the potential difference between them, and causes comparatively large fluctuations of the current flowing between the filament and the anode.

Wireless Transmission consists in the production in the ether of waves of such a nature that, by their aid, the sounds produced in a broadcasting studio can be reproduced at other places. The nature of the wireless waves may be pictured as follows. If a stone is dropped into a lake, across the surface of which waves are travelling, the stone produces ripples of short wave length. In water the height of the main waves (the vertical distance between a trough and a crest) is greater than that of the ripples, and the two sets of waves travel at different speeds. If, however, we concentrate our attention on the ripples which are travelling in the same direction as the main waves, and imagine them to travel at the same speed as the main waves and to have a height somewhat greater than that of the main waves, we have a picture of the ripples sent out by a broadcasting station. The ripples now correspond to the carrier wave (whose wave length is characteristic of the station), and the long waves correspond to modulations of the carrier wave. The wave length of these modulations is deter-

mined by the pitch of the sounds which fall on the microphone at the broadcasting station. The transmitting microphone is, in principle, merely a telephone transmitter (see **Telephony**) by means of which sound waves produce fluctuations of electric current, but it must be carefully designed to ensure that it responds equally well to notes of every pitch over a wide range. The fluctuating current from the microphone is amplified by means of thermionic valves, and is then impressed on a high frequency current produced in an oscillatory circuit. After further amplification the resulting current passes to the transmitting aerial, where it produces ether waves of the type described above.

Wireworm, the larva of various click-beetles, so named from their slenderness and the hardness of the integument; they are often very destructive to the roots of plants. The name is also applied to a liver fluke infesting sheep.

Wisbech, market town in the Isle of Ely, Cambridgeshire, England. An agricultural and fruit-growing centre, it has a shipping trade along the R. Nene. Oilsake, beer and farm implements are made. Pop. 15,000.

Wisconsin, one of the Central States of the U.S.A., situated between Lakes Superior and Michigan; the surface is chiefly of rolling prairie, and the soil fertile; yields cereals, sugar, potatoes, hops, hemp, and large quantities of lumber from the forests; lead, iron, copper, and silver are among its mineral resources; it abounds in beautiful lakes; the Wisconsin and the Chippewa are the chief rivers, tributaries of the Mississippi; and Madison (the capital), Milwaukee, Racine, and Kenosha are the chief towns. Area, 56,060 sq. m. Pop. 2,939,000.

Wisdom of Solomon, a book of the Old Testament Apocrypha, written at the close of the 2nd or during the 1st Century B.C. by one who knew both the Greek language and Greek philosophy, to commend the superiority to this philosophy of the divine wisdom revealed to the Jews.

Wishaw, industrial town of Lanarkshire, Perth, Scotland, on a coalfield, 15 m. S.E. of Glasgow. It has iron and steel works, blast furnaces and railway wagon works. With Motherwell it forms a burgh. Pop. (with Motherwell) 64,700.

Wistaria, a hardy climbing leguminous shrub, with blue, purple, white and mauve flowers. Several species, especially *Wistaria chinensis*, are favourite garden wall shrubs and thrive on any good soil. April and May are the flowering months.

Witch, or **Wych Hazel**, a shrub, hardy, flowering shrub, *Hamamelis virginiana*, first introduced into Britain in 1736, with clusters of yellow flowers. Its bark contains a volatile oil which is used in folk medicine as an embrocation for rheumatism and muscular complaints.

Witchcraft, the practices attributed to witches and wizards, or persons who were supposed to have entered into a compact with the devil, and thus to have obtained power to perform various acts of sorcery, usually malevolent, to predict the future, etc. Popular belief in witchcraft prevailed in England throughout the Middle Ages, and was entertained even by eminent men. Witchcraft was indictable by common law, and was later made a felony by statute, the penalty for the convicted witch being death. Many hundreds of accused persons,



WISTARIA

mostly women, were put to death as witches, especially in Scotland, where prosecutions continued until well into the 18th Century, many revolting barbarities being practised on the accused.

Witch of Endor, a divining woman consulted by King Saul, who affected to call up the spirit of Samuel, who foretold the king's defeat and doom.

Witenagemot (assembly of the wise), name given to the national council or Parliament of England in Anglo-Saxon times, through whose decisions the affairs of the kingdom were managed. It consisted of the bishops, royal vassals, and thence, but historians differ on the point whether the assembly was actually representative of the people (i.e., freemen) or was mainly a feudal institution.

Witney, market town of Oxon., Eng.-land, 10 m. W. of Oxford, on the Windrush. Gloves and woollen goods are made, but it is chiefly noted for its blankets. Pop. 5,000.

Wittenberg, a town in Prussian Saxony, on the right bank of the Elbe, 50 m. SW. of Berlin; was the capital of the electorate of Saxony, and a stronghold of the Reformers; is famous in the history of Luther, and contains his tomb; it was on the door of the Schlosskirche there that he nailed his famous 95 theses, and at the Elster Gate burned the Pope's bull. Pop. c. 25,000.

Witwatersrand, district of the Transvaal, South Africa, generally abbreviated to "Rand," a ridge of land extending about 40 m. E. and W. and centred at Johannesburg, and the world's richest gold-bearing district.

Woad (*Isatis tinctoria*), a plant of the family Cruciferae. It yields a blue dye obtained from the root-leaves; it is said to have been used by the ancient inhabitants of Britain for staining their bodies.

Wodehouse, **Pelham Grenville**, English humorous author, born at Guildford. Best known through the *Pamph* series (beginning with *Mike*, 1909) and the *Jeeves* series (beginning with *The Inimitable Jeeves*, 1924). He has also written musical comedies, including *Kissing Time*, *The Golden Alibi*, etc., and other plays. (1881-).

Woden, the German and Anglo-Saxon name for Odin (q.v.).

Woffington, **Peg (Margaret)**, English actress, born at Dublin, where she made her first appearance in 1737, and in London at Covent Garden in 1740, in a style which carried all hearts by storm; she was as charming in certain male characters as in female. Her life-story was the subject of a novel by Charles Reade. (c. 1715-1760).

Woking, town of Surrey, England, 20 m. SW. of London; a railway centre, growing in popularity as a residential outer suburb for Londoners. It has a Mohammedan mosque. Pop. 39,000.

Wokingham, borough of Berkshire, England, 7 m. SE. of Reading, at the edge of Windsor Forest. Its old buildings include the church, almshouses, and the Rose Inn. Pop. 7,300.

Wolf (*Canis lupus*), a carnivorous animal of the family Canidae, of which there are several varieties, differing only in minor particulars. The chief are the European and the Canadian. The latter has finer and denser fur than the former and broader feet. The furry pelts have considerable commercial value, though the hair of the northern varieties is longer and coarser than the southern European. The wolf is some 5 ft. in length and stands about 2½ ft. high; is generally greyish-yellow in colour, has a

drooping tail, pointed upright ears and obliquely-set eyes. The animal hunts in packs, but only attacks man when driven by hunger. It is still found in Europe in the Pyrenees, parts of the Balkan lands, and in Russia and Poland. The prairie wolf or coyote (*Canis latrans*) of the Western U.S.A. is a smaller, reddish animal.

Wolf, Friedrich August, German classical scholar, born near Nordhausen; studied at Göttingen; was professor of Philology at Halle; became world-famous for his theory of the Homeric poems, maintaining that the *Iliad* and the *Odyssey* were originally a body of independent ballads handed down by oral tradition, and gradually collected into two groups, which finally appeared each as one, bearing the name of Homer, who was probably the first to attempt to weave them severally into one. His theory, first made public in 1795, gave rise to a controversy which maintained itself for a long time. (1759-1824).

Wolf, Hugo, Austrian composer; born at Wundschgratz, S. Styria. His whole musical activity was devoted to song composition, his work including settings for Lieder by Goethe, Heyse, Mörike, and other German poets. His later life was clouded by insanity. His reputation has greatly increased since his death. (1860-1903).

Wolfe, Charles, Irish poet, author of the *Burial of Sir John Moore*, born in Dublin; became an Irish clergyman; died of consumption. (1791-1823).

Wolfe, James, English general, born at Westerham, Kent, son of a Lieutenant-general who served under Marlborough; was present at the battles of Dettingen, Fontenoy, Falkirk, and Culloden, and served in the expedition against Rochefort. Pitt appointed him to a command in Canada; here he distinguished himself first at the siege of Louisbourg, and then by the capture of Quebec, where he fell at the moment of victory over the French under Montcalm. (1727-1759).

Wolf-Fish, the common name of the fishes of the family Anarrhichidae, allied to the Blennies and included in the same sub-order (Blennioidei). They occur in northern waters, some species growing to 5 ft. in length. At least 3 species occur in British waters, the most important being the Common Wolf-fish (*Anarrhichus lupus*), the thick skin of which, known as "sea-leopard," makes excellent leather and the flesh excellent food, being marketed usually as "rock salmon," and seldom as the complete fish on account of its ugliness.



WOLF-FISH

Wolf-Hound, a type of dog formerly bred and trained for hunting wolves. There are, and were, two main types, the Russian Borzoi (q.v.), and the Irish Wolf-hound (q.v.).

Wolfram, a mineral known chemically as ferrous tungstate. It occurs in Cornwall, Spain, Malaya, Australia, Colorado, etc., and is the chief source of the metal tungsten (q.v.).

Wolf's Bane. See *Aconite*.

Wollstonecraft, Mary. See *Godwin*.

Wolseley, **Garnet Joseph, first Viscount**, British field-marshal, born in co. Dublin, of a Staffordshire family; entered the army in 1852; served in the Burmese War of 1852-1853, in the Crimean War, where he was severely wounded, in the Chinese War of 1860, and afterwards in Canada; commanded in the Ashanti War in 1878, and

received the thanks of Parliament, with a grant of £25,000, for "courage, energy, and perseverance" in the conduct of it, and after service in Natal, Egypt, and Ireland was made field-marshal in 1894, and commander-in-chief in 1895. (1833-1913).

Wolsey, Thomas, English cardinal, wool-merchant; born at Ipswich, son of a leger, Oxford; entered the Church early; and was promoted to the deanery of Lincoln; subsequently secured one bishopric after another until his revenue accruing therefrom equalled that of the Crown itself, which he spent partly in display of his rank and partly in acts of munificence; of the latter the founding of Christ Church College at Oxford was one, and the presentation of Hampton Court Palace, which he had built, to the King was another. Under Henry VIII. he obtained the chancellorship of the kingdom, the cardinal's hat and other favours. He refused to sanction his master's marriage with Anne Boleyn, and was driven from power and bereft of all his possessions. Finally, though restored to the see of York, he was arrested on a charge of treason, taken ill on the way to London, and died at Leicester. (c. 1471-1530).



CARDINAL
WOLSEY

Wolstanton, urban district of Staffordshire, England, in the Potteries, near Newcastle-under-Lyme. Here are steel works, cotton mills and engineering works in addition to potteries. Pop. 30,000.

Wolverhampton, large town in Staffordshire, England, 12½ m. NW. of Birmingham, in the midst of coal and iron fields; the centre of a group of towns engaged in different kinds of iron manufacture, especially locks and keys, and the metropolis of the Black Country. Pop. 142,000.

Wombat, a group of Australian and Tasmanian fur-bearing, burrowing marsupials all placed in the family Phascogonidae. They have some resemblance to the rodents and are clumsily built animals with little tail, short ears, etc. There are four species, ranging up to 100 lb. in weight and having a thick woolly coat. They are vegetarian feeders. The flesh is edible.

Wood, the hard fibrous substance which composes the body of a tree and its branches, and is found between the pith and the bark. In dicotyledonous plants, wood is composed of the external albuminum or sapwood, and of the duramen or hard wood within. In monocotyledonous plants the hardest part of the wood is nearest the circumference, while the interior is composed of cellular tissue. The word "timber" implies not only standing trees suitable for buildings, etc., but also such trees cut into beams, rafters, boards, and planks. Wood pulp is the principal raw material for papermaking; used also for the manufacture of artificial silk. See also Mahogany, Oak, Walnut, etc.

Wood, Sir Evelyn, British soldier, born in Essex; served in the Indian Mutiny, where he gained the V.C., also in the Ashanti, Zulu, and Transvaal (1880-1881) Wars, and in Egypt in 1882. He was a British general in the Boer War. (1838-1919.).

Wood, Sir Henry Joseph, British musical conductor, born in London; studied under several masters, including García, and at nineteen began to conduct. He conducted the first Queen's Hall Promenade Concerts when only 25, and his name became inseparable from them; he also conducted a Handel Festival, and at leading concerts in England, besides visiting America. He has introduced

the works of many composers, both foreign and native, to the British public. He was knighted in 1911. (1869-).

Wood, Mrs. Henry, (née Price), English novelist, born in Worcestershire; her best novels *The Channings* and *Mrs. Halliburton's Troubles*, though her most popular was *East Lynne*. She wrote some 30 books in all. (1814-1887).

Wood, Rt. Hon. Sir (Howard) Kingsley, British politician, a solicitor by profession. He entered the L.C.C. in 1911 and the House of Commons in 1918; was Parliamentary Secretary to the Ministry of Health, 1924-1929, and to the Board of Education, 1931; Postmaster-General, 1931-1935; Minister of Health, 1935-38; Secretary of State for Air, 1938. (1881-).

Woodbine. See *Honeysuckle*.

Wood Carving, for purposes of practised since very early times, having reached a specially high level among the negro races of West Africa, whose carvings have been found very suggestive by modern Western practitioners of the art. European wood-carving reached its greatest heights as an art subservient to Gothic architecture, the rood screens, lecterns, pulpits, etc., of many medieval churches reaching a very high level of skilled execution and beauty. The art has also been pursued with success in China and Japan. The most suitable woods for the purpose are oak, mahogany, chestnut, teak, sycamore, and American walnut.

Woodchuck (*Marmota monax*), a small rodent, of the marmot group, about 1½ ft. in length, with a stout body, broad flat head, short stocky legs, and grizzled or black fur, chestnut coloured beneath.

Woodcock (*Scolopax rusticola*), a game bird of the Plover family, with variously mottled yellow, black, and dusky brown plumage. It is about a foot long, feeds on wet and marshy ground, and hides among thorns and briars, being difficult to distinguish from dead leaves. It is a silent bird, seldom crying when flushed, and has a very swift flight.

Woodcut, an impression on paper, or as a separate broad-sheet, from an engraving made in wood. Printing from wooden blocks has been in use in the East for many centuries, being far older than printing from moveable types, and the colour work of Chinese and Japanese wood-engravers is unsurpassed. In the West woodcuts are generally printed in black and white only; the present century has seen a great revival of the art, among whose best known practitioners in Great Britain are Eric Gill, Gwendolen Ravera, Paul Nash and Clare Leighton.

Woodford, district in Essex, England, a rapidly developing residential suburb of NE. London, part of the borough of Wanstead and Woodford. Pop. (with Wanstead) 53,000.

Wood Green, borough of Middlesex, England, a N. suburb of London, between Hornsey and Southgate, mainly residential in character. The Alexandra Palace is within the district. Pop. 53,600.

Woodhall Spa, small town and inland resort in Lincolnshire, England, frequented on account of its bromo-iodine springs discovered early last century. Pop. 1,300.

Woodlouse (Oniscidea), a sub-order of land-living, air-breathing crustaceans with fourteen legs, very prolific in damp places, especially under logs of wood or decaying timber. They are also sometimes known as "slaters." One of the commonest

of the garden species is *Porcellio scaber*. The Pill Woodlouse is so named from its habit of rolling itself up into a ball.

Woodpecker, the common name of *Picidae*, of world-wide distribution. There are nearly 400 species, divided into true woodpeckers, piculets and wrynecks. The best known in Britain are the Great Spotted (*Dryobates major*), Green (*Picus viridis*), and Lesser Spotted (*Dryobates minor*). The woodpecker is brightly coloured in combinations of green, yellow, black and white, with brilliant crimson on crown and back. The Great Spotted Woodpecker has a distinctive call-note made by striking a hollow branch with its bill so rapidly as to give the effect of a drumming sound.



Wood Pulp. See **Paper**; **WOODPECKER** **Silk.**

Woodruff (*Asperula odorata*), a small Eur. rubaceous plant, with small white flowers, found in shaded hedgebanks and copses throughout Europe except in Spain and Portugal; used in perfumery and to flavour wine.

Wood Spirit, name commonly given to methyl alcohol. See **Methylated Spirit**.

Wood-Sorrel (*Oxalis accosella*), a perennial herb of the geranium (*Geraniaceae*) order found wild in Britain. It bears white flowers veined with purple or pink from May onwards. The leaves, like those of some other plants, "sleep" at night and in cold weather. The seed pods burst and discharge themselves at the slightest touch.

Woodstock, a small market town in Oxfordshire, England, on the Glyme, 8 m. NW. of Oxford, once a Royal manor, near which is Blenheim Park (q.v.). Pop. 1,500.

Wool, the short, soft hair which grows on sheep and some other animals, such as the alpaca, and some species of goats, which in fineness sometimes approaches fur. Sheep's wool is the most important material of clothing in all cold and temperate climates. Zoologically, there are three distinct types of sheep, but the domestic variety, *Ovis aries*, is the most numerous and yields the best of the commercial wool fibres. Wool is generally classified into short or carding, and long or combing wool, each class being further divided into varieties according to the fineness of the staple—the finest wools being of short, and the coarser of long, staple. Great Britain has exported wool for centuries, and the English sheep produce a good strong combing wool classified in the trade as "lustre," "demi-lustre," "down" and "mountain." The finest carding wools were obtained from Spain, the country whence came the famous merino breed of sheep, the introduction of which into Victoria laid the foundation of the great sheep-rearing industry of Australia; and to-day, Great Britain, though herself rearing a greater number of distinct varieties of sheep than any other country, obtains her chief wool supplies from Australia, New Zealand and South Africa. So far as English-grown wools are concerned, Leicester and Wensleydale are good lustre varieties and are used in making worsted dress fabrics, linings and braids. The Cheviot is the best demi-lustre wool, and is used for overcoats, suits and serges. Down wool (especially Southdown), a fine crimp variety, is the best of all English-grown wools, and is used for hosiery yarns and for high quality woollen cloths. Mountain wools are inferior in quality,

but are useful for making home-spun tweeds and for carpets.

Woolf, Virginia, British novelist, born in London, daughter of Sir Leslie Stephen, married, 1912, Leonard Woolf, publisher. Her chief stories are *Mrs. Dalloway*, *The Voyage Out*, *Night and Day*, *Orlando*, *A Room of One's Own*, and *The Waves*. (1882-).

Woolsack, the seat of the Lord Chancellor in the House of Lords, as Speaker of the House, being a large square cushion of wool covered with red cloth, without either back or arms. It is said to have originated in Elizabeth's reign, when wool was a staple commodity.

Woolwich, metropolitan borough of the City, London, England, 3 m. SE. of the City, mainly on the S. bank of the Thames, but with a small detached portion on the N. bank. It contains the chief military arsenal in the country, with a gun factory, ammunition factory, laboratory, etc., and is an important military station and the seat of the Royal Military Academy. Pop. 146,500.

Woolworth, Frank Winfield, American business man and pioneer of the cheap stores associated with his name. He founded his first store at the age of 27 with a capital of under £100; when he died he owned 800 stores in the United States and Canada, besides several in England, and left a fortune of £9,000,000. The Woolworth Building, the New York headquarters of his companies, is 792 ft. high and cost £3,000,000. (1852-1919).

Worcester, the county town of Worcestershire, England, on the left bank of the Severn, 26 m. SE. of Birmingham. It has a small but interesting Gothic cathedral; is famous for its blue porcelain ware and other industries, particularly glove-making; was the scene in 1651 of a victory of Cromwell over the Royalists. Pop. 52,800.

Worcester, second city of Massachusetts, U.S.A., on the Blackstone R., 45 m. SW. of Boston. Its many industries include the manufacture of woollens and silk, firearms, tools, carpets, envelopes, and shoes. Pop. 195,000.

Worcestershire, an agricultural and pastoral English county in the valley of the Severn, the N. part of which is the Black Country, rich in coal and iron mines, and the SW. occupied by the Malvern Hills, while the S. is famous for its orchards and hop-gardens; it has also extensive manufactures at Worcester, Dudley, Kidderminster, Stourbridge, Oldbury, and Halesowen. Area, 800 sq. m. Pop. 420,200.

Wordsworth, Dorothy, sister of the poet William Wordsworth. She acted as his housekeeper for a long period, and her *Journals*, published after his death, afford much information about him. (1771-1855).

Wordsworth, William, English poet, born at Cockermouth; educated at Hawkshead Grammar School and at St. John's College, Cambridge; travelled in France at the Revolution period and was attracted for a time by republicanism; fell in with Coleridge, visiting Germany in company with him, and on his return settled in the Lake District; married Mary Hutchinson, and received a lucrative sinecure appointment as distributor of stamps in the district; took up his residence first at Grasmere and finally at Rydal Mount. He began his career in literature by publishing, with Coleridge, *Lyrical Ballads*; finished his *Prelude* in 1806, and produced his *Excursion* in 1814, after which followed



WILLIAM WORDSWORTH

a long succession of miscellaneous pieces; he succeeded Southey as poet-laureate in 1843. He is emphatically the poet of external nature. (1770-1850).

Work, in physics, is the result produced as to move it in the line of direction of the force. It is measured by the product of the magnitude of the force and the distance moved in the direction of the force. In other words work is force multiplied by distance. The unit in which it is usual to measure work is the foot-pound, representing the amount of work done by a force equal to the weight of one pound when the body on which it acts moves one foot in the direction of the force; it is the work done in lifting a mass of one pound through a distance of one foot. Any body or any system of bodies which is capable of doing work is said to have energy (*q.v.*).

Workington, borough and seaport of Cumberland, England, at the mouth of the Derwent, 6 m. N.E. of Whitehaven. Coal and iron are worked, and there are ship-building yards, engineering works, steel works, etc. Pop. 27,700.

Workmen's Compensation.

By the Workmen's Compensation Act, 1925, and the rules made thereunder, employers are liable for compensation to their workmen in cases of injury incurred at their employment, and in the case of certain industrial diseases; in the event of the employee's death his dependants are entitled to compensation in similar circumstances. Compensation is not payable if the injury is due to the serious and wilful misconduct of the worker. Compensation in case of death is by a lump sum; in that of total or partial incapacity by weekly payments of not exceeding thirty shillings. The actual amount of compensation payable in any given case is based upon the worker's previous earnings. The act applies to most wage-earners in receipt of a wage not exceeding £350 per annum.

Works, Office of, the government department in England which controls the royal palaces and parks, government buildings, and a large number of castles and monuments throughout the country that have been acquired for the nation. The department dates from 1832, and is in charge of the First Commissioner of Works, frequently a member of the cabinet.

Workshop, borough of Nottinghamshire, England, 12 m. N.E. of Mansfield. It has remains of a Norman Abbey. Malting and the making of chemicals are carried on. Pop. 27,400.

Worm, popular name for a large number of animals of several classes, with few characteristics in common except their shape. The earthworm is the typical representative of the class Annelida, or bristle worms. The common earthworm (*Lumbricus agriicola*) is formed of rings or annuli, terminating in a pointed head and tapering tail; it has no feet, but on each ring are 4 pairs of minute bristles, forming longitudinal rows, which assist progression. The worm is eyeless and has no gills and apparently breathes through the whole of its skin. It is almost nocturnal and feeds on vegetation. The Lobworm (*q.v.*), or lugworm, is a segmented marine species.

Worms, German town in Hesse-Darmstadt, in a fertile plain on the left bank of the Rhine, 40 m. S.E. of Mainz, with a massive Romanesque cathedral having two domes and four towers. It was here the Diet of the empire was held under Charles V., before which Martin Luther appeared on April 17, 1521. There is an ancient and renowned synagogue, and many manufactures, including tobacco, soap, and machinery. Pop. 51,300.

Wormwood. See *Artemisia*.

Worthing, town and holiday resort in England, on the W. Sussex coast, 10½ m. S.W. of Brighton. Pop. 55,500.

Wounds may be either cuts or incised wounds produced by sharp-edged instruments; stabs or punctured wounds, made by the thrusts of pointed weapons; contused wounds, caused by hard blunt objects; lacerated wounds, in which there is tearing, as by some rough instrument; wounds complicated by poison; and gunshot wounds. Wounds which have severed only muscles and the blood-vessels and nerves connected with them heal more easily than those which affect the tendons; and those made by a sharp weapon heal more quickly than severe bruises. When an artery is severed, bright red blood is ejected by spurts; but a cut vein produces a slower issue of dark blood. Even in the case of an artery, the blood soon tends to flow less freely, and an external coagulum forms which ultimately stops the flow. The severed portions of a vessel should be kept together till they are naturally re-united. In unfavourable cases, tetanus or pyæmia, or both, may result.

Wound-Wort. See *Beton*.

Wrangel, Baron Peter Nicolaievich, Russian general, born at St. Petersburg. He entered the army, fought in the Russo-Japanese War and held a command in the World War. After the 1917 revolution he became prominent as a leader of the anti-Bolshevik forces, or White Russians, being defeated by the Bolsheviks in 1920. He later became a mining engineer in Belgium. (1879-1928).

Wrangel Island, bare rocky island Ocean, off the coast of the Far Eastern Area of Siberia. It is separated from the mainland by Long Sound. Area, c. 2,000 sq. m.

Wrangler, name given at Cambridge University to those placed in the first class of Part II. of the Mathematical Tripos. The man heading the list was formerly known as the Senior Wrangler, but the names are no longer placed in order of merit.

Wrasse (Labridæ), a family of marine fish, comprising some 500 shallow-water, crab- and shell-fish feeding species found on rocky bottoms. They are mostly characterized by having thick prehensile and telescopic lips. Many are found in tropical waters. The chief British species is the Ballan Wrasse (*Labrus maculatus*).



BALLAN WRASSE

Wrath, Cape, the extreme NW. promontory of Scotland, in Sutherlandshire, a granite cliff, 300 ft. high, surmounted by a lighthouse.

Wrecks, subject to certain restrictions, by the Merchant Shipping Acts, owners of wrecked ships, goods, and cargo, are now entitled to claim their property as against the Crown within a year; but they must satisfy salvage claims. Finders of wreck must deliver their finds to district receivers of wreck. The following things are, in law, wreck: flotsam (things found floating near shore); jetsam (things thrown overboard to save ship); ligan (things tied to a buoy, etc., for preservation). Wreckage unclaimed for a year and a day passes to the Crown.

Wrekin, an isolated hill in Shropshire, England, 2 m. S.W. of Wellington, believed to have been once an active volcano. It is 1,320 ft. high, and there are ancient earthworks on its summit.

Wren, the popular name for any bird of the Troglodytidae family, especially *Anthus troglodytes*, the common wren, widely distributed over the British Isles and the Old World. It is about 4 in. long, has a reddish-brown plumage, slender and rather long bill.

Wren, **Sir Christopher**, English architect, born at East Knoyle, in Wiltshire; was early distinguished in mathematics and mechanics, and soon became notable for his skill in architecture, and received a commission to restore St. Paul's, London, but on its destruction in 1686 was appointed to design and erect an entirely new structure. For this he had prepared himself by study abroad, and he proceeded to construct a new St. Paul's after the model of St. Peter's at Rome, a work which, as it occupied him from 1675 to 1710, took him 35 years to finish. He died at the age of 90, and was buried in the cathedral with this inscription, "Si monumentum requiris, circumspice" (If you seek his monument, look around.) Many famous London churches, including St. Stephen's, Walbrook; and St. Bride's, Fleet Street, were designed by him, together with Chelsea Hospital, Marlborough House, and part of Windsor Castle. He was one of the founders of the Royal Society. He was knighted in 1672. After being elected to Parliament in 1689 he was unseated. (1632-1723).

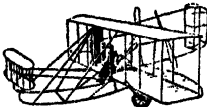
Wren, **Percival Christopher**, English novelist; educated at Oxford; served in French and Indian armies; for a time assistant-director of public instruction in Bombay presidency. Among his works are *The Wages of Virtue*, 1916; *Beau Geste*, 1924; *Beau Sabreur*, 1926; *Mammon of Righteousness*, 1930; *Bubble Reputation*, 1936. (c. 1873-).

Wrestling, a game, which remained popular throughout the Middle Ages, but has to-day lost a good deal of its popularity, though in recent years there has been some slight revival of "all-in" wrestling. Greek wrestling involved trying to throw the opponent and the ground struggle, the body being rubbed with oil. Roman wrestling was merely an imitation of later Greek. The modern so-called Græco-Roman form, which obtains in the Olympic Games, requires holds to be above the waist and allows the ground struggle but not tripping. In the catch-as-catch-can or Lancashire style there are both tripping and ground struggle and the match is lost only when both shoulders touch the ground at the same time. Similarly in the Cornwall style, the preliminary hold is made by the catch. The Cumberland style involves a preliminary grip, each wrestler passing his left arm over the right shoulder of his opponent, his right arm under his opponent's left arm and gripping the wrist behind the back; tripping is allowed, and if any part of the person, excepting the feet, touch the ground the match is lost, there being no ground struggle.

Wrexham, town in Denbighshire, from Chester, in the centre of a mining district, and famed for its breweries. Pop. 23,600.

Wright, **Orville**, (1871-) and **Wilbur**, (1867-1912), American aero-

nauts; began experiments with a glider in Carolina in 1900, and in 1903 built a machine fitted with a petrol engine; on Dec. 17 that year they flew for 300 yds., the first successful flight ever made. The Wright brothers were thus the real pioneers of aeroplane aviation.



WRIGHT BIPLANE

Wrinkles, creases in the skin such as are produced by age. Senile atrophy of the skin is due to metabolic disturbances, and altered relations of waste and repair, which are characteristic, in varying degree, of all the tissues (q.v.) of the body, and is a degenerative process; the skin, besides being wrinkled, becomes loose, dry and yellowish. Long residence in the tropics is apt to promote wrinkles.

Writers to the Signet, a body of solicitors in Scotland who had at one time the exclusive privilege of practising in and drawing up cases for the supreme courts of the country, and whose privileges are now limited to the preparation of Crown writs.

Writing may be divided into ideographic and phonographic, i.e., into signs representing the things symbolized by words and signs representing sounds. Chinese characters are practically ideographic. Egyptian hieroglyphs and Mexican picture-writing are examples of both kinds blended. The art of writing seems to have been introduced to the Western world about 1,500 B.C. by the Phœnicians, whose writing was probably based on Egyptian. Egyptian writing was of three kinds: hieroglyphic, hieratic (of the priests) and demotic. The Greeks at first wrote from right to left, next alternately from right to left and from left to right; writing from left to right is believed to have been introduced only in Homer's time. Ancient Greek and Roman writing did not separate the words by spaces or by punctuation. Medieval MSS. reveal a variety of styles of writing at different periods. Uncial characters partly resembling modern capitals) writing is found in 4th-8th Century MSS. Gothic characters in the 13th Century. Both Roman and Medieval MSS. were often illuminated—a luxurious mode of coloured embellishment. The English Court hand, adapted from the Saxon, prevailed from the 16th Century to the time of George II. Prior to the Roman occupation there was probably no writing in Britain.

Writ of Execution, a writ, directed to the sheriff or other proper person, commanding him to take certain compulsory proceedings for the purpose of carrying into effect a judgment of the Court. There are several such writs, e.g., a writ of *fi. fa.* (*faci faciatis*), the ordinary form of writ, which authorizes the seizure and disposal of the judgment debtor's goods; writ of attachment of debts, i.e., a writ authorizing the judgment creditor to attach debts owing to the judgment debtor; writ of possession in an action for the recovery of land; writ of sequestration (q.v.).

Writ of Summons, the formal document by which a High Court action is commenced. If the defendant wishes to dispute the claim, he must "enter an appearance," usually within 8 days, otherwise judgment will be given against him. The writ must, before it is issued, be indorsed with a statement of the nature of the claim and the relief or remedy sought. Also, the formal document calling peers to Parliament. Under Magna Carta, the greater barons were to receive a special, the lesser barons a general writ. A baron whose ancestor has been once summoned, and has once sat in Parliament, can claim an hereditary right to be so summoned.

Wryneck, a sub-family (Jynginae) of pecker family. There is only one genus (*Jynx*) and only 4 species, having long tails of soft feathers and mottled plumage not unlike that of the Nightjar. One species, the Common Wryneck (*Jynx torquilla*) is a summer visitor to Britain. It nests in holes in trees in woods and hedgerows and occasionally in orchards at the end of April and early May.

Wuchang, city and river port of China, on the Yangtse-kiang, capital of Hu-poh province. Across the river is Hankow. It has a university, and there are cotton mills and iron works. Pop. 800,000.

Wuhu, treaty port of China, in An-hwei province, on the Yangtse-kiang. Steel and cutlery is made, and it has an extensive trade. Pop. 136,000.

Wuppertal, a densely peopled valley in Germany, traversed by the R. Wupper, which after a course of 40 m. enters the Rhine between Cologne and Düsseldorf; the former towns of Elberfeld and Barmen, with several smaller towns, were amalgamated in 1929 to form the large steel-manufacturing town of Wuppertal. Pop. 408,600.

Württemberg, a former kingdom between Baden on the W. and Bavaria on the E.; the Black Forest extends along the W., and it is traversed nearly E. and W. by the Swabian Alps, which slope down on the N. side into the valley of the Neckar, and on the S. into that of the Danube; the soil is fertile, and is in great part under cultivation, yielding corn, vines, and fruits, agriculture being the chief industry of the population; minerals abound, the chief being salt and iron. Stuttgart is the capital; the towns, including Ulm and Heilbronn, are the centres of varied manufactures. Area, 7,530 sq. m. Pop. 2,696,000.

Würzburg, town in Bavaria, Germany, in a valley of the Main, 70 m. S.E. of Frankfurt; its principal buildings are the Royal or Episcopal Palace, the cathedral, and the university, with the Julius Hospital, called after its founder, Bishop Julius, who was also founder of the university, which specializes in medical studies; there are varied manufactures, including beer, machinery, scientific instruments, and tobacco. Pop. 101,000.

Wyandottes, a tribe of N. American Indians of the stock; were nearly exterminated in 1636, but a feeble remnant of them now occupy a small district in Oklahoma.

Wyatt, Sir Thomas, English poet, courtier, and statesman, born at Allington Castle, in Kent, and educated at St. John's College, Cambridge; was a welcome presence at court, a friend of Anne Boleyn, in high favour with the King, and knighted in 1537; did a good deal of diplomatic work in Spain and the Netherlands, and died on his way to meet the Spanish ambassador and convoy him to London. He had travelled in Italy, had studied the lyric poets of Italy, especially Petrarch, and, along with Surrey, imported their style and metres, including the sonnet, into English verse. (1503-1542).

Wyatt, Sir Thomas, the younger, British rebel, only son of the preceding; was leader of the rebellion that broke out in 1554 in consequence of the settlement of the marriage between Queen Mary and Philip of Spain, in which, being repulsed at Temple Bar, he surrendered and was committed to the Tower, and executed. (1521-1554).

Wych Elm (*Ulmus montana*), a species of elm with much larger leaves than the common or English elm; it is widely distributed over Europe, particularly in Scotland, whence its alternative name, Scots elm.

Wycherley, William, English dramatist, born in Shropshire, and resident for a time in Paris, being admitted to the circle of the Précieuses, but returned to England at the Restoration, and became a

he succeeded to his paternal estate when he was an old man. (1640-1715).

Wycliffe, Wyclif or Wickliffe, John, the "Morning Star of the Reformation," born at Hipswell, near Richmond, Yorkshire; studied at Oxford, and became Master of Balliol in 1361, professor of Divinity in 1372, and rector of Lutterworth in 1375. He held strong anti-Papal views, and in 1382 was condemned as a heretic and his works burned, though he himself remained unmolested. His greatest work was his translation of the Bible from the Vulgate into the mother-tongue, at which, with assistance from his disciples, he laboured for some 10 or 15 years, and which was finished in 1380. He was struck with paralysis while standing before the altar at Lutterworth on December 29, 1384, and died the last day of the year. His remains were exhumed and burned afterwards, and the ashes thrown into the R. Swift close by the town. (c. 1320-1384).

Wycombe, High, or Chepping, a market town in Buckinghamshire, England, on the Wye, 25 m. S.E. of Oxford; has a parish church built in the Norman style in 1273 and restored in 1887, and several well-known schools; has manufactures of chairs, lace, and straw-plait. Pop. 32,700.

Wye, a winding river in S. Wales, Severn on Plihimmon, and falls into its estuary at Chepstow, 125 m. from its head; rapid in its course at first, it becomes gentler as it gathers volume; barges ascend it as far as Hereford, but a high tidal wave makes navigation dangerous at its mouth. Its beautiful valley is a favourite resort for walkers and holidaymakers.

Wykeham, William, of English divine, born in Wykeham, Hampshire, of humble parentage; was patronized by the governor of Winchester Castle and introduced by him to Edward III., who employed him to superintend the rebuilding of Windsor Castle, and later made him Privy Seal and Lord Chancellor; in 1367 he became Bishop of Winchester, though he fell into disgrace towards the close of Edward's reign; was restored to favour in Richard II.'s reign and once more made Chancellor. In his later years he founded New College, Oxford, built and endowed St. Mary's College, Winchester, and rebuilt much of the cathedral there. (1324-1404).

Wyndham, Sir Charles, English actor; served in the American Civil War as a surgeon; took to the stage, playing first with John Wilkes Booth; appeared in London in 1865; was successful in the management of the Criterion Theatre, where he produced and acted in *Pink Dominoes*, *Wild Oats*, *David Garrick*, *The Sloop to Conquer*, and *The School for Scandal*, among other plays; built Wyndham's Theatre and was associated many years in management with his wife, Mary Moore. (1837-1919).

Wyoming, a north-west state of the U.S.A., chiefly on the eastern slope of the Rocky Mts., an elevated region with a comparatively sparse population. It has a very rugged surface, and abounds in deep cañons and frowning precipices. The lakes are also deep, and there are immense geysers, one, the Great Geyser, throwing up a volume of water 300 ft. high. It is rich in minerals, yields good crops of various grains, rears large herds of horses and cattle, as well as game on its moors, and trout and salmon in its rivers. It includes a number of natural forests and the Yellowstone National Park. There are few manufactures; petroleum is produced in large quantities. Area, 97,550 sq. m. Pop. 225,600.

Wyvern, a heraldic device in shape of a dragon with expanded wings with only two legs and the tail of a scorpion.

were the country in debt, the Dealer (1677). After an imprisonment for debt, U.E.



Xavier, St. Francis, a Jesuit missionary, styled the "Apostle of the Indies," born at Xavier in the N. of Spain; when a student at Paris, he became acquainted with Ignatius Loyola, and was associated with him in the formation of the Jesuit Society; was sent in 1541, under sanction of the Pope, by John III. of Portugal to christianize India, and arrived at Goa in 1542, whence he extended his missionary labours to the Eastern Archipelago, Ceylon and Japan, in which they were attended with signal success. On his return to Goa in 1552 he proceeded to organize a mission to China, in which he experienced such opposition and so many difficulties that on his way to carry on his work there he sickened and died. He was buried at Goa; beatified by Paul V. in 1619, and canonized by Gregory XV. in 1622; festival, December 3. (1506-1552).

Xebec, a small three-masted vessel with lateen and square sails, used formerly in the Mediterranean by the Algerine pirates, and mounted with guns.



XEBEC

Xenon, metallic element belonging to the group of the rare or inactive gases, the other members of which are helium, neon, argon, krypton and radon. Symbol Xe; atomic number, 54; atomic weight, 130.2. It is practically devoid of chemical properties and has so far met with no industrial application.

Xenophanes, Greek philosopher and school, born at Colophon in Asia Minor; set up a philosophical school at Elea in Southern Italy, where he taught monism (q.v.). (c. 540-c. 480 B.C.).

Xenophon, Greek historian, philosopher and military commander, born at Athens; was a pupil and friend of Socrates; joined the expedition of Cyrus against his brother Artaxerxes, and on the failure of it conducted the ten thousand Greeks—"the Retreat of the Ten Thousand"—who went up with him back to the Bosphorus; served afterwards in several military adventures, brought himself under the ban of his fellow-citizens in Athens, and retired to Elis, where he spent 20 years of his life in the pursuits of country life and in the prosecution of literature. The principal of his literary works are the *Anabasis*, an account of the expedition of Cyrus and his own conduct of the retreat; the *Memorabilia*, an account of the life and teaching, and a defence, of his master Socrates; the *Hellenica*, in seven books, an account of 49 years of Grecian history in continuation of Thucydides to the battle of Mantinea; and *Cyropaedia*, being an ideal account of the education of Cyrus the Elder. He wrote pure Greek in a plain, perspicuous, and unaffected style, had an eye to the practical in his estimate of things, and professed a sincere belief in a divine government of the world. (c. 435-354 B.C.).

Xeres. See *Jerez de la Frontera*.

Xerxes, a king of Persia, son of Darius I., whom he succeeded on the throne in 485 B.C. After suppressing a revolt in Egypt, his ambition was directed to subduing Greece. This he essayed to do in 481

with an immense horde of men by sea and land; with his army he crossed the Hellespont by means of a bridge of boats; he was checked for a time at Thermopylae by Leonidas and his five hundred; advancing to Athens, he saw his fleet destroyed at Salamis by Themistocles, and fled by the way he came, leaving Marodonius with 300,000 men to carry out his purpose; but Marodonius was defeated in 479 at Plataea. Xerxes was assassinated in 465 B.C. by Artabanus, the captain of his body-guard, after a reign of 20 years.

Xingu, a river in Brazil, which rises in the heart of the country, and after a course of 1,300 m. falls into the Amazon 210 m. W. of Para.

X-Rays, discovered by Röntgen in 1895-1896, are, like light, heat and electric energy, a type of electro-magnetic radiation of varying, but always very short, wave-length. Even those of longest wave-length are far beyond the lower limit of light-waves, and X-rays are therefore invisible. They have, however, the power of causing a screen covered with barium platino-cyanide, or some other substances, to fluoresce, and this is one method used in investigating them. They have remarkable penetrating powers, being able to pass through thick layers of substances completely opaque to light. Since they act upon a photographic plate, X-ray photographs of such objects as the human body may be taken; in such a photograph the bones, being less permeable by the X-rays than the softer parts of the body, appear dark. To take an X-ray photograph of a soft organ, e.g., the alimentary canal, the organ is, if possible, impregnated with a substance, such as bismuth opaque to the rays.

To generate X-rays, the Coolidge tube is generally used; this consists of a highly evacuated glass bulb containing a tungsten spiral acting as cathode, and an inclined tungsten plate acting as anode. The spiral is kept hot by an electric current passing through it, and the anode and cathode are then connected to a source of high potential, e.g., an induction coil, or a transformer with an appropriate make and break device. Cathode rays (streams of negative electrons) pass from the cathode to the anode, and when they strike the latter X-rays are generated.

Xucar, or Jucar, a river of Valencia, Spain, which rises near the source of the Tagus, and after a course of 317 m. falls diminished into the Mediterranean, most of its water having been drained off for irrigation of orange plantations.

Xylonite, a variety of celluloid, made by mixing pyroxylin and camphor under high pressure.

XYLOPHONE, a musical instrument consisting of 21 bars of specially prepared wood arranged in rows over resonators; notes are produced by striking the bars with small hammers.

York, an ancient city of Yorkshire, England, situated at the confluence of the Foss with the Ouse, 188 m. N. of London and 22 m. N.E. of Leeds: is the seat of an archbishop, and a great railway centre. Known among the Romans as Eboracum, it was the centre of the Roman power in the North, many relics of that epoch still remaining. Its cathedral, known as the Minster, is one of the grandest in England. This is built on the site of a church erected as early as the 7th Century, and was finished as it now exists in 1470: it is 524 ft. in length, and the transepts 250 ft., the breadth of the nave 140 ft., the height of the central tower 216 ft., and of the western one 201 ft. There are other buildings of great antiquity, and the Guildhall dates from the 15th Century. Confectionery and glass are manufactured. Pop. 94,000.

York, Duke of, title often borne by the second son of the King of England. Henry VIII., Charles I., James II., George V. and George VI. are among kings who were once Dukes of York.

York, Duke of (Richard), Protector of Henry VI., and the author of the Wars of the Roses, on account of his claiming the throne and disputing the Lancastrian right of succession; he was killed in the battle of Wakefield in 1460.

Yorkshire, the largest county in England, is divided into three Ridings (i.e., thiridings or thirds) for administrative purposes, North, East, and West; the city of York is not included in any of the Ridings, of which the West is the wealthiest and the most populous; contains a large coalfield, and is the centre of the woollen manufacture of the county; the East being mainly agricultural, with ironworks and shipbuilding works; and the North mainly pastoral, with industries connected with mining and shipping. Large towns are York (itself an administrative county), Sheffield, Leeds, Hull, Bradford, Middlesbrough, Huddersfield and Halifax. Area, 6,090 sq. m. Pop. (E. Riding) 483,100; (N. Riding) 467,000; (W. Riding) 3,358,700.

Yorkshire Terrier, a small dog, with straight silky hair reaching to the ground and parted down the middle; bred from the Scotch terrier. The coat is generally blue-grey, with tan underneath and on the head, ears and legs.

Yorktown, a small town in Virginia, U.S.A., on the York R., where Lord Cornwallis surrendered to Washington in 1781, after a siege, thus practically bringing to an end the War of Independence. The town was also the seat of military operations in the Civil War. Pop. 500.

Yosemite Valley, the most remarkable gorge in the world, in the centre of California, U.S.A., 140 m. E. of San Francisco, 6 m. long and from 1 to 24 m. broad, girt by perpendicular walls thousands of feet deep and traversed by the river Merced in a succession of falls of great height, the whole presenting a scene of mingled grandeur and beauty. It was discovered in 1851, and a national park of 1,140 sq. m. has been established, which includes the valley.

Yoshihito, Emperor of Japan. He succeeded to the throne in 1912. In 1900 he married Princess Sadako. During his reign the westernization of Japan steadily continued, and for the first time the country figured as one of the Great Powers, asserting its complete equality by its defeat of Russia in the war of 1904-5. (1879-1926).

Youghal, a seaport in co. Cork, Eire 27 m. E. of Cork; it exports bricks and agricultural produce. Pop. 5,500.

Young, Brigham, American Mormon leader, born at Whittingham, Vermont, U.S.A., son of a small farmer; was baptized into the Mormon community in 1832; became one of the apostles of the Church and a preacher, and finally its head in 1851 after he had led the community from Nauvoo to Utah. He was a talented organizer, did much to encourage commerce and agriculture, and left a large fortune to his 17 widows and 56 children. (1801-1877).

Young, Francis Brett, British novelist; educated at Epsom and Birmingham University. His books include *The Crescent Moon*, 1918; *Jim Redlake*, 1930; *House Under the Water*, 1932; *Far Forest*, 1936. 1884-).

Younghusband, Sir Francis Edward, official, born at Mari, Punjab; educated at Clifton and Sandhurst. He entered the Army in 1882, and was transferred to the Indian Political Department, 1890. Explored Manchuria, 1886; traveled, Peking to India via Chinese Turkestan, 1887. Political agent in Chitral, 1893-4; *Times* correspondent with Chitral Expedition, 1895. He accompanied the British Mission to Lhasa in 1902, and has written many books on the East. K.C.I.E. 1904. (1863-).

Young Men's Christian Association, an association founded in London in 1844, for the benefit of young men connected with various dry-goods houses in the City, which gradually spread over the whole world. Its object is the spiritual, moral, social and physical welfare of young men. During the World War it took up canteen and other work among the troops and so much increased its scope. It is familiarly known as the Y.M.C.A.

Young Plan, a scheme for the settlements (q.v.) named after Owen Young, the American chairman of the international committee of experts which examined the problem in 1928 in Paris; it was adopted at a conference at the Hague in 1929. Besides reducing the total of German indebtedness it set up a Bank for International Settlements, and superseded the Dawes Plan (q.v.).

Youngstown, city of Ohio, U.S.A., with large iron factories and allied industries. Pop. 170,000.

Young Women's Christian Association, an organization formed in 1894, to serve the same purposes for women as the Y.M.C.A. (q.v.) does for men. It is worldwide in its operations, though England and the U.S.A. are its principal centres of activity.

Ypres, town in West Flanders, Belgium, 30 m. SW. of Bruges; was at one time a great weaving centre, and famous for its diaper linen. Its Gothic town hall and cathedral were almost completely destroyed with the rest of the town during the World War, in which the town was almost continuously a seat of operations. The most notable dates were the first battle of Ypres, October 20, 1914, when the German advance was checked, the "decisive" German attack on November 11, 1914, which also failed, the poison gas attack on April 22, 1915, and the other great German defeat on February 14, 1916. The town now contains a memorial to the British dead called the Menin Gate (q.v.). The principal manufactures are textile. Pop. c. 15,000.

Ypres, Earl of. See French, John Denton Pinkstone.

Yser, a river 55 m. in length rising in the dept. of Nord, France, and flowing through Belgium to the sea at Nieuport. It was the scene of a battle in

October, 1914, when the Germans in an endeavour to capture the coast ports met French and Belgian troops; the Allied forces won, owing largely to their opening the sluice gates and letting in the sea on the advancing Germans.

Ytterbium, a metallic chemical element, one of the rare earth group. Symbol Yb; atomic number 70; atomic weight 173.04.

Yttrium, a metallic chemical element, belonging to the same group as scandium and lanthanum. Symbol Y; atomic number 39; atomic weight 88.92.

Yuan, or Manchu dynasty, the line of Mings and endured till the fall of the empire in 1912. They ruled the Chinese as foreign conquerors, reserving most of the government posts for Manchus, and imposing various disabilities on the Chinese; but they encouraged Chinese culture, and adopted Chinese manners in almost every respect. Among the greatest rulers of the line were Kang Hsi (1662-1723) and Chien Lung (1736-1796).

Yucatan, a peninsula in Central America from the Caribbean Sea; it is a flat expanse with a good climate and a fertile soil, yielding maize, rice, tobacco, indigo, etc.; abounds in forests of mahogany and other valuable woods; it bears traces of early civilization in the ruins of temples and other edifices, particularly at Chichen Itza. It forms the two Mexican states of Campeche (Cap., Campeche; area, 19,670 sq. m.; pop. 84,600) and Yucatan (Cap., Merida; area, 23,930 sq. m.; pop. 386,100).

Yucca, a genus of ever-shrubs, native to America, with white purple-striped scentless flowers. Among the cultivated species is *Yucca gloriosa*, the Adam's Needle or Spanish Bayonet.

Yugoslavia, since 1929 official name of the Kingdom of Serbs, Croats, and Slovenes, consisting of the old kingdoms of Serbia and Montenegro with Croatia, Slavonia, Bosnia, Herzegovina, and parts of the Banat, Carniola, and Styria; formed in December, 1918, after the World War, and recognised by the Treaty of Versailles. Bel-



YUCCA
(*Angustifolia*)

grade is the capital, and other important towns are Zagreb, Subotica, Ljubljana, and Sarajevo. With the Danube as the main waterway and a lengthy coastline on the Adriatic, trade flourishes, maize, wheat, poultry produce, and timber being largely exported. Three-quarters of the inhabitants are engaged in agricultural pursuits. The people are mainly Orthodox (49 per cent.), Roman Catholic (37 per cent.), or Moslem (11 per cent.); education is compulsory and mainly free; the national language is Serbo-Croat. The present Parliamentary constitution dates from 1931. Area, 95,600 sq. m. Pop. 13,934,000.

Yukon, (1) a great river of Alaska, rises in British territory, and after a course of 2,300 m. falls, by a number of mouths forming a delta, into the Behring Sea; it is navigable nearly throughout, and its waters swarm with salmon three months in the year; the chief city on its banks is Dawson. (2) A territory in Canada, formerly part of the NW. Territories, constituted in 1898 on the discovery of gold in the Klondike (q.v.) and other fields; the climate is extremely cold; the population, which reached 27,000 in 1901 at the height of the gold rush, is now only just over 4,000. Area, 207,000 sq. m.

Yule, an old Scandinavian heathen festival held at the winter solstice, whose name has been transferred to many popular observances connected with Christmas, such as the Yule log.

Yung-Ling, a mountain range running N. and S., which forms the eastern buttress of the tableland of Central Asia.

Yunnan, the extreme south-western province of China; is fertile, particularly in the S.; yields large quantities of maize, rice, tobacco, sugar, and especially opium, and abounds in mineral wealth, including gold, silver, mercury, as well as iron, copper, and lead. The population is mainly non-Chinese, consisting of tribes allied to those found in Burma, such as the Tai, Shan and Lolo. The capital is Kunming. Area, 146,700 sq. m. Pop. 11,000,000.

Yvetot, town in the dept. of Seine-Inferieure, 24 m. N.W. of Rouen, with manufactures of textile fabrics, and a trade in agricultural produce, the seigniors of which long bore the title of king, "Roi d'Yvetot," a title satirically applied by Béranger to Napoléon, and often employed to denote an insignificant potentate with large pretensions. Pop. 7,000.

Z

Zaghlul Pasha, Saad, Egyptian politician. Educated at Al Azhar University, he took an active part in Nationalist politics before becoming a barrister, and was arrested for the part he played in Arabi Pasha's revolt. In 1906 he became Minister of Education, but was later removed from office and became leader of the opposition, being deported in 1921, but returning to lead the powerful Wafd or home rule party. (1852-1927).

Zagreb, formerly Agram, the capital of Croatia, Yugoslavia. It has a fine Gothic cathedral and a university, and is subject to earthquakes. It is the centre of a wheat and maize-growing district, and tobacco and sugar-beet are also grown. It was here, at the close of hostilities in the World War, that a convention was held in 1918 for

proclaiming Yugoslavia an independent kingdom, the "Triune Kingdom of the Serbs, Croats and Slovenes." Pop. 186,000.

Zaharoff, Sir Basil, Greek financier. In England, but his commercial interests, particularly in armaments, had world-wide ramifications. He founded chairs of aviation in England, France, and Russia, as well as one for French literature at Oxford and for English literature at Paris. Amongst the many honours bestowed on him in various countries was the British G.C.B. in 1921. (1850-1936).

Zama, a fortified city of ancient Numidia, 100 m. SW. of Carthage, where Hannibal (q.v.) was defeated by Scipio Africanus, the Second Punic War (q.v.), brought to an end, and the fate of Carthage virtually sealed.

Zambesi, the fourth largest river of Africa as regards both the volume of its waters and the area it drains. Rising on the boundary of Angola and the Belgian Congo, its waters a rich pastoral region, and falls into the Indian Ocean after a course of nearly 1,600 m., in which it drains 600,000 sq. m. of territory. Owing to cataracts and rapids it is only navigable in different stretches; at 900 m. from its mouth it plunges in a cataract known as the Victoria Falls, which rival in grandeur those even of Niagara. The Zambesi bridge, the highest in the world, 12,064 ft. in length, completed in 1934, carries a railway across it from Mutarara to Sena.

Zamora, ancient town of Spain, on the 130 m. NW. of Madrid; now in a decayed state; was a flourishing place in Moorish times: contains interesting ruins; manufactures linens and woollens, and trades in wine and fruits. Pop. 18,000. The province of the same name, of which it is the capital, has an area of 4,100 sq. m. and a pop. of 286,000.

Zamenhof, Lazarus Ludwlg, Polish-Esperanto (q.v.), born at Bialystok. By profession an oculist; he practised successively in Warsaw, Kherson, Grodno, and again at Warsaw, where he died. His first publication concerning his Universal Language was issued under the pseudonym "Doktoro Esperanto"—hence the name. (1859-1917).

Zangwill, Israel, Anglo-Jewish novelist and dramatist, born in London; wrote novels, essays, plays, and poems. Among his works are the *Bachelor's Club*, *Old Maid's Club*, *Children of the Ghetto*, *Dreamers of the Ghetto*, *The Master*, *Without Prejudice*. He was a leader of the Zionist movement. (1864-1925).

Zante, or *Cephalonia*, one of the Ionian is., 9 m. off the NW. coast of the Morea, is 24 m. long and 12 m. broad; raises currants, the produce of a dwarf vine, and exports large quantities annually. Area, 270 sq. m. Pop. 40,500.

Zanzibar, a British colony and protectorate in E. Africa, consisting of the island of Zanzibar, with a capital of the same name, and the island of Pemba and a small strip of mainland; has a hot unhealthy climate, and a rich tropical vegetation; its products are cloves, coconuts, betel-nuts, and grain, and the exports ivory, india-rubber, gum, etc.; the natives are mostly Swahili-speaking Negroes, the higher classes Arab Mohammedans under a sultan, who is advised by a British resident. The area of the protectorate is 1,020 sq. m.; pop. 235,000. The capital, Zanzibar, has a pop. of 45,300.

Zara, a city of Italy, an ancient seaport on a promontory on the Dalmatian coast, 129 m. SE. of Trieste. It was founded by the Venetians, and has a spacious harbour; the chief manufactures are glass and a liqueur called *maraschino*. It was annexed by Italy in 1919 (previously Austrian). Pop. 18,600.

Zaragoza. See *Saragossa*.

Zealand, or *Seeland*, the largest island situated between the Cattegat and the Baltic, being 81 m. long and 87 m. broad, with Copenhagen (q.v.) on the E. coast; the surface is nearly everywhere flat, and agriculture and cattle-rearing the chief industries. Area, 2,670 sq. m. Pop. 1,100,000.

Zealand, a province of the Netherlands, consisting chiefly of islands, of which Walcheren (q.v.) is one, constituting a delta as it formed by the Maas and Scheldt; great part of it is reclaimed from the sea. The capital is Middelburg. Area, 690 sq. m. Pop. 254,000.

Zebra, popular name for several fully-striped species of the genus *Equus* (horses). The possession of stripes is inherited from the common ancestor of horses and asses. The *Equus zebra*, the Mountain or True Zebra, has pointed asinine ears, an elegant head and very narrow spinal stripes. Grévy's Zebra (*Equus grévyi*), standing 13 hands, is an animal intermediate between the True Zebra and the Quagga. It has expanded round-tipped ears. The name zebra is also sometimes applied to some of the Quaggas (q.v.), e.g., the *Ponte-quatta*, sometimes called Burchell's Zebra.



ZEBCRA (GRÉVY'S)

Zebu, the Indian ox (*Bos indicus*), domesticated and used principally for draught purposes; is distinguished from the European species by a large fatty hump behind the head. It is also found in China, E. Africa, Madagascar, and the East Indian Is.

Zebulun (*Zebulun*), the tenth son of Jacob, the sixth borne to him by Leah, and the reputed ancestor of the tribe of Israel bearing his name. Their territory was in the northern part of the Holy Land, on the coast.

Zechariah, a Hebrew prophet who in Babylon during the captivity, to have prophesied in Jerusalem at the time of the restoration, and to have contributed by his prophecies to encourage the people in rebuilding the Temple and reorganizing its worship. The Old Testament book under his name, the twelfth of the Minor Prophets, is now considered by critics to fall into three sections, the first eight chapters representing Zechariah's prophecies, the remainder being made up of two separate and later anonymous works.

Zedoary (*Owreuma Zedoaria*), a broad-leaved plant of the natural order Zingiberaceae, grown in the East Indies, and bearing a rhizome used as a food and condiment, resembling ginger.

Zeebrugge, town in Belgium, 7 m. W. of Bruges, of which it is the port. It was the scene of one of the most daring deeds in naval warfare, when on April 23, 1918, H.M.S. *Vindictive* fought her way to the mole, stormed it, and held it, while the old cruisers *Intrepid* and *Iphigénia*, laden with cement, were run into the mouth of the canal and sunk there so as to block the fairway. The object was to prevent German submarines reaching the sea from Bruges, which was used by them as a base. Admiral Sir Roger Keyes commanded the attack.

Zeeman Effect, the change in the spectrum of a source of light which occurs when it is placed in a strong magnetic field. If an incandescent element is placed in such a field and the light emitted is examined in the direction of the field, each normal spectral line is seen to give rise to two distinct lines, each circularly polarized (*longitudinal Z.-effect*). If the light is examined in a direction perpendicular to the field, each normal line gives three lines, all of them plane-polarized (*transverse Z.-effect*). It was discovered by a Dutch physicist, Pieter Zeeman, Professor of Physics at Amsterdam, and Director of the Physical Institute, (1866-).

Zeiss, Carl, German optician, born at instrument-makers there and in Stuttgart and Vienna. Opened, 1846, a famous optical instrument factory—known, since 1889, as the Carl Zeiss-Stiftung—at Jena, where he died. (1816-1888).

Zeitgeist (i.e. Time-spirit), a German word applied to the dominant trend of life and thought at any particular period.

Zend-Avesta, the name given to the sacred writings of the Parsees, ascribed to Zoroaster. A great part of the original collection is lost, the remains consisting of *Gathas*, or ritual hymns, which may contain some parts of Zoroaster's own teaching.

Zenith, name of Arab origin given to the point of the heaven directly overhead, or the pole of the horizon, the opposite point directly under foot being called the Nadir, a word of similar origin. The imaginary line connecting the two passes through the centre of the earth.

Zeno, Greek philosopher, the founder of the Stoic philosophy, born at Citium, Cyprus, originally a merchant; went to Athens, and opened a school of his own in the Stoa, where he taught to extreme old age a gospel called Stoicism, which became extremely popular in the Roman Empire of the first two centuries of the Christian Era. See Stoicism. (342-270 B.C.).

Zenobia, queen of Palmyra, whose ambition provoked the jealousy of the Emperor Aurelian, who led an army against her, and after a succession of defeats subdued her and brought her to Rome to adorn his triumph as conqueror, afterwards presenting her with a domain at Tivoli, where she spent the rest of her days. (fl. c. 270).

Zephaniah, a Hebrew prophet who prophesied in the 7th Century B.C., in the interval between the decline and fall of Nineveh and the hostile advance of Babylon. The short book of the Old Testament named after him is a warning of God's judgments on idolaters.

Zeppelin, a rigid dirigible balloon of the type designed and built by Count Ferdinand von Zeppelin (1838-1917), which started from Lake Constance on August 4, 1908, the name being applied for a time to all types of subsequent airships. Zeppelins were used for air raids on England during the World War. The first such raid, on East Anglia, took place on January 19, 1915; the first on London was on May 31, 1915; on October 19, 1917, there was a raid on East Anglia in which six airships were lost on their return journey. A machine of the same type called *Graf Zeppelin* in 1929 accomplished the first round-the-world flight, and a later machine, the *Hindenburg*, after making several flights from Germany to the U.S.A., was destroyed by fire while landing in New Jersey in 1937.

Zermatt, a small village of canton of Uri, Valais, Switzerland, 23 m. SW. of Brig, a great centre of tourists and the starting-point in particular for the ascent of the Matterhorn. Pop. c. 800.

Zero, a word of Arab origin signifying a neutral point in scale between an ascending and descending series, or between positive and negative.

Zero, Absolute, the point at which all heat is absent from a body. It is equal to 273° below zero on the Centigrade scale.

Zetland, Lawrence John Lumley Dundas, second Marquess of, styled "Lord Dundas," 1876-92, and "Earl of Lennox," 1892-1929; educated at Harrow, and at Trinity College, Cambridge. He entered the House of Commons in 1907, and became Governor of Bengal from 1916 to

1922; G.C.I.E., 1917; succeeded his father, 1929; Secretary of State for India since 1935. (1876-).

Zeus, the chief deity of the Greeks, the father of gods and men, the mightiest of all the gods; the son of Kronos and Rhea; by the help of his brothers and sisters dethroned his father, seized the sovereign power, and appointed them certain provinces of the universe to administer in his name—Hera to rule with him as queen above, Poseidon over the sea, Pluto over the nether world, Demeter over the fruits of the earth, Hestia over the social life of mankind; to his dynasty all the powers in heaven and earth were more or less related, descended from and dependent on it. He corresponded to the old Aryan God Dyaus Pitar and the Roman Jupiter. He is represented as having his throne in heaven, and as wielding a thunderbolt in his right hand, in symbol of the jealousy with which he guards the order of the world established under him as chief.

Zidon. See Sidon.

Zimbabwe, a remarkable ruin in Mashonaland, Rhodesia, the remains apparently of some enterprising colony of ancient gold-seekers. It is generally attributed to about the 14th Century A.D.

Zinc, a metallic chemical element beryllium, belonging to the same group as cadmium and mercury. Symbol Zn; atomic number, 30; atomic weight, 65.38. It occurs naturally as zinc sulphide, or blende, zinc carbonate or calamine, and zinc ferrite. In its commercial form, of about 98 per cent. purity, zinc is known as spelter; the pure metal can be obtained by electrolysis. It is a somewhat hard, bluish-white metal, which dissolves readily in dilute sulphuric or hydrochloric acid, liberating hydrogen from the acid. It is comparatively stable in the air, and is therefore used for protecting iron, so-called galvanized iron being made by dipping iron into molten zinc or by sherardizing, i.e., by heating the iron in zinc dust. It is an ingredient of many alloys, e.g., brass (copper and zinc), and is also largely used in the manufacture of dry cells and batteries. Zinc sulphate, a white crystalline solid known as white vitriol, is used in the calico-printing industry as a mordant, and in the varnish industry. Like all zinc compounds it is poisonous. Many zinc compounds have therapeutic applications; thus zinc ointment contains 10 per cent. of zinc oxide, while a solution of zinc sulphate is a useful antiseptic in cases of conjunctivitis, etc.

Zingiberaceæ, a natural order of monocotyledonous perennial herbs, found chiefly in Indo-Malaya. They usually have fleshy rhizomes, and sometimes tuberous roots. There are 35 genera and some 800 species, the typical genus being *Zingiber*, which includes *Zingiber officinale*, the ginger plant. (q.v.).

Zinnia, a genus of annual Composite, native to N. America and Mexico. They bear showy red, yellow and white flowers and are grown in England in favourable sunny positions.

Zinoviev, Georgy, other Grigory Evseyevich Apfelbaum, Russian revolutionary leader, born at Elisavetgrad. He joined the Bolsheviks in 1903, and was imprisoned for seditious activity, 1908. He was with Lenin in Switzerland; returned to Russia in 1917, but held back during the Revolution of November. In 1918 he became President of the Leningrad Soviet, and in 1919 of the



ZINNIA
ELEGANS

Third International. He was the alleged author of a letter purported to be sent in September, 1924, to the Russian chargé d'affaires in London, with instructions for revolutionary propaganda, which contributed to the defeat of the Labour Party at the general election of that year. After Lenin's death he was expelled from the Politburo and headship of Third International, 1926; and was executed after trial for complicity in the Kirov murder. (1883-1936).

Zionism, a movement for the re-national state in Palestine, begun at the end of the last century by Theodor Herzl (q.v.). After the World War Zionist activity in Palestine led to the foundation of Tel-Aviv and much of the social and industrial development that took place in the Palestinian Jewish colonies. See *Palestine*.

Zirconium, a metallic chemical element belonging to the same group as titanium and hafnium. Symbol Zr; atomic number 40; atomic weight 91.22. The metal itself is of little importance, but its dioxide is used in the manufacture of refractory crucibles and for rendering the lower part of the alimentary canal opaque to X-rays, thus making an X-ray photograph of this region possible. Impure zirconium dioxide is the chief constituent of the precious stone jargon.

Zither, a stringed musical instrument with a flat sounding-board played on a table. It has usually five metal strings passing over frets, which are plucked with a plectrum, and a score or more of other "open" strings plucked with the finger. It is very popular in Bavaria and the Tyrol.



ZITHER

Zodiac, the name given to a belt of the heavens extending 8° on each side of the ecliptic, containing twelve constellations, called signs of the zodiac, which the sun traverses in the course of a year. These signs are named: Aries, the Ram; Taurus, the Bull; Gemini, the Twins; Cancer, the Crab; Leo, the Lion; Virgo, the Virgin; Libra, the Balance; Scorpio, the Scorpion; Sagittarius, the Archer; Capricornus, the Goat; Aquarius, the Water-bearer; and Pisces, the Fishes. The sun enters Aries at the spring equinox and Libra at the autumnal equinox, while the first point of Cancer marks the summer solstice, and that of Capricorn the winter.

Zoetrope, an optical toy consisting of a cylinder, essentially of a cylinder open at the top with slits in the circumference and a series of pictures, representing the progressive attitudes of a body, which are passed rapidly behind the slits, thus giving an illusion of motion.

Zogu, Ahmed (Zog I.) king of the Albanians, was born at Bourgajet, Mati—head of a ruling family in that district, son of Djemal Pasha Zogu. He fought on the Austrian side during the World War; thereafter he became Minister of the Interior, 1920; of War, 1921; of the Interior again, 1921-22; and Prime Minister, 1922-24. He was elected President in 1925, and proclaimed King in 1928. (1895-).

Zola, Émile, French novelist of the realistic or naturalist school; born at Paris, of Italian descent; began literature as a journalist, but soon gave himself up to novel-writing. Of his works the chief are *Thérèse Raquin*, *La Fortune des Rougons*, *L'Assommoir*, *Lourdes*, *Rome*, and *Paris*. He distinguished himself by his courage in connection with the Dreyfus affair and his bold condemnation of the sentence under

which Dreyfus was condemned, his protests being largely responsible for the eventual rehabilitation of Dreyfus. (1840-1902).

Zöllner's Lines, parallel lines which by an optical illusion seem to diverge or converge, owing to their intersection by numerous oblique lines; named after the German physicist Johann Zöllner. (1834-1884).

Zones, the name given to belts of the earth, climate on the surface of the earth marked off by the tropical and polar circles, of which the former are 23½° from the equator and the latter 23½° from the poles, the zone between the tropical circles, subject to extremes of heat, being called the Torrid Zone, the zone between the polar circles and the poles, subject to extremes of cold, being called respectively the North Frigid Zone and the South Frigid Zone, and the zones north and south of the Torrid, subject to moderate temperature, being called respectively the North Temperate and the South Temperate Zones.

Zoological Gardens, parks set apart for the care and display of animal specimens from various parts of the world. Most great capital cities have such institutions, the London "Zoo" in Regent's Park containing one of the world's best collections of animals, birds, and reptiles, controlled by the Zoological Society. The gardens were opened in 1827; an auxiliary establishment now exists at Whipsnade (q.v.). Other English Zoological collections exist at Chessington, Surrey, and Tring Park, Herts.

Zoology, the branch of biological study dealing with the classification and comparative study of animals. Its chief branches are: Morphology, dealing with form and structure; Comparative Anatomy, which investigates the position and relation of organs and parts; Embryology, which traces development from the ovum to maturity; Physiology, which treats of the organs of nutrition, reproduction and the nervous system; and the classification of animals into natural groups or families. The first to record zoological facts were Aristotle and Pliny, but the science practically began with Linnaeus, who was the first to institute a system of zoological classification, though it has since been superseded.

Zoroaster, Zarathustra, or Zerdusht, Iranian religious reformer, the founder or reformer of the Parsee religion, of whom, though certainly a historical personage, nothing whatever is for certain known except that his family name was Spitama, and that he was born in Bactria. He may have flourished between 1000 and 500 B.C. For his system see *Parsees*.

Zouaves, the name given to a body of light infantry in the French army. They were raised in 1830 from among the Zouavag, a tribe of Kabyle Arabs; but since 1840 they have been almost always men of superior physique specially selected from the ordinary infantry regiments of the line.

Zug, the smallest canton of Switzerland; is 12 m. long by 9 m. broad; is hilly and pastoral in the SE. and has cultivated fields and orchards in the NW.; all but includes Lake Zug, at the NE. of which is Zug, the capital, which carries on sundry industries on a small scale. Area, 93 sq. m. Pop. 34,400.

Zuider Zee (i.e., south sea), a deep inlet of the North Sea, in the Netherlands, which includes the islands of Texel, Vlieland, Terschelling, and Ameland, and was formed by irruptions of the North Sea into a lake called Flevo, in the 12th, 13th, and 14th centuries, when thousands of people were drowned; is 85 m. long and 45 m. broad, and is embraced in a circuit of 210 m.

Large portions of it have already been, and almost the whole is eventually to be, reclaimed for agricultural purposes, so as to form a new province of the Netherlands.

Zululand, a territory to the NE. of Natal, from which it is separated by the Tugela, and of which it was independent till 1898, but is now an integral part. Its area is 10,430 sq. m.

Zulus, a section of the Bantu Negro family which originally occupied the SE. seaboard of Africa from Delagoa Bay to the Great Fish River. They are a race of superior physique and intellectual endowment, and incline to a quiet pastoral life. They were attacked under Cetywayo by the English in 1879, but after falling upon an English force at Isandhlwana, and cutting it to pieces, were overpowered at Ulundi, and put to rout. See Zululand.



ZULU

Zurich, a northern canton SHIELD AND WEAPONS in Switzerland, and the second largest in population; is in the basin of the Rhine, with a well-cultivated fertile soil, and manufactures of cottons and silks, and with a capital of the same name, the largest city in Switzerland, at the foot of the Lake of Zurich; a large manufacturing and trading centre; has a Romanesque cathedral and a university, with silk mills and cotton mills, as well as foundries and machine shops; here Lavater was born and Zwingli was pastor. Area, 670 sq. m. Pop. (cantons), 617,700; (city) 312,600.

Zutphen, manufacturing town in the Netherlands, in the neighbourhood of which Sir Philip Sidney fell wounded in a skirmish. The industries are chiefly tanning and textiles. Pop. 19,600.

Zweig, Arnold, German-Jewish novelist, born in Glogau, notable for a series of war-novels, publication of which, upon the rise of Nazism, was transferred to Holland. Chief works, *Der Streit um den Sergeanten Grischa*; *Junge Frau von 1914*; *Erziehung vor Verdun* (1887-).

Zweig, Stefan, Austrian-Jewish author, born at Vienna; began with poetry, 1901. His plays include *Jeremias*, 1917. His principal novel is *Amok*, 1922; he has written lives of Marie Antoinette, Fouché, Roland, and Mary Queen of Scots. (1881-).

Zwickau, city in Saxony, Germany, 82 m. SW. of Dresden. It is in the midst of rich beds of coal, and manufactures chemicals, glass, earthenware, machinery, etc. Pop. 84,700.

Zwingli, Ulrich, Swiss religious Reformer, born at Wildhaus, in the canton of St. Gall, and founder of the Reformed Church; studied at Berne, Vienna, and Basel, and was appointed pastor at Glarus; met Erasmus at Basel, and gave himself to the study of Greek, and in particular the epistles of St. Paul. Attached to the monastery of Einsiedeln, he, in 1516, attacked the sale of indulgences, and was in 1518 elected to be preacher in the cathedral of Zurich. Adopting anti-Catholic opinions, he held a disputation with the bishop of Constance, which resulted in the abolition of the Mass and the substitution of the Lord's Supper. The movement thus begun spread, and Zwingli met in conference with Luther, but they failed to agree on the matter of the Eucharist, on which point the Lutheran and the Reformed Churches separated. In 1531 the Catholic cantons declared war against the reformers of Zurich and Berne, and the latter were defeated at Cappel, among the dead on the battlefield being Zwingli. (1484-1531).

Zwolle, town in the Dutch province of Overijssel, 50 m. NE. of Amsterdam. It has manufactures of ironware, salt, cotton, etc. Pop. 43,500.

Zygoma, the cheekbone or complete bony arch of the cheek.

Zygophyte, a plant in which sexual reproduction involves the fusion of two similar cells.

Zygospor, in botany, a spore formed in the process of reproduction in some algae and fungi by the union of two similar protoplasmic masses. Zygosporae are full of granular protoplasm and are rich in oil-drops as a reserve food.

Zygote, a fertilized egg, or the cell formed by the union of two gametes.

Zymase, an enzyme occurring in yeast and elsewhere, catalysing the conversion of glucose into alcohol and carbon dioxide.

Zymotic Disease, a term formerly applied to those diseases characterized by symptoms similar to the processes of fermentation; later, applied mainly to the chief fevers and contagious diseases, such as smallpox, malaria, typhoid fever. It has now fallen into disuse.

SUPPLEMENT

WELL-KNOWN CHARACTERS IN DRAMA AND FICTION

Some names not included in the following list, particularly characters in the ancient Greek and Roman mythology, will be found in the body of this book

Abou Hassan, a youth of Bagdad to the bed of the caliph Haroun-al-Raschid in the latter's palace, and awakes to believe himself to be the caliph.—*The Arabian Nights' Entertainments*.

Absolute, Sir Anthony, an irascible, domineering, but warm-hearted old gentleman who deludes himself that he is good-tempered; his son is Captain Absolute, who, under the name of Ensign Beverley, woos the heiress Lydia Languish. See *Acres*, Bob.—*The Rivals*, Sheridan.

Abydos, Bride of, Zuleika, the daughter of Giaffer, the pasha of Abydos; her lover, Sellin, is shot by her father, whereupon Zuleika dies broken-hearted.—*The Bride of Abydos*, Byron.

Acres, Bob, a blustering braggart whose courage "oozed out of his fingers' ends" when put to the test; the rival of Beverley (Capt. Absolute) for the hand of Lydia Languish.—*The Rivals*, Sheridan.

Adam, the old retainer who follows (Orlando (q.v.) into the Forest of Arden; a type of the loyal, devoted manservant.—*As You Like It*, Shakespeare.

Adams, Parson, a country curate with a head full of learning and a heart full of love for his fellows, but in absolute ignorance of the world, which in his simplicity he takes for what it professes to be.—*Joseph Andrews*, Fielding.

Admirable Crichton, The, a butler in the service of the Earl of Loam, the perfection of an "upper man-servant"; when, with members of the Earl's family, he is wrooked on a desert island it is he who alone rises to the occasion; from being "king" of the island he reverts naturally to his former position on the party being rescued.—*The Admirable Crichton*, Sir J. M. Barrie.

Adverse, Anthony, the hero of ingenious,ously contrived adventures in Lezhorn, Cuba, Africa, Paris, Mexico and on the high seas during the Napoleonic period.—*Anthony Adverse*, Hervey Allen.

Æmilia, the mother of the twins named married Adriana; parted from her sons by shipwreck, she goes to Ephesus and becomes abbess of a convent there; unknown to her one of the twins is a powerful citizen of Ephesus; the other, with Ægeon, lands in Ephesus later, and all are brought together when the strange story of their lives is unfolded.—*The Comedy of Errors*, Shakespeare.

African Magician, The, the wizard who in the story of Aladdin sent the latter into the cave in quest of the wonderful lamp; later he deprives Aladdin of the lamp by a trick and transports its former possessor and his palace to Africa, but is subsequently killed by Aladdin.—*The Arabian Nights' Entertainments*.

Agnes, the daughter of Mr. Wickfield, the solicitor, whom David Copperfield married after the death of Dora (q.v.).—*David Copperfield*, Dickens.

Agravaine, Sir, son of King Lot of Orkney, nephew of King Arthur, and brother of Gawain, Gaheris and Gareth; was killed by Lancelot, whom he and others tried to trap in an intrigue with Queen Guinevere.—*Morte d'Arthur*, Malory.

Aguecheek, Sir Andrew, an old sop who is the boon companion of Sir Toby Belch (q.v.).—*Twelfth Night*, Shakespeare.

Ahmed, Prince, the possessor of the magic tent and the apple of Samarkand which cured all diseases.—*The Arabian Nights' Entertainments*.

Aladdin, the hero of the story of the "wonderful lamp"; on possessing himself of the treasure, he becomes the owner of immense wealth and son-in-law of the sultan; after being deprived for a time of his palace and riches by the machinations of a magician, he regains them and returns home in triumph.—*The Arabian Nights' Entertainments*.

Alasnam, Prince, the owner of eight statues, each a precious stone mounted on gold; being told to search for a ninth, he finds it in the person of a beautiful girl, whom he marries; during his quest he carries a magic mirror, the surface of which remains undimmed only when the face it reflects is that of a virtuous woman.—*The Arabian Nights' Entertainments*.

Albert, a young farmer who eventually marries Lotte, the beloved of Werther who in real life is Goethe himself; Albert is his friend Kestner, and Lotte is Charlotte Buft.—*The Sorrows of Werther*, Goethe.

Alceste, the misanthrope, a sincere critic of men and manners, despising frivolity. Against his will he becomes enamoured of the beautiful and coquettish Célimène, whom he openly criticizes and rebukes, though unable to conceal his affection.—*Le Misanthrope*, Molière.

Alden, John, a son of one of the Pilgrim Fathers in *The Courtship of Miles Standish*, Longfellow.

Ali Baba, the hero of the story of the Forty Thieves a poor woodman who learned the magic password, "Open Sesame," which gained him entrance to the robbers' treasure cave and possession of its wealth; through the wit of his female slave, Morgiana, the Forty Thieves are killed.—*The Arabian Nights' Entertainments*.

Alice, the chief character in *Alice's Adventures in Wonderland* and *Through the Looking Glass*.—Lewis Carroll.

Alice-Sit-by-the-Fire, finds her children antagonistic to her when she sees them again on her return from life in India. After having been saved from an imaginary "affair" by her sentimental daughter, she wins their affection.—*Alice-sit-by-the-Fire*, play by Sir J. M. Barrie.

Allan-a-Dale, or *Allen-a-Dale*, a member of Robin Hood's band whom the outlaw befriends and assists in his marriage against the will of the lady's father; as a character figures in Scott's *Ivanhoe*.

Allworthy, an upright and charitable gentleman who rears Tom Jones and discovers the latter to be the natural son of his sister.—*Tom Jones*, Fielding.

Almayer, a solitary Englishman in Malaya, who centres all his ambitions in his half-caste daughter Nina. Crushed and impoverished by repeated reverses, he is unable to recover from his despair at Nina's elopement with a Malayan chief.—*Almayer's Folly*, Joseph Conrad.

Amadis de Gaul, the hero of a romance of chivalry by Garcia de Montalvo; is to Spain and Portugal what in legend Arthur is to Britain and Charlemagne is to France; his lady-love, whom he ultimately marries, is Oriana.

Amoryllis, a favourite name among old-time pastoral poets for a country girl: "To sport with Amoryllis in the shade" (Milton); a character (founded on the Countess-dowager of Derby) in Spenser's *Colin Cloute's Come Home Again*. Also used by Virgil and Ovid.

Ambrose, Father, the Abbot of Kennaquhair, otherwise Edward Glendinning, brother of the Knight of Avenel.—*The Abbot*, Scott.

Amelia, the wife of the profligate Captain Booth, a woman of the highest virtues and a model of wifely affection; is accepted as a portrait of the novelist's wife.—*Amelia*, Fielding.

Amory, Blanche, a good-looking girl with superficial accomplishments but selfish at heart; was engaged in turn to Penderennis and Harry Foker.—*Penderennis*, Thackeray.

Ancient Mariner, The, the hero of a poem of the name by Coleridge, relating how, having shot an albatross, he was doomed to wander from place to place repeating the story of his ill-doing as a warning.

Andrews, Joseph, a footman who successfully resists temptation offered him and eventually marries a girl of his own class; a character created to ridicule Richardson's *Pamela*.—*Joseph Andrews*, Fielding.

Antipholus, the name of the twin brothers, sons of Aegon and Emilia of Syracuse, whose misadventures provide the plot for Shakespeare's *Comedy of Errors*.

Antiquary, The, Jonathan Oldbuck, the laird of Monkburn, a whimsical but good-hearted gentleman of antiquarian tastes who is the central figure in Scott's novel of the name.

Antonio, the Merchant of Venice in the name, who is in debt to Shylock the Jew and who is saved from his predicament by the shrewdness of Portia (q.v.).

Aram, Eugene, a schoolmaster of Knaresborough, who, having committed a murder, becomes haunted by remorse until he is driven to kill himself.—*Eugene Aram*, Lord Lytton. Thomas Hood wrote a poem on the same subject.

Aramis. See D'Artagnan.

Arden, Enoch, hero of a poem by Tennyson, who, on his return from the sea, after long absence, finds his wife, who believed him dead, married happily to another; he does not disclose himself, and dies broken-hearted.

Arden of Feversham, a landowner, who is murdered, after several unsuccessful attempts, by his wife and her lover. Their plot is finally discovered, and they are executed.—*The Tragedy of Mr. Arden of Feversham*, Lillo (after an old play).

Ariel, an airy spirit liberated from bondage by Prospero, Duke of Milan, and a faithful servant to the latter.—*The Tempest*, Shakespeare.

Armida, a beautiful, seductive sorceress who lures Rinaldo among other crusaders from the siege of Jerusalem, entertaining him in her palace.—*Jerusalem Delivered*, Tasso.

Artegal, a prince of Cornwall stolen as a baby by them; marries Britomart (q.v.); is the personification of justice.—*The Faerie Queene*, Spenser.

Artful Dodger, The, John Dawkins, a young pickpocket trained by Fagin the Jew.—*Oliver Twist*, Dickens.

Ashton, Lucy, daughter of Sir William and Lady Ashton and betrothed to the Master of Ravenswood, but forced into marriage with the Laird of Bucklaw, whom she tries to murder.—*The Bride of Lammermoor*, Scott.

Athos. See D'Artagnan.

Audrey, a country girl who attaches herself to Touchstone (q.v.), a type of rustic simplicity and *gaucherie*.—*As You Like It*, Shakespeare.

Autolycus, a witty pedlar. "a snapper-up of unconsidered trifles."—*The Winter's Tale*, Shakespeare.

Babbitt, George F., chief character in Sinclair Lewis's novel *Babbitt*.

Backbite, Sir Benjamin, a conceited and malicious scandal-monger, with an unwarranted reputation as a poet and a wit; the nephew of Crabtree.—*The School for Scandal*, Sheridan.

Bagstock, Major, a retired military officer, red-faced and pompous, with a native servant whom he abuses constantly; refers to himself as "Old Joey," "J. B.," "Old Josh—tough, and devilish sly!"; cherishes an admiration and affection for Miss Tox.—*Dombey and Son*, Dickens.

Balderstone, Caleb, the old butler in the service of the Master of Ravenswood, who resorts to odd shifts to maintain the dignity of the house.—*The Bride of Lammermoor*, Scott.

Balfour, David, a young Scotsman driven to seek his fortune in the world, the hero of *Kidnapped* and *Catriona*, novels by R. L. Stevenson dealing with the Jacobite rebellion.

Banquo, a Scottish thane who is murdered and whose ghost haunts the latter.—*Macbeth*, Shakespeare.

Bardell, Mrs., a landlady in Goswell Street, London, who brings a successful action for breach-of-promise against Mr. Pickwick, but is subsequently brought to book by her own lawyers, Dodson and Fogg.—*The Pickwick Papers*, Dickens.

Bardolph, a corporal under Sir John Falstaff, a pimply, drunken, swaggering rascal, whose red nose is a continual source of jest with his companions; is a lieutenant in *Henry V.*; like Nym comes to the gallows eventually.—*The Merry Wives of Windsor*, Shakespeare.

Barkis, a carrier who courts David Copperfield's nurse, Clara Peggotty, sending her a message that "Barkis is willin'," and eventually marries her.—*David Copperfield*, Dickens.

Barmecide, a prince who entertains a beggar named Shacabac to a mock feast, and is so pleased with the other's reception of the jest that he finally orders a real banquet to be prepared.—*The Arabian Nights' Entertainments*.

Barton, Amos, a character in George Eliot's *Series of Clerical Life*.
Bassanio, the friend of Antonio (*q.v.*) and the lover of Portia (*q.v.*).—*The Merchant of Venice*, Shakespeare.

Beatrice, (1) the niece of Leonato, governor of Messina, the light-hearted, impulsive, and affectionate heroine of Shakespeare's *Much Ado About Nothing*; is in love with Benedick, whom she marries; (2) the daughter of a citizen of Florence named Portinari, with whom Dante fell in love; she was the inspiration of his *Divine Comedy*; (3) Beatrice Cenci, the subject of Shelley's tragedy, *The Cenci*.

Bede, Adam, a village carpenter, a strong upright man; he becomes the friend of Arthur Donnithorne, son and heir of the local squire, but quarrels with him over the love of Hetty Sorrel. When she is tried for murdering the child she has had by Arthur, he stands by her, but later marries Dinah Morris.—*Adam Bede*, George Eliot.

Bedivere, Sir, a knight of the Round Table and King Arthur's butler; at the king's death he throws the latter's magic sword Excalibur into the mere.—*Morte d'Arthur*, Tennyson.

Belch, Sir Toby, the roistering old uncle of the Countess Olivia and companion of Sir Andrew Aguecheek (*q.v.*).—*Twelfth Night*, Shakespeare.

Belinda, the heroine of *The Rape of the Lock*, by Pope; also the heroine of a novel of the name by Maria Edgeworth.

Bell, Peter, Wordsworth's simple rustic, to whom the primrose was but a yellow flower and nothing more.

Belphebe, the huntress of Spenser's *Faerie Queene*, in whom he depicted Queen Elizabeth; "a Diana among women, cold, passionless, correct, and strong-minded."

Benedick, a young lord of Padua who forgoes his vow of celibacy to woo and marry the fair Beatrice (*q.v.*).—*Much Ado About Nothing*, Shakespeare.

Ben Hur, the Jewish hero of the novel of the name by Lew Wallace, the scenes of which are laid in the time of Christ.

Beverley, Ensign. See *Absolute*, *Captain*.

Biron, a merry young lord in attendance on the King of Navarre, who finds subject for jest in almost everything.—*Love's Labour's Lost*, Shakespeare.

Black Dwarf, The. See Manley, Sir Edward.

Blakeney, Sir Percy, an English gentleman who assists French aristocrats to escape from the terrors of the Revolution, masquerading under the name of "The Scarlet Pimpernel."—*The Scarlet Pimpernel*, Baroness Orczy.

Bluebeard, a wealthy seigneur of fable, the owner of a castle; marries a beautiful woman, and leaves her in charge of the keys of the apartments in his absence, with strict orders not to unlock any of the doors, an injunction which she fails to respect, and finds to her horror the remains of his former wives locked up in one of them; her disobedience is discovered, and she is to prepare for death, but is rescued as she lies with her head on the block by the timely arrival of her brothers, who at once despatch the husband to his merited doom. The English version is derived from Perrault's *Contes*.

Bobadil, Captain, a blustering but cowardly braggart, remarkable for his boasting and dainty oaths; with nineteen selected warriors like himself, he says, he would annihilate an army by challenging the enemy at a time—"two hundred a day: five days a thousand," and so on.—*Every Man in His Humour*, Ben Jonson.

Boffin, Nicodemus, "the golden dust-man," John Harmon's foreman, "a broad, round-shouldered, one-sided old fellow," rough in exterior but with a heart of gold; he sacrifices a fortune in favour of his employer's son.—*Our Mutual Friend*, Dickens.

Bois-Guilbert, Brian de, a leader of the Knights Templars, a cruel and unscrupulous man; when the Jewish girl, Rebecca, refuses his advances he carries her off; later, Rebecca being on trial for sorcery, Sir Brian encounters her champion, Ivanhoe, in single combat and is killed.—*Ivanhoe*, Scott.

Bombastes Furioso, the leading character in a farcical tragedy of the name by W. B. Rhodes, (1790) written in burlesque of Ariosto's *Orlando Furioso*.

Bors, Sir, a worthy, high-minded knight of the Round Table, the grandfather of Sir Galahad, to whom is given a vision of the Holy Grail.—*Morte d'Arthur*, Malory.

Bottom, Nick, a weaver of Athens, ignorant but full of conceit; with his fellows he devises the play *Pyramus and Thisbe* for Duke Theseus; under the spell of Oberon, the Fairy King, he is invested with an ass's head, in which guise Titania, the Fairy Queen, dotes upon him.—*A Midsummer Night's Dream*, Shakespeare.

Bovary, Emma, the wife of a provincial doctor, heroine of the most famous of all "realistic" as opposed to "romantic" novels and the type from which all modern "realistic" novels have sprung. She endeavours to relieve her boredom by indulging her longing for romance in various love affairs. Disillusioned and heavily in debt, she finally commits suicide.—*Madame Bovary*, Flaubert.

Bowling, Tom, a naval lieutenant, a man of the most excellent qualities—*Roderick Random*, Smollett. It was this character which suggested Dibdin's well-known song.

Brabantio, a senator, father of Desdemona, a man of haughty, arrogant bearing, and an enemy of the Moor.—*Othello*, Shakespeare.

Bradamant, the "virgin knight" in white armour who marries Rogers the Moor upon his baptism; was the possessor of a magic and irresistible spear; is a character in both *Orlando Innamorato*, Bojardo, and *Orlando Furioso*, Ariosto.

Bradwardine, Baron, a pedantic but brave Scottish nobleman, a Jacobite, whose daughter, Rose, marries Waverley.—*Waverley*, Scott.

Braggadochio, a braggart who is his borrowed plumes; the personification of exaggeration and boasting.—*The Faerie Queene*, Spenser.

Brand, a priest self-consecrated to teach the need of total renunciation of will. By his constant demand for all or nought he finally causes the people to revolt against him and drive him an outcast to the mountains where he dies.—*Brand*, Ibsen.

Brass, Sampson, a knavish attorney in Dickens' *Old Curiosity Shop*; affected feeling for his clients, whom he fleeced.

Brazenhead, Captain Salomon, "the Great," a 15th Century soldier of fortune who passes through amazing adventures with many love affairs.—*Brazenhead the Great*, Maurice Hewlett.

Breck, Alan, (real name Stewart), the companion of David Balfour in his flight through the Highlands; an ardent Jacobite and "a bonny fechter."—*Kidnapped*, R. L. Stevenson.

Bride of Lammermoor,

See Ashton, Lucy.

Bridgenorth, Major, a Parliamentarian conspirator who, is a neighbour of Sir Geoffrey Peveril; his daughter, Alice, the heroine of the novel, marries Julian Peveril, Sir Geoffrey's son.—*Peveril of the Peak*, Scott.

Bridlegoose, a judge who decides his cases by a throw of the dice.—*Pantagruel*, Rabelais.

Britling, Hugh, a successful and wealthy author, whose easy cultured and amorous life is broken into by the World War, in which he loses his eldest son.—*Mr. Britling Sees It Through*, H. G. Wells.

Britomart, an allegorical character representing chastity, whose adventures denote the triumph of purity over impurity; meets eventually with Sir Artegal (q.v.), to whom she is married.—*The Faerie Queene*, Spenser.

Brooker, a former clerk of Ralph Nickleby, a felon, who out of revenge steals the latter's son and confines him under the name of Smike in Dotheboys Hall school.—*Nicholas Nickleby*, Dickens.

Brown, Father, a Roman Catholic priest whose intuition and insight into human character, combined with his sense of humour, make him an excellent detector of crime.—*The Innocence of Father Brown* and other stories, G. K. Chesterton.

Brown, Tom, the hero of *Tom Brown's School-days* and *Tom Brown at Oxford*, by Thomas Hughes; a typical healthy-minded, sport-loving, natural boy.

Brownlow, Mr., a benevolent old gentleman who befriends Oliver when he escapes from Fagin and his associates.—*Oliver Twist*, Dickens.

Bruin, the bear in the beast-epic, *Reynard* (1498).

Bruneild, a masterful princess whom King Gunther surpasses in feats of strength and skill by the aid of his friend Siegfried; the story of her conflict with the latter forms an important part of *The Nibelungenlied*.

Brutus, Marcus, the Roman patriot who conspires against Caesar with Cassius, Casca, and others and stabs the great dictator in the Capitol.—*Julius Caesar*, Shakespeare.

Bucklaw, Laird of, Frank Hayston, to whom Lucy Ashton (q.v.) is married against her will and whom she attempts to murder on her wedding-night.—*The Bride of Lammermoor*, Scott.

Bumble, Mr., the pompous, self-important beadle who becomes master of the workhouse in which Oliver Twist is lodged; his marriage with Mrs. Corney, the matron, turns out badly for him, and eventually he is disgraced.—*Oliver Twist*, Dickens.

Bumppo, Natty, backwoodsman and trapper, alias "Deerslayer," "Hawk-Eye," "Pathfinder," and "La Longue Carabine," the hero of *The Pathfinder*, *The Pioneers*, *The Deerslayer*, *The Last of the Mohicans*, and *The Prairie*, Fenimore Cooper.

Bunsby, Jack, a ship's captain and friend of Captain Cuttle; he is considered to be an oracle of wisdom, although his speech is laconic; remarkable for possessing "one stationary eye and one revolving one, on the principle of some lighthouses"; eventually marries Mrs. Mottinger, the virginal landlady of Cuttle.—*Dombey and Son*, Dickens.

Burchell, Mr., the name under which Barchinola goes when he visits Dr. Primrose; he was at first suspected of being the seducer of Olivia, but eventually marries Sophia.—*The Vicar of Wakefield*, Goldsmith.

Buzfuz, Serjeant, the lawyer retained by Dodson and Fogg on behalf of Mrs. Bardell in the action brought against Mr. Pickwick.—*The Pickwick Papers*, Dickens.

Caliban, a deformed and malignant being whose mother is the witch Sycorax; he is servant to Prospero (q.v.).—*The Tempest*, Shakespeare.

Calidore, Sir, a gallant knight (modelled upon Sir Philip Sydney) who is the personification of courtesy; he adventures in quest of the Blatant Beast.—*The Faerie Queene*, Spenser.

Cambyases, a ranting character in a tragedy of the name by Preston (1569), referred to in Shakespeare's *Henry IV., Part I.* ("in King Cambyases' vein").

Camellias, Lady of the (Dame aux Camélias). See Gautier, Marguerite.

Campaigner, The Old, Mrs. Mackenzie, zie, the mother of Rose, Clive Newcome's first wife.—*The Newcomes*, Thackeray.

Candida, the wife of Morell, a clergyman. A poet, Eugene Marchbanks, whom Morell has befriended, claims to understand her and enters into rivalry with him for her affections. Candida's choice is finally with her husband.—*Candida*, Shaw.

Candide, the unfortunate hero of a novel of the name by Voltaire; his attitude towards his accumulation of woes is one of cynical indifference.

Caradoc, Sir, one of the knights of the Round Table, whose pure heart enables him to pass two tests safely.—*Percy's Reliques*.

Carker, James, the head clerk of Mr. Dombey, an evil man who not only brings financial ruin upon his employer, but elopes with the latter's young (second) wife; he is killed accidentally on the railway line.—*Dombey and Son*, Dickens.

Carstone, Richard, a ward of John Jarndyce and concerned in the famous Chancery suit, "Jarndyce v. Jarndyce"; he is a happy and engaging young man, who marries his cousin, Ada Clare, also a ward in Chancery, but after trying several occupations he plunges into the family litigation, loses his estate, and dies soon after.—*Bleak House*, Dickens.

Carton, Sydney, the dissipated "jackal" of Mr. Stryver, the barrister; his great abilities deadened by drink, he cherishes an affection for Lucie Manette, who marries Charles Darnay (Evrémonde), and, by reason of the strong likeness between the two men, he personates Darnay and goes to the guillotine in his stead.—*A Tale of Two Cities*, Dickens.

Casca, one of the conspirators against Caesar; with Brutus, he stabs the dictator in the Capitol.—*Julius Caesar*, Shakespeare.

Cassim, Ali Baba's brother, who enters the treasure cave of the Forty Thieves by stealth, but is imprisoned therein because he cannot remember the password "Open Sesame!" which opens the door; when the Thieves return he is caught and cut to pieces.—*The Arabian Nights' Entertainments*.

Cassio, a Florentine lieutenant under Othello, whose disgrace with the latter leads to the assumed intrigue between Desdemona and Iago.—*Othello*, Shakespeare.

Cassius, a friend of Brutus, and the chief conspirator against Caesar.—*Julius Caesar*, Shakespeare.

Catharick, Anne, the "Woman in White," in the novel of that name by Wilkie Collins.

Caudle, Mrs., famous for her "curtain lectures" to her husband, delivered at night-time for many years.—*The Caudle Papers* (in *Punch*), Douglas Jerrold.

Cedric, a wealthy Saxonthane, lord of Rowena.—*Ivanhoe*, Scott.

Celia, daughter of Duke Frederick, the usurper, who joins her cousin, Rosalind (daughter of the banished duke), in her journey into the Forest of Arden to seek the latter's father; in disguise as a peasant girl is known as Aliena.—*As You Like It*, Shakespeare.

Chadband, Rev. Mr., a hypocritical man, with a fat smile, who speaks of himself as a "vessel" and imposes on many of his dupes.—*Black House*, Dickens.

Charmian, one of Cleopatra's women attendants, devoted to her mistress; following the queen's example she kills herself with an asp bite.—*Antony and Cleopatra*, Shakespeare.

Chatterley, Lady, a woman of passionate nature, whose husband is partly paralysed. She conducts an affair with her husband's gamekeeper, and after obtaining a divorce marries him.—*Lady Chatterley's Lover*, D. H. Lawrence.

Cheyne, Harvey N., the son of Harvey Cheyne, an American millionaire; he is washed overboard and rescued by a fishing schooner; he lives with the crew who make a man of him.—*Captains Courageous*, Rudyard Kipling.

Chickweed, Mr., a licensed victualler that he has been robbed and trades upon the generosity of friends until his fraud is exposed.—*Oliver Twist*, Dickens.

Children of the Mist, of the MacGregor clan; they withstand the soldiers sent in pursuit of Dalgetty.—*The Legend of Montrose*, Scott.

Chriemhild, sister of King Gunther of Siegfried (q.v.); after the latter's death she develops into a vindictive, revengeful woman; as her second husband marries Attila, king of the Huns.—*The Nibelungenlied*.

Christabel, the heroine of Coleridge's beautiful but unfinished poem of the title.

Christian, the hero of Bunyan's *Pilgrim's Progress*, which recounts the story of his journeying from the City of Destruction to the Celestial City; his wife, Christians, follows him under the guidance of Mr. Groatheart.

Chuzzlewit, Anthony, the miserly brother of Martin Chuzzlewit the Elder and father of Jonas; a Manchester warehouseman in business.—*Martin Chuzzlewit*, Dickens.

Chuzzlewit, Jonas, the profligate son of Anthony, who attempts to murder his father and does so away with Montagu Tigg who discovers his villainy; he marries Mercy Pecksniff, treats her cruelly, and eventually poisons himself while on his way to prison under arrest for murder.—*Martin Chuzzlewit*, Dickens.

Chuzzlewit, Martin, the elder, a rich but eccentric old man who disinherits his grandson, Martin, goes to live with the hypocritical Pecksniff (q.v.), and after the latter's exposure is reconciled to Martin.—*Martin Chuzzlewit*, Dickens.

Chuzzlewit, Martin, the younger, grandson of Martin the Elder; because of a love affair with Mary Graham, quarrels with his grandfather and goes to America, where he loses his money in a swindling land-boom project; returns to find his grandfather apparently in the power

of the Pecksniffs, but is reinstated in the old man's affections and marries Mary.—*Martin Chuzzlewit*, Dickens.

Cinderella (the little cinder-girl), the youngest member of a family who must drudge at home while her elder sisters go to balls, till one day a fairy befriended her and conveys her to a ball, where she is as the centre of attraction, and wins the favour of a prince. On quitting the ball she leaves a slipper behind her, by means of which she is identified by the prince, who finds that hers is the only foot that the slipper will fit, and marries her. The story in one version or another is a very ancient and widespread one, being found in the writings of Aelian and Strabo.

Clärchen, a female character in Goethe's *Edmont*, distinguished by qualities of constancy and devotion.

Clare, Ada, the cousin of Richard Cardstone (q.v.) and, like him, a ward in Chancery; she marries Richard, but their happiness is marred by the great "Jarndyce v. Jarndyce" suit.—*Black House*, Dickens.

Claribel, Sir, a knight surnamed "the Lewd," one of the six who contend for Florimel the False.—*The Faerie Queene*, Spenser.

Clarissa Harlowe. See Harlowe, Clarissa.

Claudio, the brother of Isabella and a suitor for Juliet's hand.—*Measure for Measure*, Shakespeare.

Claudio, a Florentine lord who is the lover of Hero, Leonato's daughter.—*Much Ado About Nothing*, Shakespeare.

Claudius, king of Denmark, Hamlet's uncle; having poisoned his brother and married the latter's widow, he is finally killed by Hamlet, whom he has attempted to poison.—*Hamlet*, Shakespeare.

Cleishbotham, Jedediah, the schoolmaster editor of *The Tales of My Landlord*, Scott.

Clementine, The Lady, a lady, accomplished and beautiful, in Richardson's novel, *Sir Charles Grandison*, in love with Sir Charles, who marries another he has no partiality for.

Cleon, the governor of Tarsus, slain with his wife by the citizens under suspicion of having murdered Marina, daughter of Pericles.—*Pericles*, Shakespeare.

Cleveland, Clement, otherwise Vaughan, the pirate, in love with Minna Troll, daughter of Magnus, the udaller.—*The Pirate*, Scott. See *Norna*.

Clinker, Humphry, the hero of Smollett's novel, *Humphry Clinker*, who attracts the notice of Mr. Bramble, marries Mrs. Bramble's maid, and proves to be a natural son of Mr. Bramble.

Clissold, William, son of a company promoter; he becomes a metallurgist in the firm of Roper, Steinhart, Crest and Co., later being made director. He believes that the eventual rulers of the world are the industrialists and constructive financiers.—*The World of William Clissold*, H. G. Wells.

Clorinda, the daughter of Senapus of Ethiopia; abandoned by her mother for a changeling, she goes to Africa; after many adventures, becomes a leader of the pagan forces, wins the love of Tancred (q.v.), but is slain by him unknowingly.—*Jerusalem Delivered*, Tasso.

Cloten, Cymbeline's son by her first husband, a base-minded lout who tries to make love to Imogen (q.v.) and is killed in a duel with Guiderius.—*Cymbeline*, Shakespeare.

Codlin, Tom, with Mr. Harris ("Short Trotters"), one of the Punch and Judy showmen, "Codlin and Short," who

show kindness to Little Nell and her grandfather.—*The Old Curiosity Shop*, Dickens.

Cogia Houssain, the captain of the band of the Forty Thieves, who is outwitted and killed by Morgiana, Ali Baba's slave.—*The Arabian Nights' Entertainments*.

Colepepper, Captain, a bully of Alsatia, the thieves' quarter in London.—*The Fortunes of Nigel*, Scott.

Coningsby, the hero of a novel of the name by Lord Beaconsfield, a representative of the Young England Party.

Constance, a Benedictine nun in love with Marmion, whom she accompanies in disguise as a page; is subsequently immured to her death for violating her vows.—*Marmion*, Scott.

Cophetua, an African king of legend marries a beggar-girl, as in Tennyson's poem, *The Beggar-Maid*.

Copperfield, David, an only son; after a life of misery under Mr. Murdstone, whom his mother marries, runs away from menial employment and finds a friend in Betsey Trotwood, a great-aunt, at Dover; enters a law office, turns to writing, marries first Dora Spenlow and secondly Agnes Wickfield.—*David Copperfield*, Dickens.

Cordelia, the youngest daughter of King Lear, disinherited by her father, but faithful and forgiving to him in the end.—*King Lear*, Shakespeare.

Corinne, the heroine and title of a book of Mme. de Staël, her principal novel, in which she celebrates the praises of the great men and great masterpieces of Italy; her heroine is the type of a woman inspired with poetic ideas and the most generous sentiments.

Costard, a clown who uses big words and the meaning, in imitation of the court gallants.—*Love's Labour's Lost*, Shakespeare.

Coverley, Sir Roger de, a country gentleman of the time of Queen Anne, as modest, courteous, and benevolent as he is vain and eccentric; he was the creation of Addison in *The Spectator*.

Cratchit, Bob, the hard-working clerk of Scrooge, into whose happy home at Christmas the miserly old man is given a peep by the ghost.—*A Christmas Carol*, Dickens.

Crawley, Sir Pitt, "a cunning, mean, foolish, disreputable old rogue," miserly, vulgar, and litigious.—*Vanity Fair*, Thackeray.

Crawley, Pitt, son of Sir Pitt, very much the grand gentleman, but inclined to priggishness; he succeeds his father in the title, inherits a fortune from an aunt, marries a lady of title, and enters Parliament.—*Vanity Fair*, Thackeray.

Crawley, Captain Rawdon, Pitt's younger brother, a guardsman and "man about town"; he marries Becky Sharp (q.v.), forfeits the fortune that goes to Pitt, and with her lives on his wits, until Becky's intrigue with Lord Steyne brings about their separation; he becomes later governor of Coventry Island, where he dies.—*Vanity Fair*, Thackeray.

Creakle, Mr., a bullying schoolmaster in Dickens' *David Copperfield*.

Cressida, a beautiful Trojan woman who lightly breaks her troth plight to Troilus in favour of Diomed whose prisoner she becomes; her story is told by Chaucer, and by Shakespeare in *Troilus and Cressida*.

Crichton, The Admirable. See Admirable.

Croaker, Mr., the guardian of Miss Richland, a self-martyr; always grumbling and out-at-elbows with the world; his wife is his antithesis.—*The Good-Natured Man*, Goldsmith.

Crummles, Vincent, the good-hearted theatrical company who induces Nicholas and Smike to join him; his wife, a "tragedy queen" lady, is similarly kind and generous; his daughter, Ninetta, is billed as "the Infant Phenomenon."—*Nicholas Nickleby*, Dickens.

Cruncher, Jerry, the "odd-job" porter at Telson's Bank, who in secret is a "resurrection man"; his wife prays for his reform, and is styled by him his "Aggerawayter" for her constant "flopping."—*A Tale of Two Cities*, Dickens.

Crusoe, Robinson, the hero of the novel of the same title by Defoe, a sailor shipwrecked on a desert island whose ingenuity and resource enable him to make a home there.

Cuttle, Captain, a retired ship's captain with a hook in place of his right hand, a kind-hearted man who befriends Florence Dombey; given to quoting, with a favourite motto: "When found, make a note of."—*Dombey and Son*, Dickens.

Cymbeline, a legendary king of Imogen (q.v.).—*Cymbeline*, Shakespeare.

Cyrano de Bergerac, a gallant French soldier with an abnormal nose. The chief character in the world-famous play of that name by Edmond Rostand.

Dagonet, Sir, King Arthur's court fool, whose adventures are related by Malory and whom Tennyson introduces in his *Idylls*.

Dalgetty, Dugald, a soldier of fortune with pretensions to scholarship, always ready to sell his sword to the highest bidder.—*The Legend of Montrose*, Scott.

Dandie Dinmont, an eccentric but good-natured farmer who helped Meg Merrilies to frustrate the plot of Glousin and Dick Hatterratch.—*Guy Mannering*, Scott.

Dandin, Georges, a character in one of Molière's comedies illustrative of the folly a man commits when he marries a woman of higher rank than his own, Georges being his impersonation of a husband who has patiently to endure all the extravagant whims and fancies of his dame of a wife.

Dandin, Perrin, a simple citizen in the *Pantagruel* of Rabelais, who seats himself judge-wise on the first stump that offers, and passes offhand a sentence in any matter of litigation; a character who figures similarly in a comedy of Racine (*Les Plaideurs*) and in a fable of La Fontaine.

Darnay, Charles, otherwise Evrémonde in France, the lover of Lucie Manette, whom he is enabled to marry after Sydney Carton (q.v.) has gone to the guillotine in his place.—*A Tale of Two Cities*, Dickens.

D'Artagnan, the dashing swordsman of the three musketeers, Athos, Porthos, and Aramis, the hero of *The Three Musketeers* and *Twenty Years After*, by Alexandre Dumas, and a leading character in other books by the same novelist.

Dedlock, Sir Leicester, a proud and obstinate baronet, whose wife is the mother of Esther Summerson, her child before marriage by a Captain Rawdon; on the eve of the discovery of her secret Lady Dedlock runs away from home and dies miserably.—*Bleak House*, Dickens.

Defarge, Madame, a strong-willed woman and virulent, relentless Revolutionist; her husband, keeper of a wine-shop, is a similarly implacable character.—*A Tale of Two Cities*, Dickens.

Delphine, the heroine of a novel of the same title by Madame de Staël, a girl who, like Corinne, dies of grief from unrequited love.

Demetrius, a youth of Athens in love with Hermia, daughter of Egeus, but eventually united to Helena.—*A Midsummer Night's Dream*, Shakespeare.

Deronda, Daniel, a young Jew of unknown parentage, who passes as the nephew of Sir Hugo Mallinger. Through his friendship with Mirah Cohen and her brother Mordecai, he interests himself in the welfare of the Jews. Afterwards, discovering that he is of Jewish birth, he marries Mirah and goes with her and Mordecai to Palestine.—*Daniel Deronda*, George Eliot.

Desdemona, Bantio, the daughter of Brabantio, a senator of Venice, who loves Othello the Moor and marries him; she is killed by Othello after Iago has poisoned his mind against her.—*Othello*, Shakespeare.

Diana of the Crossways.

See Merion, Diana.

Dick, Mr. a kindly, half-witted gentleman who is befriended by Betsey Trotwood, David Copperfield's aunt; his peculiar mania concerns the head of Charles I.—*David Copperfield*, Dickens.

Dinah, the coloured cook in the St. Clair household.—*Uncle Tom's Cabin*, Harriet Beecher Stowe.

Dinarzade, the sister of Scheherazade (wife of the Sultan of Persia), who wakes the latter early every morning to relate a story that shall interest the Sultan and postpone his decision to strangle his wife at daybreak.—*The Arabian Nights' Entertainments*.

Dishart, Gavin, the "Little Minister," who by chance meets a gypsy woman, Babbie, during Chartist rioting in Thrums. He marries her in gypsy style over the tongs, but redeems his reputation among his congregation by a magnificent attempt to save the life of Lord Kintoul, who had himself hoped to marry Babbie.—*The Little Minister*, Barrie.

Dobbin, Colonel, a soldier and gallant gentleman, awkward in manner, but with truly fine instincts; he worships Amelia Sedley and after her husband's death marries her.—*Vanity Fair*, Thackeray.

Dodson and Fogg, the firm of lawyers who act for Mrs. Bardell in her breach-of-promise suit against Mr. Pickwick.—*The Pickwick Papers*, Dickens.

Dogberry, an ignorant constable who, with his fellow, Verges, misuses words in a ridiculous manner.—*Much Ado About Nothing*, Shakespeare.

Dombey, Mr., a self-important, money-loving London merchant, the father of Florence and Paul; after the latter's death he becomes harder still in nature and treats his daughter with indifference; the desertion of his second wife and the loss of his fortune humble him at last.—*Dombey and Son*, Dickens.

Don Juan, a reckless libertine whose adventures, as carried off by the Devil; a character in Spanish legend that has inspired dramas by Molière and Corneille, an opera (*Don Giovanni*) by Mozart, and has given the name to a poem by Byron.

Don Quixote, the hero of the satirical romance of the same title by Cervantes; a Castilian gentleman of

means whose head is turned by books of chivalry and who rides out into the world, accompanied by his squire, Sancho Panza, as a knight-errant.

Doone, Lorna, a girl of noble birth, adopted by the lawless Doones in the Exmoor Valley; she is taken from them by John Ridd (q.v.), who marries her.—*Lorna Doone*, Blackmore.

Dora, the daughter of Mr. Spenlow, the proctor, and the "child-wife" of David; she dies young.—*David Copperfield*, Dickens.

Dromio, the name of twin brothers who are servants to the twins Antipholus, and whose exact resemblance to each other adds to the confusion caused by their masters.—*The Comedy of Errors*, Shakespeare.

Drood, Edwin, the hero of Dickens' last unfinished novel, *The Mystery of Edwin Drood*.

Dryasdust, Rev. Dr., a pedantic character invented by Scott to introduce certain of his novels, the name being used as a synonym for a dull though painstaking historian.

Dulcinea del Toboso, a country wench whom Don Quixote exalts into a peerless beauty as the object of his devotion.—*Don Quixote*, Cervantes.

Durward, Quentin, a brave young archer in the Scottish Guard in France, who saves the life of Louis XI. and carries off the Countess Isabella de Croye from the Duke of Orleans.—*Quentin Durward*, Scott.

Earnshaw, Catherine, the wife of Edward Linton, whom she marries despite the fact that she loves, and is loved by, Heathcliff, her father's adopted son. She dies at the birth of her daughter, Cathy.—*Wuthering Heights*, Emily Brontë.

Edgar, the Master of Ravenswood, the affianced lover of Lucy Ashton (q.v.); after the tragedy of her marriage to Bucklaw he meets his death in a quicksand, according to a prophecy.—*The Bride of Lammermoor*, Scott.

Egeus, the father of Hermia (q.v.).—*A Midsummer Night's Dream*, Shakespeare.

Eglantine, Madame, the prioress of Chaucer's *Canterbury Tales*, a good-natured but ignorant woman who speaks French "after the scole of Stratford-atte-Bowe."

Ekdal, Hjalmar, lives in a mist of self-delusion about his capacities, his position and the identity of his daughter Hedvig, the dispoiling of which by the well-meaning Groggers Werle leads to Hedvig's suicide.—*The Wild Duck*, Ibsen.

Elaine, the "lily maid of Astolat" who pines and dies of her love for Lancelot.—*History of Prince Arthur*, Malory; and *Idylls of the King*, Tennyson.

Emile, the hero of a philosophic romance by Rousseau of the same name, in which the author expounds his views on education, and presents his reasons, with his ideal of good education.

Emilia, the wife of Iago, who uses her to procure a handkerchief of Desdemona in order to further his plot; when she later reveals the truth she is killed by Iago.—*Othello*, Shakespeare.

Em'ly, Little, the niece of Daniel Peggotty and engaged to the latter's nephew, Ham; she is induced to elope with Steerforth, who deserts her, is found after a long search by Daniel Peggotty, and eventually goes with him to Australia. Steerforth was drowned in a shipwreck and Ham in trying to save him.—*David Copperfield*, Dickens.

Enid, daughter of Yniol and wife of Geraint; under suspicion of unfaithfulness she proves her purity and is reunited to her husband.—*Idylls of the King*, Tennyson.

Eric, hero of a book for boys entitled *Eric, or Little by Little*, by F. W. Farrar, Dean of Canterbury.

Erl-King, a mischievous goblin or spirit of a ballad by Goethe.

Esmeralda, a gipsy girl of great beauty who dances publicly with a tambourine and a goat; she is shielded from peril in a church by Quasimodo, the hunchback, but eventually comes to the gibbet.—*Notre Dame de Paris*, Hugo.

Esmond, Henry, a chivalrous soldier involved in a plot for the restoration of the Stuarts; pays court to the imperious Beatrix, his kinswoman, but finally marries the latter's mother.—*Henry Esmond*, Thackeray.

Estella, a beautiful girl who is adopted by Miss Havisham; at one time engaged to Pip, she marries the worthless Drummle; she proves to be the natural child of Magwitch the convict.—*Great Expectations*, Dickens.

Euphues, an Athenian noted for his fine taste, wit, and gallantry, the chief character in John Lyly's *Euphues, or the Anatomy of Wit*.

Evangeline, the heroine of Longfellow's poem of the same title, an Acadian (Nova Scotian) girl who is parted from her lover, Gabriel, during the exile of the colonists, and who does not find him until both are old.

Everdene, Bathsheba, the prosperous owner of Weatherbury Upper Farm; she rejects the hand of Gabriel Oak and marries Sergeant Troy. He leaves her and is reported drowned. She engages to marry Boldwood, a farmer, who eventually murders Troy. Bathsheba finally marries Gabriel Oak.—*Far from the Madding Crowd*, Hardy.

Eyre, Jane, the heroine of a novel of the same name by Charlotte Brontë, a governess who marries Rochester, a man of fortune but a misanthrope, after the death of his insane wife in a fire at Thornfield Hall, Rochester himself being blinded and maimed in the attempt to save her.

Fag, the lying servant of Captain Absolute, who "wears his master's wit, as he does his lace, at second-hand."—*The Rivals*, Sheridan.

Fagin, an old Jew, a trainer of thieves and receiver of stolen goods; he is ultimately convicted of complicity in a murder and executed.—*Oliver Twist*, Dickens.

Fainéant, Le Noir, the name borne by Richard Cour-de-Lion in *Ivanhoe*.

Fair Maid of Perth, Catherine Glover, daughter of a Perthshire glover, whose lover is Smith the armourer, "Hal of the Wynd," a brave youth who survives an Ordeal of Battle and wins her hand.—*The Fair Maid of Perth*, Scott.

Faithful, Christian's companion in his journey to the Celestial City; at Vanity Fair he is taken and burned alive.—*The Pilgrim's Progress*, Bunyan.

Faithful, Jacob, the hero of a tale of the sea, under the same title, by Captain Marryat.

Falkland, a gentleman of high birth who, under provocation, commits a murder for which another suffers the death penalty; his secret is discovered by a servant named Caleb Williams, and when he persecutes the latter for robbery his crime is revealed and he dies in misery.—*Caleb Williams*, Godwin.

Falstaff, Sir John, the droll, boastful and bibulous "fat knight," whose amorous misadventures form the main theme of Shakespeare's *Merry Wives of Windsor*, and who, as soldier and wit, the companion of

Fat Boy, The, otherwise Joe, a lad in Dingley Dell, with a voracious appetite and a habit of going to sleep constantly.—*The Pickwick Papers*, Dickens.

Fata Morgana. See *Morgan La Fée*.

Fathom, Ferdinand, Count, a heartless friend nor enemy in his villainy, but finds forgiveness in the end.—*The Adventures of Ferdinand, Count Fathom*, Smollett.

Fatima, the last of the wives of Bluebeard (q.v.), who is saved from the fate of the others by the arrival of her brothers.—*Fairy Tales*, Perrault.

Faust, or Dr. Faustus, a magician and astrologer who makes a compact with the Devil to sell his soul in exchange for twenty-four years of unlimited enjoyment; the subject of a tragedy by Marlowe and of a poem by Goethe, in the latter work Faust being represented as a scholar of high attainments, while the Devil, Mephistopheles, is a less crude character than in previous productions.

Fenton, the lover of "sweet Anne Page," a gentleman of breeding who seeks an heiress but marries for love.—*The Merry Wives of Windsor*, Shakespeare.

Ferdinand, the son of Alonso, king of Naples, in love with Prospero's daughter, Miranda.—*The Tempest*, Shakespeare.

Feverel, Richard, brought up in accord with his father, rebels against it, makes a runaway match, but later deserts his wife. They are reconciled, but she dies soon afterwards.—*The Ordeal of Richard Feverel*, Meredith.

Fezziwig, Mr. a kindly, jolly old merchant, a former employer of Scrooge, whom the ghost shows to the latter as presiding at a Christmas Ball; his wife, "one vast substantial smile," is worthy to be his partner in every sense of the term.—*A Christmas Carol*, Dickens.

Fiammetta, the name Boccaccio gave to his *Filocolo* in the *Decameron* to hide the identity of Maria d'Aquino with whom he was desperately in love.

Figaro, the astute barber and valet who outwits everybody by his cunning.—*Barbier de Seville* and *Mariage de Figaro*, Beaumarchais, two comedies on which were based operas by Mozart, Paisiello, and Rossini.

Finn, Huckleberry, the companion of Tom Sawyer in many amusing adventures in the story of the same name by Mark Twain.

Flanders, Moll, a notorious woman, the story of whose career as thief and convict, with her subsequent reform, is told in *The Fortunes of Moll Flanders*, Defoe.

Flibbertigibbet, a foul fiend who in bare-lip and squint-eye among other evils, and mildews the white wheat.—*King Lear*, Shakespeare. Also the name given to Dickie Sludge, the dwarf, in *Kentworth*, Scott.

Florizel, the young prince, a son of the Polkenez, king of Bohemia, who falls in love with Perdita (q.v.).—*The Winter's Tale*, Shakespeare.

Fluellen, a brave, hot-tempered Welsh captain and a pedant, famous for the parallel he draws between Henry V. and Alexander the Great.—*Henry V.*, Shakespeare.

Ford, a gentleman of Windsor whose wife leads Sir John Falstaff on to make himself ridiculous; during this humorous intrigue he assumes the name of Brook and further fools the knight.—*The Merry Wives of Windsor*, Shakespeare.

Forsyte, Fleur, the daughter of Soames Forsyte. She falls in love with Jon Forsyte, the son of her father's first wife by her second marriage with Jolyon Forsyte. When she learns the story of this family complication she and Jon decide to part. She later marries Michael Mont.—*A Modern Comedy*, Galsworthy.

Forsyte, Jolyon, the son of "Old Jolyon," a prosperous tea-merchant, who is the head of the Forsyte family. Young Jolyon marries three times, his third wife being Irene, divorced wife of Soames Forsyte. By her he has a son, Jon.—*The Forsyte Saga*, and *A Modern Comedy*, Galsworthy.

Forsyte, Soames, a lawyer, the son of James Forsyte. He is a man of strong possessive and acquisitive instincts. He divorces his wife, Irene, and later marries Annette, a French girl, the daughter of Mme. Lamotte. By her he has a daughter, Fleur.—*The Forsyte Saga*, Galsworthy.

Forsyte, Swithin, an estate and land agent, the son of Superior Dossott Forsyte. As an elderly bachelor he lived in Hyde Park Mansions, his chief interest being the care of his health. He was known as "Four-in-hand Forsyte."—*The Forsyte Saga*, Galsworthy.

Fortinbras, prince of Norway in Shakespeare's *Hamlet*.

Forty Thieves. See **All Baba**.

Francesca, a lady of Ravenna, married to the deformed Lanciotto of Rimini, but wooed by the latter's brother, Paolo, both being put to death by Lanciotto when their guilt is discovered; her story is told by Dante, and forms the theme of a tragedy by Silvio Pellico.

Frankenstein, a student who constructs a hideous monster (without name) which is endowed with life but has no "breath of divinity"; in the end it slays its creator.—*Frankenstein*, Mrs. Shelley.

Freischutz, Der, a German archer of legend who, making a compact with the Devil, is given seven balls, six of which will hit with certainty whatever may be his mark, but the seventh to be directed as the Devil wishes.—*Der Freischutz*, an opera by Weber.

Friar Tuck, one of Robin Hood's "merry men" of Sherwood, identified by some with the "curial friar."

Friday, Man, a young Indian, Robinson Crusoe's servant on his island, so named as having been saved from cannibals on a Friday.—*Robinson Crusoe*, Defoe.

Fudge Family, The, the name of an English family, the four members of which write letters to friends at home describing (in verse) their doings and impressions of Paris, the whole being a delightful satire.—*The Fudge Family*, Tom Moore.

Gabler, Hedda, the hyper-fastidious but intelligent wife of a writer, Tesman; repelled by life and capable only of boredom, she finds interest in dominating Lovborg, a brilliant writer. Finally, having driven him to suicide, she also kills herself.—*Hedda Gabler*, Ibsen.

Gabriel, son of Basil Lajeunesse, the blacksmith of Grand Pré, in Acadia; he was the betrothed of Evangeline

(q.v.), from whom fate parted him for many years.—*Evangeline*, Longfellow.

Galahad, Sir, a knight of the Round Table, the son of Lancelot and Elaine, the chastest and noblest of the company, whose strength was "as the strength of ten, because his heart is pure"; he was the only knight to achieve the quest of the Holy Grail.—*History of Prince Arthur*, Malory; and *Idylls of the King*, Tennyson.

Galatea, a statue chiselled by Pygmalion, which became endowed with life but, after a time of some complexity, reverted to its original form.—*Pygmalion and Galatea*, Sir W. S. Gilbert.

Game Chicken, The, a prize-fighter whom Mr. Toots engages for boxing lessons.—*Domby and Son*, Dickens.

Gamp, Sarah, a monthly nurse addicted to drink and noted for her frequent allusions to a hypothetical "Mrs. Harris."—*Martin Chuzzlewit*, Dickens.

Gareth, Sir, a knight of the Round Table who serves in the king's household as a scullion under the name of "Beaumains," and, on being knighted, attaches himself to the Lady Lynette in her quest to free her sister Lyonnors from bondage; at first treated by his mistress with contempt, he wins her hand.—*Idylls of the King*, Tennyson.

Gargantua, a huge giant with an enormous appetite, the father of Pantagruel (q.v.); he is the hero of a romance of the same name by Rabelais.

Gautier, Marguerite (The Lady of the Camellias), a lady of fashion, the mistress of the Comte de Gray, whom she abandons for a young man, Armand Duval, who wants to marry her. His father persuades her to give him up for the sake of his career. She consents and later dies of consumption, reconciled with Armand on her death-bed.—*The Lady of the Camellias*, Dumas the Younger. The libretto of Verdi's opera, *La Traviata*, is based on the novel.

Gawain, Sir, a knight of the Round Table, surnamed "the Court-teous," strong in upholding the king's honour.—*History of Prince Arthur*, Malory.

Geierstein, Anne of, "the Maiden of the Mist," the heroine of a novel of the same name, dealing with Swiss history in the time of Edward IV., by Scott.

Geraint, Sir, a knight of the Round Table, married to the Lady Enid, whose fidelity he doubts but whose faithful love is proved to him.—*Idylls of the King*, Tennyson.

Giant Despair, the ogre of Doubting Castle, who imprisons Christian and Hopeful in his dungeons.—*The Pilgrim's Progress*, Bunyan.

Giaour, The, the hero of a dramatic poem of the same name by Byron, the Giaour being an unbeliever (according to Mohammedan tenets) who turns monk after the tragic fate that overtakes Lelah, a beautiful girl, whom he has carried off from the caliph Hassan.

Gil Blas, the hero of a novel of the same name by Le Sage, a chronicle of the more or less amusing adventures of a young man of good birth and scholarship whom vanity and lax morality lead astray often, but who becomes a reformed character.

Gilpin, John, a London linen-draper, the story of whose ride on horseback to Ware and back is told in Cowper's poem of the same title.

Giovanni, Don. See **Don Juan**.

Glaucus, in love with Ione. Nydia the blind girl who has a secret passion for Glaucus saves the lovers by leading them to the coast in the darkness. *The Last Days of Pompeii*, by Lord Lytton.

Gloriana, the name of the Queen of Fairyland, who represents Queen Elizabeth in Spenser's *The Faerie Queene*.

Glover, Catherine. See *Fair Maid of Perth*.

Glumdalclitch, a giantess, forty feet high, in whose charge Gulliver was placed on his visit to Brobdingnag.—*Gulliver's Travels*, Swift.

Gobbo, Launcelot, an amusing clown, an ex-servant of Shylock, who attaches himself to Bassanio.—*The Merchant of Venice*, Shakespeare.

Goneril, the eldest daughter of Lear, who, with her sister Regan, whom she later poisons out of jealousy, treats her father with ill courtesy.—*King Lear*, Shakespeare.

Goody Two Shoes, a character in a nursery story published in 1765, and supposed to have been written by Oliver Goldsmith.

Gradgrind, Thomas, a retired hardware merchant who rules out sentiment in his life and is nothing if not practical, and whose family suffer for the hard, practical way in which he brings them up.—*Hard Times*, Dickens.

Grandison, Sir Charles, a Christian and perfect gentleman, precise in his manner and moral to the highest degree in precept and practice.—*The History of Sir Charles Grandison*, Richardson.

Grantly, Dr., archdeacon of Barchester Cathedral, representative of the old school of clergy in opposition to the new, represented by Mr. Slope; he introduces Dr. Arabin to the neighbourhood and finally witnesses his appointment to the deanery and Mr. Slope's dismissal.—*Barchester Towers*, Anthony Trollope.

Gratiano, a friend of Antonio, who talks "an infinite deal of nothing"; he marries Nerissa, Portia's attendant.—*The Merchant of Venice*, Shakespeare.

Gray, Dorian, a young sensualist of great beauty, the inspiration of an artist, Basil Hallward, who paints a portrait of him. In successive years the painted face mirrors the growing corruption of Dorian's life, until finally in attempting to destroy it, he kills himself.—*The Picture of Dorian Gray*, Wilde.

Greatheart, Mr., the guide of Christiana and her children when they follow Christian to the Celestial City.—*The Pilgrim's Progress*, Bunyan.

Gretchen, Margaret, and the name of the guileless girl seduced by Faust in Goethe's tragedy of that name.

Grey, Vivian, a precocious but attractive and clever young man who thinks he can win his way in the world by his audacity. He eventually thinks he is "the most unfortunate and unhappy being that ever existed."—*Pivian Grey*, Disraeli.

Grim, Giant, a giant who endeavoured to hinder pilgrims on their way to the Celestial City.—*The Pilgrim's Progress*, Bunyan.

Grischa, Sergeant, a German soldier in the World War. He is captured by the Russians, but escapes from them, using the identity papers of a dead Russian deserter. He is taken by the Germans and condemned to death before his real identity can be established.—*Sergeant Grischa*, Zweig.

Griselda, the model wife, patient and submissive under a series of trials inflicted upon her by her husband, Walter, Marquis of Saluzzo; the subject of the Clerk's tale in *The Canterbury Tales*, Chaucer.

Grizel, the heroine of *Sentimental Tommy* and *Tommy and Grizel*, who suffers for her love of Tommy. By Sir J. M. Barrie.

Gudrun, the daughter of Attila, who is carried off by the king of Norway from her lover and put to menial service because she will not marry her captor; ultimately her lover, Horwig of Helligoland, defeats the king of Norway and recovers Gudrun for his bride.

Guinevere, the wife of King Arthur, who entertains a guilty love for Sir Lancelot and flies from the court to end her days in a nunnery.—*Idylls of the King*, Tennyson.

Gulliver, Lemuel, a sea-captain, formerly a surgeon, whose ship is wrecked on the coast of Lilliput (the land of pygmies), after which he visits Brobdingnag (the land of giants), Laputa (the country of quacks), and the land of the Houyhnhnms (horses), encountering amusing adventures.—*Gulliver's Travels*, Swift.

Gummidge, Mrs., the widow of Peg-gum, a gotty's partner, who keeps house for Peggotty; considers herself a "lone, lorn creetur"; and is continually "thinkin' of the old 'un."—*David Copperfield*, Dickens.

Gunther, the king of Burgundy and the brother of Chriemhild (q.v.); he weds Brunhild through the aid of Siegfried, acquiesces in the murder of the latter, and is himself killed by Chriemhild.—*The Nibelungenlied*.

Guppy, Mr., a young clerk in the office of Keage and Carboy, solicitors, who conceives a passion for Esther Summerson and declares his love in an amusing series of declarations.—*Bleak House*, Dickens.

Gurth, the swineherd who is the serf of Cedric,thane of Rotherwood.—*Ivanhoe*, Scott.

Guyon, Sir, a gallant knight who is the personification of temperance; he overcomes in turn Braggadocchio, Furor, and Mammon, and finally overthrows the Bower of Bliss, the home of Acrasia the enchantress.—*The Faerie Queene*, Spenser.

Gynt, Peer, a Norwegian peasant, who is despised as a dreamer and shut out from the village community as a punishment for carrying off Ingrid, the bride of another. He meets an innocent maiden, Solveig, but unable to mobilize his good qualities, he cannot win her. He drifts about the world, and returns to Norway, a worthless character, to find Solveig still faithful to him.—*Peer Gynt*, Ibsen.

Haidee, a beautiful Greek girl, daughter of Lampro the pirate, who nurses Don Juan in a cave after he has been shipwrecked; falls in love with him, and dies of grief when her father returns and orders Juan to be sold into slavery.—*Don Juan*, Byron.

Hamlet, Prince of Denmark, bidden by his father's ghost to slay his stepfather and avenge his murder, scruples to carry out the command and by his inactivity brings a train of calamity upon the court. He is a man of mind but not of action. While spending his energy in speculation, he accepts a challenge from Laertes to a friendly contest with the foils; but Laertes uses a poisonous rapier, with which he stabs Hamlet. In the ensuing struggle, the combatants change weapons; Laertes is stabbed and both die.—*Hamlet*, Shakespeare.

Handy Andy, the amusing Irish hero name by Lover; a servant with a faculty for blundering.

Hardcastle, Kate, the daughter of Squire Hardcastle; when young Marlow mistakes her father's house for an inn she "stoops to conquer" by waiting upon him like a maid.—*She Stoops to Conquer*, Goldsmith.

astle, Squire, a jovial but prosy country gentleman, who at length on Prince Eugene and of Marlborough to young Marlow mistaken his house for an inn.—*to Conquer*, Goldsmith.

owe, *Clarissa*, a young lady of high principle whose trust is shamefaced by a libertine named Lovelace; of shame after rejecting his attempt at reparation.—*The History of Clarissa* Richardson.

rachis, an Egyptian, descended from the Pharaohs, who to kill Cleopatra, but soon falls in love; being outwitted by Antony, he, with her, who loves him, plots the queen's *Cleopatra*, Sir H. Rider Haggard.

non, John, a leading character in Dickens' novel, *Our Mutual*, a young man who is assumed to be and who takes the name of John with to further his plans.

old, *Childe*, the hero of a poem of the same name by Byron, describing levels of a *blase* man of intellect.

oun-al-Raschid, a caliph of Bagdad who as a leading character in many of the *The Arabian Nights' Entertainments*.

pagon, a miser whose avarice leads him to quarrel with his son. He only allows them to follow their choice in marriage when a valuable which had been lost is restored to him son.—*L'Acare*, Molière.

rrington, Evan, a tailor with social

tal Mel. "The Mui als," a man of ve appearance and personality who any adventures comes into money and happi *Fran Harrington*, George

ris, Mrs. See *Gamp*, Sarah.

ter, The Mad, a character in Lewis Carroll's *Alice in Wonderland*.

risham, Miss, an old spinster whose former lover is Compeyson, rger; deserted on her wedding morn, she fier wears her wedding dresses and finery; loys the girl Estella, whom Pip eventu-aries.—*Great Expectations*, Dickens.

wk, Sir *Mulberry*, a scoundrelly roué, who insults Kate Nickleby, sister thomas, and is thrashed by the latter, and in a duel kills Lord Frederick Verisopht, associate and dupe.—*Nicholas Nickleby*, ns.

athcliff, a gypsy boy, brought up by Earnshaw with his v. Earnshaw's son, Hindley, ill-treats and he is cheated of his love for the iter, Catherine. He goes away, but as from exile a wealthy man, and encom- the ruin of Hindley Earnshaw.—*ering Heights*, Emily Brontë.

athen Chinee, The, Ah Sin, a Chinaman with le "childlike and bland" that belied his ing and deceit at cards.—*The Heathen* e, Bret Harte.

ep, *Uriah*, a cringing, malignant clerk in the office of Mr. Wickfield; ys proclaiming himself "so 'umble," he tly works for his employer's ruin, but is sed by Micawber. He aspired to the hand

of Agnes, but ended in prison, Agnes marrying David.—*David Copperfield*, Dickens.

Heldar, Dick, an artist who becomes masterpiece, blind just after completing his The picture is destroyed by *Bessie* Broke, an artist's model, who loves Heldar's friend, Torpenhow, and believes Heldar has thwarted her. When Heldar learns of this, he manages to go to the Sudan, where he is killed.—*The Light That Failed*, Kipling.

Helena, the wife of Bertram, Count of Roussillon, the heroine of Shakespeare's *All's Well That Ends Well*.

Helena, the companion of Hermia (q.v.), who marries Demetrius after the latter has abandoned his love for Hermia.—*A Midsummer Night's Dream*, Shakespeare.

Helmer, Nora, a young wife, rebelling against being treated constantly as a doll. She has committed forgery in order to obtain money to save her husband's life, but when this is detected he is unwilling to stand by her, and she leaves him to live her own life.—*A Doll's House*, Ibsen.

Hermia, an Athenian lady promised by her father in marriage to Demetrius, but eventually affianced to Lysander.—*A Midsummer Night's Dream*, Shakespeare.

Hermione, the wife of Leontes of Sicily and mother of Perdita, a cold, dignified woman, not without tenderness.—*The Winter's Tale*, Shakespeare.

Hero, the daughter of Leonato, the governor of Messina, who is the victim of a scurvy trick played on her by Don John which leads her bridegroom Claudio to reject her at the altar, though later the wrong is put right.—*Much Ado About Nothing*, Shakespeare.

Heron, Irene, the daughter of Professor Forsyte, she marries Soames Forsyte, but does not love him. After their divorce, she marries "young" Jolyon, Soames's cousin. The marriage is a happy one, and they have a son Jon.—*The Forsyte Saga*, Galsworthy.

Herries, Francis, youngest son of Sir Mathew Herries; black-tempered, wild and unlicensed in his ways, he earns for himself the title of "Rogue Herries." After an unhappy marriage, the good in his nature is not brought out until, later in life, he falls deeply in love with a gypsy girl, Mirabell Starr, whom he marries.—*Rogue Herries*, Sir Hugh Walpole.

Hiawatha, a legendary hero, a prophet-teacher among the N. American Indians, whose adventures are related in a poem of the same name by Longfellow.

Hieronimo, the chief character in Thomas Kyd's play in two parts, *Hieronimo* and *The Spanish Tragedy*. His only son Horatio is murdered by Balthazar, rival for the hand of Belimperia, whereupon Hieronimo becomes insane.

Higgins, Henry, a phonetician who trans-Eliza Doolittle, into a person possessing the refinements of speech proper to a duchess.—*Pygmalion*, G. B. Shaw.

Hippolyta, a queen of the Amazons; the wife of Duke Theseus of Athens in Shakespeare's *A Midsummer Night's Dream*.

Holmes, Sherlock, a detective who brings science to bear upon the elucidation of crime mysteries, arriving at his solution by the method of deduction; he is the leading character in a number of stories by Sir A. Conan Doyle.

Holt, Felix, a young watchmaker whose social conscience forbids him to live on the proceeds of quack medicines invented by his father. He devotes his life to helping the poor, but in the endeavour to stem an election riot he accidentally kills a policeman and is tried for manslaughter. He is eventually pardoned and marries Esther Lyon.—*Felix Holt*, George Eliot.

Honeywood, the "good-natured" man, whose patrimony is threatened by swindlers, in Goldsmith's play *The Good-natured Man*.

Hood, Robin, the outlaw hero of Sherwood ballads, Forest, celebrated in medieval ballads.

Hook, Captain, the famous pirate that the children meet in the Never-Never Land, in *Peter Pan*, by Sir J. M. Barrie.

Hopeful, the companion of Christian the Celestial City after the death of Faithful.—*The Pilgrim's Progress*, Bunyan.

Horatio, the friend of Hamlet in Shakespeare's tragedy of that name.

Houyhnhnms, a race of horses who are endowed with the man-like Yahoos for servants.—*Gulliver's Travels*, Swift.

Hudibras, the hero of a poetical satire of the name, aimed at the Nonconformists, by Butler.

Hunter, Mrs. Leo, a lady who runs after her friends for an "Ode to an Expiring Frog."—*The Pickwick Papers*, Dickens.

Hypatia, the heroine of a novel of the same name by Charles Kingsley, the story of a young and beautiful leader of Greek philosophic thought of the 4th Century who arouses the enmity of the church and is cruelly put to death.

Iachimo, a libertine who by deceit persuades Posthumus that his wife Imogen is faithless to him, but is compelled to confess his guilt.—*Cymbeline*, Shakespeare.

Iago, an "ancient," or ensign, in the army of Othello, who villainously poisons the Moor's mind against his wife, Desdemona, and contrives to implicate Cassio.—*Othello*, Shakespeare.

Ida, the Princess in the poem of the same name by Tennyson, on which the light opera *Princess Ida* by Gilbert and Sullivan was based.

Imogen, the wife of Posthumus, whose good name is blown upon through the wiles of Iachimo, but whose fidelity to her husband is finally established.—*Cymbeline*, Shakespeare.

Iras, a female attendant, like Charmian, upon Cleopatra.—*Antony and Cleopatra*, Shakespeare.

Isaac, a wealthy Portuguese Jew, who, priding himself upon his cunning, is in the end outwitted by others, eloping with the duenna of the lady whom he aspires to marry.—*The Duenna*, Sheridan.

Isaac of York, a rich Jew, the father to the torture as a means of extorting his money.—*Ivanhoe*, Scott.

Isabella, sister of Claudio, and the victim of the insults of Angelo, the deputy of Vienna, from whom she is delivered by Duke Vincentio on his return to the city.—*Measure for Measure*, Shakespeare.

Isengrin, the wolf in the medieval beast-epic, *Bernard the Fox*.

Iseult, or *Isolda*, the princess of Brittany who is the lady-love of Sir Tristram.—*Idylls of the King*, Tennyson.

Ivanhoe, the gallant hero-knight of Scott's romance of the same name, the son of Cedric of Rotherwood and a favourite of Richard I.; he marries Rowena, a Saxon girl, who is his father's ward.

Jaques, a lord in attendance upon the banished duke in Arden, a philosopher with a melancholy turn of mind. In his mouth Shakespeare put the famous speech beginning "All the world's a stage."—*As You Like It*, Shakespeare.

Jarley, Mrs., the owner of a travelling warwork show, a good-hearted woman who shows kindness to Little Nell.—*The Old Curiosity Shop*, Dickens.

Jarndyce, Mr., the guardian of Esther Summerson and involved in the great Jarndyce v. Jarndyce law-suit in Chancery; a kindly man who affects a churlish demeanour.—*Black House*, Dickens.

Jarvie, Bailie Nicol, a proud, tactless, self-important, quick-spoken, but kind-hearted magistrate of Glasgow.—*Rob Roy*, Scott.

Jasper, John, the choirmaster at Cloister-Drood, whom he secretly hates; is addicted to opium.—*The Mystery of Edwin Drood*, Dickens.

Jeeves, Bertie Wooster, a wealthy young man who with his friends is constantly in difficulties from which he is extricated by the sagacity of Jeeves.—*My Man Jeeves*, etc., P. G. Wodehouse.

Jekyll, Dr., a doctor who, respected and beloved, transforms himself at will into a despicable creature named Hyde, changing from one to the other until his magic potion is exhausted and he kills himself.—*The Strange Case of Dr. Jekyll and Mr. Hyde*, R. L. Stevenson.

Jenkinson, Ephraim, an old swindler and the good Doctor, impressing the latter with his learned talk; he becomes a reformed character in the end.—*The Vicar of Wakefield*, Goldsmith.

Jenny Diver, a light-of-love of Captain Macheath, whom she betrays at last.—*The Beggar's Opera*, Gay.

Jessica, the daughter of Shylock who elopes with the young Lorenzo.—*The Merchant of Venice*, Shakespeare.

Jew Süss (Josef Süß Oppenheim), a Jew of humble origin who by a mixture of astuteness and ability becomes Privy Financial Councillor to the Duke Karl Alexander, ruler of the Duchy of Württemberg in the 10th Century.—*Jew Süss*, Feuchtwanger.

Jim, Lord, a young Englishman, who believing his ship to be sinking, abandons her, but later retrieves his honour by a noble death. The character is a remarkably closely-woven study in introspection.—*Lord Jim*, Conrad.

Jingle, Alfred, an actor, a sharp-witted and plausible rascal, who succeeds in imposing upon Mr. Pickwick and other members of the Club for a time.—*The Pickwick Papers*, Dickens.

Joan, Saint, presented as "the combination of inept youth and academic ignorance, with great national capacity, push, courage, devotion, originality and oddity"; after her death, she returns to receive the homage of the world as Saint, but her wish to return to earth is received with so much dismay that it is apparent the world is not yet ready to receive its saints.—*Saint Joan*, Shaw.

Jollifant, Inigo, a young schoolmaster with a flair for composing popular songs, is dismissed from his post and joins a touring concert-party, the "Good Companions." He wins fame and fortune with his songs.—*The Good Companions*, Priestley.

Jones, Tom, the hero of a novel of the name by Fielding; a man of good heart but lax morals who involves himself in many adventures.

Jorkins, Mr., the partner of Mr. Spenlow, a man of a retiring nature and softness of heart, who is continually represented to clients by his colleague as a stern, uncompromising man.—*David Copperfield*, Dickens.

Jorrocks, Mr., a humorous hunting character in *Jorrocks's Jaunts and Jollities* and *Handley Cross*, by Robert Surtees. The first-named narrative was the inspiration of Dickens' *Pickwick Papers*.

in, a wealthy and respectable bourgeois whose wish to ape leads him into all sorts of. He finally grants his daughter to the son of the Grand Turk.—*Le Gentilhomme*, Molière.

in orphan boy with a flair for scholarship and lofty ideals who stonemason by trade. His marriage, and he divorces his wife to his cousin Sue. The unhappiness surrounding causes his son to murder children he had had by Sue.—*Jude e*, Hardy.

a lady of the Capulets of Verona, whose lover is Romeo, a son of the tagues; the heroine of *Romeo and akepeare*.

razov, The Brothers, Aloysha a monk, Ivan an intellectual, and Dmitri, a reckless but hearted officer, the rival of his father al passion for Grushenka, which solves the four in misfortune.—*The ramazon*, Dostoevski.

ina, Anna, wife of a serious-minded bureaucrat, Alexis ritch, becomes the victim of a fatal or Count Bronski, for whom she husband. She is later abandoned d commits suicide.—*Anna Karenina*,

rina, the fiery-tempered daughter of Baptista of Padua, whom marries and tames.—*The Taming co*, Shakespeare.

in, the foster-brother of Arthur, hose soneschal he becomes; a spite-spirited, and boastful knight, with nt for bestowing nicknames.—*The f Prince Arthur*, Malory; and *Idylls w*, Tennyson.

in, Captain, a seafaring captain who comes successfully through many as in *The Adventures of Captain Kettle Cutcliffe Hyne*.

in, short for Kimball O'Hara, an orphan son of an Irish soldier and an oman, who is brought up by a half-man and learns native ways; he the disciple of a Tibetan Lama and ruanles him in his wandering search for iver of the Arrow.—*Kim*, Kipling.

pps, Arthur, a "simple soul," an d, illegitimate child brought up by an and ant, small shop-owners in Romney. p apprenticed to a draper, but unexpected inherits a fortune.—*Kippis*, Wells.

ghtly, Mr., owner of Donwell Abbey in Highbury, a gentleman of rectitude and clear-sightedness, but dionate and considerate. He loves Emma dhouse, though he is never blind to her and finally wins her hand.—*Emma*,

in, Austen, the chief character in a ola Khan, poem of that name by l. Coleridge.

dy of Shalott. See Elaine.

dy of the Lake, Nimue, with rd fell in love, and who learned all the r's secrets.—*History of Prince Arthur*, ry. In Tennyson's *Idylls of the King* the antress is given the name of Vivien.

ertes, the son of Polonius and brother to the ill-fated Ophelia; is ded to death by Hamlet in a duel.—*id*, Shakespeare.

lia Rookh, the daughter of the emperor Aurangzebe, journeys from Delhi to Cashmere to

wed the Sultan of Bucharia, but on the way falls in with a young Persian poet, who wins her love and proves to be the sultan himself.

—*Lalla Rookh*, Moore.

Lammie, Alfred, a designing young man who attempts to deceive Mr. Boffin but is discomfited; he and his wife lead a cat-and-dog life abroad, though outwardly a most amiable pair.—*Our Mutual Friend*, Dickens.

Lancelot, or Lancelot, Sir, the most distinguished of the knights of the Round Table, whose guilty love of Queen Guinevere breaks up the king's company and causes the death of many.—*History of Prince Arthur*, Malory; and *Idylls of the King*, Tennyson.

Launce, a clownish serving man attached to Proteus, notable for his "sour-natured" dog, Crab.—*The Two Gentlemen of Verona*, Shakespeare.

Laurence, Friar, the Franciscan friar who agrees to marry Romeo and Juliet and provides the sleeping draught that will enable the latter to escape from her home.—*Romeo and Juliet*, Shakespeare.

Lavinia, the daughter of Titus Andronicus, whose sad fate is the theme of Shakespeare's tragedy, *Titus Andronicus*.

Lear, a legendary king of Britain, whose misfortunes are the theme of Shakespeare's tragedy, *King Lear*. See *Cordelia*.

Learoyd, Jock, a Yorkshireman, one of the Soldiers Three in several stories by Kipling.

Leatherstocking, the nickname of the hero of *The Last of the Mohicans*, *The Prairie*, *The Pathfinder*, *The Deerslayer*, and *The Pioneers* by J. Fenimore Cooper. They are known as *The Leatherstocking Tales*.

Lecoq, celebrated detective in Emile Gaboriau's crime stories.

Leigh, Amyas, a gallant son of Devon, who ventures to the Indies in quest of Rose Salterne, carried off by a Spanish don, fights the Spaniards on the Main and takes part in the battle with the Armada.—*Westward Ho!*, Charles Kingsley.

Leigh, Aurora, the heroine of Mrs. Browning's poem of the same name. She styled it "a novel in verse," and wrote of it as the "most mature of my works, and the one into which my highest convictions upon Life and Art have entered."

Lescaut, Manon, the heroine of a novel by the Abbé Prévost, which tells the story of Manon transported for crime to Louisiana with her lover Griex, of her adventures there, and her death in the wilderness with Griex.

Lessways, Hilda, heroine of a novel of Bennett, being the sequel to *Clayhanger*. *These Two* being the third of the trilogy. She falls in love with Edwin Clayhanger, but the match is prevented by Edwin's father. She then marries George Cannon and has a son, George; but when the marriage is proved bigamous ten years later, she is free to marry Clayhanger.—*The Clayhanger Family*, Arnold Bennett.

Lewisham, Mr., an ambitious schoolmaster who loses his position through an intrigue with a girl, Ethel. Later he meets her again and marries her, but his ambitions and his fortunes decline. The story reveals much insight into middle-class marriage problems.—*Love and Mr. Lewisham*, Wells.

Lismahago, Lieutenant Obadiah, a hard-featured, eccentric, pedantic, and argumentative Scottish soldier on half-pay, who joined the family party of Mr. Matthew Bramble at Durham during their travels and married Tabitha Bramble for her fortune.—*Humphrey Clinker*, Smollett.

Little Billee, the boy in Thackeray's novel, who is ballad of the name who narrowly escapes being eaten by his shipmates; also the nickname of a leading character in *Trilby*, George du Maurier.

Little Dorrit, the heroine of the novel of the name by Dickens, a girl brought up in the Marshalsea prison until the release of her father from confinement for debt; she marries Arthur Clennam.

Little Nell, the pathetic child who lives with her grandfather and, terrorized by the scoundrelly Quilp, accompanies the former in his wandering through the country.—*The Old Curiosity Shop*, Dickens.

Lob, a strange little man, devoted to his garden, who invites to his country house a group of people who have in common their discontent with life. On midsummer night he turns them loose in an enchanted wood, in which life offers them a "second chance."—*Dear Brutus*, Barrie.

Lochinvar, a gallant young Highlander from her bridegroom and kinsmen at Netherby Hall.—*Marmion*, Scott.

Locke, Alton, a tailor and poet, the hero of the Chartist novel of the name by Charles Kingsley.

Lockit, a harsh gaoler who extorts money from his prisoners; his daughter, Lucy, in love with Captain Macheath, helps the latter to escape, but is jilted by him.—*The Beggar's Opera*, Gay.

Lohengrin, "Knight of the Swan," son of Parsifal and husband of Elsa or Elsa. He is a hero of German medieval epic and his story is the basis of Wagner's opera of the name.

Lorelei, a siren of the Rhine who, according to legend, sits on a rock combing her hair and singing to entice sailors to their doom on the rocks.

Lothair, the hero of a novel of the name, dealing with religious questions, by Lord Beaconsfield.

Lothario, a youthful nobleman of Genoa who betrays Callista, the daughter of Sciolto, and is killed in a duel.—*The Fair Penitent*, Rowe.

Lovelace, Robert, the handsome but heartless libertine who betrays Clarissa.—*Clarissa Harlowe*, Richardson.

Lumpkin, Tony, the rough, mischievous, but good-natured son of Mrs. Hardcastle by her first husband, with a fondness for playing practical jokes.—*She Stoops to Conquer*, Goldsmith.

Lupin, Arsène, the clever hero of Maurice Leblanc's detective novels, who was himself once a criminal.

Lysander, a young Athenian in love with Hermia and united to her, as Demetrius to Helena (q.v.), after their adventure.—*A Midsummer Night's Dream*, Shakespeare.

Mab, the fairy queen according to the early English poets. She is described by *Mercutio* in Shakespeare's *Romeo and Juliet* (I, iv) as "the fairies' midwife."

Macbeth, thethane of Glamis, who is murder treacherously King Duncan.—*Macbeth*, Shakespeare.

MacChoakumchild, Mr., a school-master in Coketown, full of facts and statistics, who might have taught much more had he learnt less.—*Hard Times*, Dickens.

Macduff, thethane of Fife, who kills Macbeth at Dunsinane, in accordance with prophecy.—*Macbeth*, Shakespeare.

Macheath, Captain, a highwayman, a dashing, handsome rascal, who swings in love between Polly Peachum and Lucy Lookit, and marries the former, although it is the latter who helps him to escape from jail.—*The Beggar's Opera*, Gay.

MacWhier, Captain, skipper of the steership *Nan-Shan*, a stupid, dull-witted man, but obstinate and stubborn in the pursuit of his duty. He is ignorant of theoretical seamanship, which he despises, and in his own way braves a typhoon, bringing his ship through safely.—*Typhoon*, Conrad.

Madoc, a Welsh prince who, in Southey's poem of the name, is credited with having discovered America in 1170.

Maid Marian, the lady of the Robin Hood ballads, incorrectly assumed to be the daughter of Lord Fitzwalter, who joins the outlaw in Sherwood Forest.

Malambruno, a giant and wizard Quixote gallantly attempts to release from enchantment.—*Don Quixote*, Cervantes.

Malaprop, Mrs., an amusing old lady, aunt and guardian to Lydia Languish whose misuse of words has made her name a synonym for verbal blunders.—*The Rivals*, Sheridan.

Malfi, Duchess of, the heroine of Webster's tragedy of that name. She falls in love with Antonio, her steward, thereby giving mortal offence to her brother, Duke Ferdinand. She is a figure of ineffable beauty and gentleness, placed amidst scenes of incredible cruelty and terror.

Malvolio, the vain and pompous Olivia, who is tricked into a ludicrous declaration of his love for his mistress by Sir Toby Belch and Sir Andrew Aguecheek, together with Maria, the Countess's waiting-woman.—*Twelfth Night*, Shakespeare.

Manette, Dr., a prisoner in the Bastille who, after release, slowly recovers his lost memory; his daughter, Lucie, marries Charles Darnay, the French *émigré* whom Sydney Carton (q.v.) personates on the scaffold.—*A Tale of Two Cities*, Dickens.

Manley, Sir Edward, "the Black Dwarf," who assists Isabella Vere (daughter of the laird of Ellenslaw) to marry her lover, Patrick Earncliffe, in defiance of her father's opposition; he is otherwise known as Cannie Elshie and Elshander the Recluse.—*The Black Dwarf*, Scott.

Mannering, Guy, a colonel and hero of the name, but one of the least convincing characters in the book.

Marchioness, The, a half-starved maid-of-all-work employed by Sampson Brass and his sister, so named by Dick Swiveller, who afterwards marries her.—*The Old Curiosity Shop*, Dickens.

Margaret, Gretchen, the girl whom Faust betrays, who murders her infant and loses her reason in prison.—*Faust*, Goethe.

Maria, (a) Olivia's attendant in *Twelfth Night*, (b) a character in *Tristram Shandy* and *A Sentimental Journey* by Laurence Sterne, (c) Sir Peter Teazle's ward whom Charles Surface marries in *School for Scandal* by R. B. Sheridan.

Marina, the daughter of Pericles, Prince of Tyre, whose misadventures form the theme of Shakespeare's drama, *Pericles*.

Marley, Scrooge's late partner, whose ghost appears to the old miserly man and helps to bring about his change of character.—*A Christmas Carol*, Dickens.

Marmion, the hero of a poem of the name by Scott, "a tale of Flodden Field."

